```
-------------------------------------------------------------------------------
-------------------------------------
      name:  <unnamed>
       log:  C:\Users\mkhan03\Documents\ECON423_CP_2.log
  log type:  text
 opened on:  18 Oct 2023, 07:39:39


. browse

. gen FatPop = fatalities/(population/10000)

. scatter FatPop gdppercap

. gen lnFatPop = ln(FatPop)

. label variable lnFatPop "= ln(fatalities/10,000persons)"

. gen lngdp = ln(gdppercap)

. label variable lngdp "= ln(gdppercap)"

. gen lngdp2 = lngdp*lngdp

. label variable lngdp2 "= ln(gdppercap) squared"

. egen t = group(year)

TASK 1: OLS WITHOUT CLUSTERED STANDARD ERRORS

. reg lnFatPop lngdp lngdp2 t

      Source |       SS           df       MS      Number of obs   =     2,200
-------------+----------------------------------   F(3, 2196)      =    572.12
       Model |  472.981749         3  157.660583   Prob > F        =    0.0000
    Residual |  605.161475     2,196  .275574442   R-squared       =    0.4387
-------------+----------------------------------   Adj R-squared   =    0.4379
       Total |  1078.14322     2,199   .49028796   Root MSE        =    .52495

------------------------------------------------------------------------------
    lnFatPop | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   3.702308   .1767174    20.95   0.000     3.355758    4.048859
      lngdp2 |  -.2041933   .0109452   -18.66   0.000    -.2256573   -.1827294
           t |  -.0064133   .0011233    -5.71   0.000    -.0086161   -.0042104
       _cons |  -16.21855   .7066835   -22.95   0.000    -17.60439   -14.83271
------------------------------------------------------------------------------

TASK 1: OLS WITH CLUSTERED STANDARD ERRORS

. reg lnFatPop lngdp lngdp2 t, robust cluster(wbcode)

Linear regression                               Number of obs     =      2,200
                                                F(3, 87)          =      25.13
                                                Prob > F          =     0.0000
                                                R-squared         =     0.4387
                                                Root MSE          =     .52495

                                  (Std. err. adjusted for 88 clusters in wbcode)
```

```
------------------------------------------------------------------------------
             |               Robust
    lnFatPop | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   3.702308   .7231417     5.12   0.000     2.264986    5.139631
      lngdp2 |  -.2041933   .0442943    -4.61   0.000     -.292233   -.1161537
           t |  -.0064133   .0031582    -2.03   0.045    -.0126906   -.0001359
       _cons |  -16.21855   2.939258    -5.52   0.000    -22.06064   -10.37646
------------------------------------------------------------------------------

. areg lnFatPop lngdp lngdp2 t, absorb(wbcode) robust cluster(wbcode)

Linear regression, absorbing indicators             Number of obs     =  2,200
Absorbed variable: wbcode                           No. of categories =     88
                                                    F(3, 87)          =  55.17
                                                    Prob > F          = 0.0000
                                                    R-squared         = 0.8518
                                                    Adj R-squared     = 0.8455
                                                    Root MSE          = 0.2752

                                (Std. err. adjusted for 88 clusters in wbcode)
------------------------------------------------------------------------------
             |               Robust
    lnFatPop | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   7.750247   .6237576    12.43   0.000     6.510461    8.990033
      lngdp2 |  -.4510488   .0355131   -12.70   0.000    -.5216349   -.3804627
           t |  -.0009681   .0036869    -0.26   0.793    -.0082963      .00636
       _cons |  -32.66474   2.766493   -11.81   0.000    -38.16344   -27.16603
------------------------------------------------------------------------------

. egen countrynum = group(wbcode)

. xtset countrynum t

Panel variable: countrynum (unbalanced)
 Time variable: t, 1 to 37, but with gaps
         Delta: 1 unit

TASK 2: FIXED EFFECTS WITHOUT CLUSTERED STANDARD ERRORS

. xtreg lnFatPop lngdp lngdp2 t, fe

Fixed-effects (within) regression               Number of obs     =      2,200
Group variable: countrynum                      Number of groups  =         88

R-squared:                                      Obs per group:
     Within  = 0.3737                                         min =         11
     Between = 0.3963                                         avg =       25.0
     Overall = 0.3996                                         max =         37

                                                F(3,2109)         =     419.49
corr(u_i, Xb) = -0.4342                         Prob > F          =     0.0000

------------------------------------------------------------------------------
    lnFatPop | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   7.750247   .2243225    34.55   0.000      7.31033    8.190164
      lngdp2 |  -.4510488   .0136858   -32.96   0.000    -.4778878   -.4242098
```

```
           t |  -.0009681   .0009827    -0.99   0.325    -.0028953     .000959
       _cons |  -32.66474   .9271224   -35.23   0.000    -34.48291   -30.84657
-------------+----------------------------------------------------------------
     sigma_u |  .55110146
     sigma_e |  .27523366
         rho |  .80036817   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(87, 2109) = 67.58                     Prob > F = 0.0000
```

