```
1 . import excel "C:\Users\tkaur\Downloads\driving dataset.xlsx", sheet("driving")
  >  firstrow
  (24 vars, 1,200 obs)

2 . Xtset totfat
  command Xtset not defined by Xtset.ado
  r(199);

3 . xtset totfat

  Panel variable: totfat (unbalanced)

4 . xtset slcom

  Panel variable: slcom (unbalanced)

5 . xtset seatbelt

  Panel variable: seatbelt (unbalanced)
```

```
 6 . xtset gdl

   Panel variable: gdl (unbalanced)

 7 . xtset bac10

   Panel variable: bac10 (unbalanced)

 8 . xtset bac08

   Panel variable: bac08 (unbalanced)

 9 . xtset nghtfat

   Panel variable: nghtfat (unbalanced)

10 . xtset wkndfat

   Panel variable: wkndfat (unbalanced)

11 . xtset statepop

   Panel variable: statepop (balanced)

12 . xtset vehicmiles

   Panel variable: vehicmiles (unbalanced)

13 . xtset perc14_24

   Panel variable: perc14_24 (unbalanced)

14 . gen miles_pop = statepop*vehicmiles

15 . gen slcom_belt = slcom*seatbelt

16 . gen slcom_minage = slcom*minage

17 . gen slcom_zerotol = slcom*zerotol

18 . gen slcom_gdl = slcom*gdl

19 . gen slcom_perc = slcom*perc

20 . gen minage_seatbelt = minage*seatbelt

21 . xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom_
   > belt slcom_gdl, fe
   note: slcom_belt omitted because of collinearity.
   note: slcom_gdl omitted because of collinearity.

   Fixed-effects (within) regression               Number of obs     =      1,200
   Group variable: perc14_24                       Number of groups  =         87

   R-squared:                                      Obs per group:
        Within  = 0.9939                                         min =          1
        Between = 0.9934                                         avg =       13.8
        Overall = 0.9937                                         max =         45

                                                   F(10,1103)        =   18018.91
   corr(u_i, Xb) = -0.0202                         Prob > F          =     0.0000
```

totfat	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
slcom	-1.22e+09	1.27e+09	-0.96	0.338	-3.72e+09	1.28e+09
seatbelt	5.712459	3.034974	1.88	0.060	-.2425148	11.66743
gdl	-32.77728	6.61065	-4.96	0.000	-45.74815	-19.80641
bac10	17.43092	6.747094	2.58	0.010	4.192333	30.66951
bac08	21.95707	8.621872	2.55	0.011	5.039945	38.87419
nghtfat	2.411682	.067226	35.87	0.000	2.279776	2.543587
wkndfat	-1.3672	.1270955	-10.76	0.000	-1.616576	-1.117823
statepop	-4.66e-06	1.79e-06	-2.60	0.009	-8.18e-06	-1.14e-06
vehicmiles	4.132672	.2457517	16.82	0.000	3.650479	4.614866
miles_pop	-3.24e-08	4.48e-09	-7.25	0.000	-4.12e-08	-2.36e-08
slcom_belt	0	(omitted)				
slcom_gdl	0	(omitted)				
_cons	1.22e+09	1.27e+09	0.96	0.338	-1.28e+09	3.72e+09
sigma_u	26.560305					
sigma_e	68.945599					
rho	.12922822	(fraction of variance due to u_i)				

F test that all u_i=0: F(86, 1103) = 1.30 Prob > F = 0.0380

```
22 . xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom_
> belt slcom_gdl, re
note: slcom omitted because of collinearity.
note: slcom_belt omitted because of collinearity.
note: slcom_gdl omitted because of collinearity.

Random-effects GLS regression                   Number of obs     =      1,200
Group variable: perc14_24                       Number of groups  =         87

R-squared:                                      Obs per group:
     Within  = 0.9939                                         min =          1
     Between = 0.9941                                         avg =       13.8
     Overall = 0.9938                                         max =         45

                                                Wald chi2(9)      =  189720.00
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000
```

