Homework #4

Due 8am EST Wednesday Oct 14, 2015

Econ B2000, MA Econometrics

Kevin R Foster, CCNY

Each student should submit a separate assignment, even if it is an identical computer file to the rest of your study group. When submitting assignments, please include your name and the assignment number as part of the filename. Please write the names of your study group members at the beginning of your homework.

- 1. What are the names of the people in your study group?
- Go back to the PUMS data and do a few interesting linear regressions. Clearly explain the null hypothesis and statistical tests for them. The next questions are from last year's exam.
- 3. A recent report asserted that people who worked more hours also tended to be fatter (among those in certain occupations). (The paper doesn't give precise numbers so I'll make them up – don't bother with Google.) The paper did much more econometric analysis of course. Nevertheless, suppose that, of the 7219 women working nonstrenuous occupations, 23% are working more than 40 hours/week. Of those women in non-strenuous occupations working more than 40 hours/week, 27.3% were obese; of those women in non-strenuous occupations working less than 40 hours/week, 24.6% were obese. There were also 714 women in strenuous occupations with 21% working more than 40 hours/week. Of the women in strenuous occupations working more than 40 hours/week, 28.1% were obese while 37.4% were obese among those working fewer hours. Does it seem likely that overtime makes certain groups more likely to be obese? *J Abramowitz, "Working Hours, Body Mass Index, and Health Status: A Time Use Analysis"*
- 4. I used the CEX data to look at the fraction of spending going to health insurance. I get the following table, grouped by education of the reference person:

%Insurance	No HS	HS diploma	Some college, no degree	Assoc degree	Bach degree	Adv degree
less than 10%	467	1385	1191	615	1181	521
11% - 20%	82	231	157	71	122	58
21% - 30%	21	65	27	10	32	7
more than	8	18	14	1	3	2

a. Conditional on the reference person having a college degree (Associate's, Bachelor's or Advanced), what fraction devote more than 20% of spending to health insurance?

- b. Conditional on the reference person having less than a college degree, what fraction spend more than 20% on health insurance?
- c. Is this difference statistically significant?
- d. What is the overall share (in this sample) of people with any college degree? What share of people spending more than 20% is made up of people with any college degree?
- e. Are those break points (+/- 20%; any degree) reasonable? Can you suggest better? Explain.
- f. What problems might there be, with the classification and analysis here? Can you do better with the CEX data?
- 5. (*This question is optional*) Consider the following simple distribution questions. Your answer can be as detailed as necessary. You might sketch each case.
 - a. For a Normal Distribution with mean 2 and standard deviation 5.6, what is area to the right of 10.4?
 - b. For a Normal Distribution with mean -1 and standard deviation 4.9, what is area to the right of -7.86?
 - c. For a Normal Distribution with mean 10 and standard deviation 5.2, what is area to the left of 0.12?
 - d. For a Normal Distribution with mean 7 and standard deviation 4, what is area to the left of 9.8?
 - e. For a Normal Distribution with mean 11 and standard deviation 8.4, what is area in both tails farther from the mean than 19.4?
 - f. For a Normal Distribution with mean -8 and standard deviation 0.4, what is area in both tails farther from the mean than -7.52?
 - g. For a Normal Distribution with mean 11 and standard deviation 6.3, what is area in both tails farther from the mean than 0.29?
 - h. For a Normal Distribution with mean 10 and standard deviation 1.5, what is area in both tails farther from the mean than 12.7?
 - i. For a Normal Distribution with mean -1 and standard deviation 1.2, what is area in both tails farther from the mean than 1.52?
 - j. For a Normal Distribution with mean 9 and standard deviation 4.9, what values leave probability 0.08 in both tails?
 - k. For a Normal Distribution with mean 3 and standard deviation 9.6, what values leave probability 0.311 in both tails?
 - I. A regression coefficient is estimated to be equal to 8.25 with standard error 7.5; there are 35 degrees of freedom. What is the p-value (from the t-statistic) against the null hypothesis of zero?
 - m. A regression coefficient is estimated to be equal to 10.08 with standard error 5.6; there are 7 degrees of freedom. What is the p-value (from the t-statistic) against the null hypothesis of zero?
 - A regression coefficient is estimated to be equal to -12.04 with standard error 8.6; there are 14 degrees of freedom. What is the p-value (from the t-statistic) against the null hypothesis of zero?