TASK 2: FIXED EFFECTS WITH CLUSTERED STANDARD ERRORS

```
. xtreg lnFatPop lngdp lngdp2 t, fe robust cluster(countrynum)

Fixed-effects (within) regression               Number of obs     =      2,200
Group variable: countrynum                      Number of groups  =         88

R-squared:                                      Obs per group:
     Within  = 0.3737                                         min =         11
     Between = 0.3963                                         avg =       25.0
     Overall = 0.3996                                         max =         37

                                                F(3,87)           =      57.45
corr(u_i, Xb) = -0.4342                         Prob > F          =     0.0000

                           (Std. err. adjusted for 88 clusters in countrynum)
------------------------------------------------------------------------------
             |               Robust
    lnFatPop | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   7.750247   .6112769    12.68   0.000     6.535268    8.965226
      lngdp2 |  -.4510488   .0348025   -12.96   0.000    -.5202226    -.381875
           t |  -.0009681   .0036131    -0.27   0.789    -.0081497    .0062134
       _cons |  -32.66474   2.711138   -12.05   0.000    -38.05342   -27.27605
-------------+----------------------------------------------------------------
     sigma_u |  .55110146
     sigma_e |  .27523366
         rho |  .80036817   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. gen thd1 = hd1 * t

. gen thd2 = (1-hd1) * t
```

TASK 3: FIXED EFFECTS WITH SEPARATE TIME TREND FOR HD1 AND HD2 COUNTRIES AND CLUSTERED STANDARD ERRORS

```
. xtreg lnFatPop lngdp lngdp2 thd1 thd2, fe robust cluster(countrynum)

Fixed-effects (within) regression               Number of obs     =      2,200
Group variable: countrynum                      Number of groups  =         88

R-squared:                                      Obs per group:
     Within  = 0.4220                                         min =         11
     Between = 0.4100                                         avg =       25.0
     Overall = 0.4273                                         max =         37

                                                F(4,87)           =      48.65
corr(u_i, Xb) = -0.2649                         Prob > F          =     0.0000
```

```
                           (Std. err. adjusted for 88 clusters in countrynum)
------------------------------------------------------------------------------
             |               Robust
    lnFatPop | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   4.983225   .8766295     5.68   0.000     3.240829    6.725621
      lngdp2 |  -.2705177   .0543298    -4.98   0.000    -.3785039   -.1625314
        thd1 |  -.0179643   .0047813    -3.76   0.000    -.0274677    -.008461
        thd2 |   .0055822   .0038766     1.44   0.153    -.0021231    .0132874
       _cons |  -22.21057   3.543478    -6.27   0.000    -29.25362   -15.16753
-------------+----------------------------------------------------------------
     sigma_u |  .51092157
     sigma_e |  .26446386
         rho |  .78868598   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

TASK 4: RANDOM EFFECTS MODEL WITH SEPARATE TIME TRENDS FOR HD1 AND HD2 COUNTRIES AND CLUSTERED STANDARD ERRORS

```
. xtreg lnFatPop lngdp lngdp2 thd1 thd2, re robust cluster(countrynum)

Random-effects GLS regression                   Number of obs     =      2,200
Group variable: countrynum                      Number of groups  =         88

R-squared:                                      Obs per group:
     Within  = 0.4220                                         min =         11
     Between = 0.4109                                         avg =       25.0
     Overall = 0.4281                                         max =         37

                                                Wald chi2(4)      =     211.64
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000

                           (Std. err. adjusted for 88 clusters in countrynum)
------------------------------------------------------------------------------
             |               Robust
    lnFatPop | Coefficient  std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
       lngdp |   4.799793     .79207     6.06   0.000     3.247364    6.352221
      lngdp2 |  -.2594863   .0498234    -5.21   0.000    -.3571384   -.1618342
        thd1 |  -.0181748   .0045352    -4.01   0.000    -.0270636   -.0092859
        thd2 |   .0054971   .0033931     1.62   0.105    -.0011534    .0121475
       _cons |  -21.47762   3.149594    -6.82   0.000    -27.65071   -15.30452
-------------+----------------------------------------------------------------
     sigma_u |  .47403518
     sigma_e |  .26446386
         rho |  .76263018   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```