ECO220Y1Y, Test #3, Prof. Murdock SOLUTIONS

(1) One example would be tracking a random sample of people who have had a change in their insurance status, where for each person you record their use of the emergency department when they have insurance and their use when they do not have insurance. Each person would be paired with themselves. [Alternatively, people could be paired by some other observable such as previous use of the emergency department: first person in Sample 1 used the ED four times in the previous period and first person in Sample 2 used the ED four times in the previous period and so on. Sample 1 gets insurance and Sample 2 does not.]

(2) (a)

$H_0: p = 0.10$ [this can also be correctly written as $H_0: p \geq 0.10$]

$H_1: p < 0.10$

$P(Z < -2.326) = 0.01$

$z = \frac{\hat{P} - p_0}{\sqrt{\frac{p_0(1-p_0)}{}}}$