Homework 2 Due Thu 21st March (in class)

1) Read Chapter 3 (to do the homework)
   Chapter 4 (For the next classes)

2) Chapter 3 problem 1, 5
   computer exercise C1, C6, C10

Note: When you do the computer exercises, please capture the screen or copy & paste your stata results into your homework as well. If you work on iPad, you can take pictures of the STATA output results and insert them in your homework.

- Here is an example on how to answer a question which requires STATA output.

Question C1 (iii)

$$\widehat{bwght} = \underset{(1.049)}{116.974} - \underset{(0.092)}{0.463}\, cigs + \underset{(0.029)}{0.093}\, faminc \quad ; n=1388,\ R^2=0.0298$$

$$\widehat{bwght} = \underset{(0.572)}{119.772} - \underset{(0.090)}{0.514}\, cigs \quad ; n=1388 \quad R^2=0.0227$$

```
. regress bwght cigs faminc

      Source |       SS       df       MS              Number of obs =    1388
-------------+------------------------------           F(  2,  1385) =   21.27
       Model |  17126.2088     2  8563.10442            Prob > F      =  0.0000
    Residual |  557485.511  1385  402.516614            R-squared     =  0.0298
-------------+------------------------------           Adj R-squared =  0.0284
       Total |  574611.72   1387  414.283864            Root MSE      =  20.063

------------------------------------------------------------------------------
       bwght |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        cigs |  -.4634075   .0915768    -5.06   0.000    -.6430518   -.2837633
     faminc |   .0927647   .0291879     3.18   0.002     .0355075    .1500219
       _cons |   116.9741   1.048984   111.51   0.000     114.9164    119.0319
------------------------------------------------------------------------------

. regress bwght cigs

      Source |       SS       df       MS              Number of obs =    1388
-------------+------------------------------           F(  1,  1386) =   32.24
       Model |  13060.4194     1  13060.4194            Prob > F      =  0.0000
    Residual |  561551.3    1386  405.159668            R-squared     =  0.0227
-------------+------------------------------           Adj R-squared =  0.0220
       Total |  574611.72   1387  414.283864            Root MSE      =  20.129

------------------------------------------------------------------------------
       bwght |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        cigs |  -.5137721   .0904909    -5.68   0.000    -.6912861   -.3362581
       _cons |   119.7719   .5723407   209.27   0.000     118.6492    120.8946
------------------------------------------------------------------------------
```

← This can be a picture, screen capture or a cut & paste results BUT each student must estimate the regressions on their own. Do not use your friend's.

Next Page

- The effect of cigarette smoking is slightly smaller when family income is added to the regression.

$$E(\tilde{\beta}_{cigs}) = \beta_{cigs} + \beta_{faminc} \cdot \frac{Cov(Cigs, faminc)}{Var(cigs)}$$

This could be because 1) β_{faminc} is small and/or
2) Cov(Cigs, faminc) is small.

```
. correlate cigs faminc, cov
(obs=1388)

             |     cigs   faminc
-------------+------------------
        cigs |   35.673
      faminc |  -19.3679  351.161
```

-19.3679 is small in relation to Var(Cigs) = 35.673 and Var(faminc) = 351.161.