totfat	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
slcom	0	(omitted)				
seatbelt	3.282616	2.632514	1.25	0.212	-1.877017	8.44225
gdl	-35.65067	6.398502	-5.57	0.000	-48.1915	-23.10984
bac10	26.22904	6.134296	4.28	0.000	14.20604	38.25204
bac08	24.45677	8.014326	3.05	0.002	8.748977	40.16456
nghtfat	2.390351	.0647954	36.89	0.000	2.263354	2.517348
wkndfat	-1.302505	.1207071	-10.79	0.000	-1.539087	-1.065923
statepop	-6.82e-06	1.68e-06	-4.06	0.000	-.0000101	-3.53e-06
vehicmiles	4.137536	.2259751	18.31	0.000	3.694633	4.580439
miles_pop	-2.72e-08	4.25e-09	-6.41	0.000	-3.55e-08	-1.89e-08
slcom_belt	0	(omitted)				
slcom_gdl	0	(omitted)				
_cons	8.333817	6.065995	1.37	0.169	-3.555314	20.22295
sigma_u	0					
sigma_e	68.943088					
rho	0	(fraction of variance due to u_i)				

```
23 . hausman fe re
   estimation result fe not found
   r(111);

24 .  xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom
   > _
   slcom_ ambiguous abbreviation
   r(111);

25 .
26 . belt slcom_gdl, fe
   command belt is unrecognized
   r(199);

27 .  xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom
   > _
   slcom_ ambiguous abbreviation
   r(111);

28 .
29 . > belt slcom_gdl, fe
   > is not a valid command name
   r(199);

30 .  xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom
   > _ belt slcom_gdl, fe
   slcom_ ambiguous abbreviation
   r(111);

31 . xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom_
   > belt slcom_gdl, fe
   note: slcom_belt omitted because of collinearity.
   note: slcom_gdl omitted because of collinearity.

   Fixed-effects (within) regression               Number of obs     =      1,200
   Group variable: perc14_24                       Number of groups  =         87

   R-squared:                                      Obs per group:
        Within  = 0.9939                                         min =          1
        Between = 0.9934                                         avg =       13.8
        Overall = 0.9937                                         max =         45

                                                   F(10,1103)        =   18018.91
   corr(u_i, Xb) = -0.0202                         Prob > F          =     0.0000

   ------------------------------------------------------------------------------
         totfat |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
   -------------+----------------------------------------------------------------
          slcom |  -1.22e+09   1.27e+09    -0.96   0.338    -3.72e+09    1.28e+09
       seatbelt |   5.712459   3.034974     1.88   0.060    -.2425148    11.66743
            gdl |  -32.77728    6.61065    -4.96   0.000    -45.74815   -19.80641
          bac10 |   17.43092   6.747094     2.58   0.010     4.192333    30.66951
          bac08 |   21.95707   8.621872     2.55   0.011     5.039945    38.87419
        nghtfat |   2.411682    .067226    35.87   0.000     2.279776    2.543587
        wkndfat |    -1.3672   .1270955   -10.76   0.000    -1.616576   -1.117823
       statepop |  -4.66e-06   1.79e-06    -2.60   0.009    -8.18e-06   -1.14e-06
     vehicmiles |   4.132672   .2457517    16.82   0.000     3.650479    4.614866
      miles_pop |  -3.24e-08   4.48e-09    -7.25   0.000    -4.12e-08   -2.36e-08
     slcom_belt |          0  (omitted)
      slcom_gdl |          0  (omitted)
          _cons |   1.22e+09   1.27e+09     0.96   0.338    -1.28e+09    3.72e+09
   -------------+----------------------------------------------------------------
        sigma_u |  26.560305
        sigma_e |  68.945599
            rho |  .12922822   (fraction of variance due to u_i)
   ------------------------------------------------------------------------------
```

F test that all u_i=0: F(**86**, **1103**) = **1.30** Prob > F = **0.0380**

```
32 . estimate store fe

33 . xtreg totfat slcom seatbelt gdl bac10 bac08 nghtfat wkndfat statepop vehicmiles miles_pop slcom_
> belt slcom_gdl, re
note: slcom omitted because of collinearity.
note: slcom_belt omitted because of collinearity.
note: slcom_gdl omitted because of collinearity.

Random-effects GLS regression                   Number of obs     =      1,200
Group variable: perc14_24                       Number of groups  =         87

R-squared:                                      Obs per group:
     Within  = 0.9939                                         min =          1
     Between = 0.9941                                         avg =       13.8
     Overall = 0.9938                                         max =         45

                                                Wald chi2(9)      =  189720.00
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000
```

totfat	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
slcom	0	(omitted)				
seatbelt	3.282616	2.632514	1.25	0.212	-1.877017	8.44225
gdl	-35.65067	6.398502	-5.57	0.000	-48.1915	-23.10984
bac10	26.22904	6.134296	4.28	0.000	14.20604	38.25204
bac08	24.45677	8.014326	3.05	0.002	8.748977	40.16456
nghtfat	2.390351	.0647954	36.89	0.000	2.263354	2.517348
wkndfat	-1.302505	.1207071	-10.79	0.000	-1.539087	-1.065923
statepop	-6.82e-06	1.68e-06	-4.06	0.000	-.0000101	-3.53e-06
vehicmiles	4.137536	.2259751	18.31	0.000	3.694633	4.580439
miles_pop	-2.72e-08	4.25e-09	-6.41	0.000	-3.55e-08	-1.89e-08
slcom_belt	0	(omitted)				
slcom_gdl	0	(omitted)				
_cons	8.333817	6.065995	1.37	0.169	-3.555314	20.22295
sigma_u	0					
sigma_e	68.943088					
rho	0	(fraction of variance due to u_i)				

```
34 . estimate store re

35 . hausman fe re

Note: the rank of the differenced variance matrix (7) does not equal the number of coefficients
        being tested (9); be sure this is what you expect, or there may be problems computing the
        test.  Examine the output of your estimators for anything unexpected and possibly consider
        scaling your variables so that the coefficients are on a similar scale.
```

	Coefficients (b) fe	Coefficients (B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
seatbelt	5.712459	3.282616	2.429843	1.510277
gdl	-32.77728	-35.65067	2.873387	1.661287
bac10	17.43092	26.22904	-8.798118	2.809571
bac08	21.95707	24.45677	-2.4997	3.179192
nghtfat	2.411682	2.390351	.0213307	.0179132
wkndfat	-1.3672	-1.302505	-.0646945	.0397876
statepop	-4.66e-06	-6.82e-06	2.15e-06	6.32e-07
vehicmiles	4.132672	4.137536	-.0048636	.0965876

miles_pop	**-3.24e-08**	**-2.72e-08**	**-5.22e-09**	**1.42e-09**

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(**7**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **31.74**
Prob > chi2 = **0.0000**

36 .