

```
. use traffic, clear
```

```
. summarize fatal beertax spircons unrate perincK
```

Variable	Obs	Mean	Std. Dev.	Min	Max
fatal	336	2.040444	.5701938	.82121	4.21784
beertax	336	.513256	.4778442	.0433109	2.720764
spircons	336	1.75369	.6835745	.79	4.9
unrate	336	7.346726	2.533405	2.4	18
perincK	336	13.88018	2.253046	9.513762	22.19345

```
. xtreg fatal beertax spircons unrate perincK, fe
```

```
Fixed-effects (within) regression      Number of obs   =   336
Group variable (i): state              Number of groups =   48
R-sq:  within = 0.3526                  Obs per group:  min =    7
      between = 0.1146                  avg =           7.0
      overall = 0.0863                  max =           7
                                         F(4,284)        =   38.68
corr(u_i, Xb) = -0.8804                 Prob > F         =   0.0000
```

fatal	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
beertax	-.4840728	.1625106	-2.98	0.003	-.8039508	-.1641948
spircons	.8169652	.0792118	10.31	0.000	.6610484	.9728819
unrate	-.0290499	.0090274	-3.22	0.001	-.0468191	-.0112808
perincK	.1047103	.0205986	5.08	0.000	.064165	.1452555
_cons	-.383783	.4201781	-0.91	0.362	-1.210841	.4432754
sigma_u	1.1181913					
sigma_e	.15678965					
rho	.98071823	(fraction of variance due to u_i)				

```
F test that all u_i=0:      F(47, 284) =   59.77      Prob > F = 0.0000
```

```
. qui tabulate year, generate(yr)
```

```
. local j 0
```

```
. forvalues i=82/87 {
2.     local ++j
3.     rename yr`j' yr`i'
4.     qui replace yr`i' = yr`i' - yr7
5.     }

```

```
. drop yr7
```

```
. xtreg fatal beertax spircons unrate perincK yr*, fe
```

```
Fixed-effects (within) regression      Number of obs   =   336
Group variable (i): state              Number of groups =   48
R-sq:  within = 0.4528                  Obs per group:  min =    7
      between = 0.1090                  avg =           7.0
      overall = 0.0770                  max =           7
                                         F(10,278)       =   23.00
corr(u_i, Xb) = -0.8728                 Prob > F         =   0.0000
```

fatal	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
beertax	-.4347195	.1539564	-2.82	0.005	-.7377878	-.1316511
spircons	.805857	.1126425	7.15	0.000	.5841163	1.027598
unrate	-.0549084	.0103418	-5.31	0.000	-.0752666	-.0345502

perinck	.0882636	.0199988	4.41	0.000	.0488953	.1276319
yr82	.1004321	.0355629	2.82	0.005	.0304253	.170439
yr83	.0470609	.0321574	1.46	0.144	-.0162421	.1103638
yr84	-.0645507	.0224667	-2.87	0.004	-.1087771	-.0203243
yr85	-.0993055	.0198667	-5.00	0.000	-.1384139	-.0601971
yr86	.0496288	.0232525	2.13	0.034	.0038554	.0954021
yr87	.0003593	.0289315	0.01	0.990	-.0565933	.0573119
_cons	.0286246	.4183346	0.07	0.945	-.7948812	.8521305
sigma_u	1.0987683					
sigma_e	.14570531					
rho	.98271904 (fraction of variance due to u_i)					

F test that all u\_i=0: F(47, 278) = 64.52 Prob > F = 0.0000

. test yr82 yr83 yr84 yr85 yr86 yr87  
yr82 yr83 yr84 yr85 yr86 yr87 | |

. xtreg fatal beertax spircons unrate perinck, be

Between regression (regression on group means) Number of obs = 336  
Group variable (i): state Number of groups = 48  
R-sq: within = 0.0479 Obs per group: min = 7  
between = 0.4565 avg = 7.0  
overall = 0.2583 max = 7  
F(4,43) = 9.03  
sd(u\_i + avg(e\_i.))= .4209489 Prob > F = 0.0000

fatal	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
beertax	.0740362	.1456333	0.51	0.614	-.2196614 .3677338
spircons	.2997517	.1128135	2.66	0.011	.0722417 .5272618
unrate	.0322333	.038005	0.85	0.401	-.0444111 .1088776
perinck	-.1841747	.0422241	-4.36	0.000	-.2693277 -.0990218
_cons	3.796343	.7502025	5.06	0.000	2.283415 5.309271

. xtreg fatal beertax spircons unrate perinck, re

Random-effects GLS regression Number of obs = 336  
Group variable (i): state Number of groups = 48  
R-sq: within = 0.2263 Obs per group: min = 7  
between = 0.0123 avg = 7.0  
overall = 0.0042 max = 7  
Random effects u\_i ~ Gaussian Wald chi2(4) = 49.90  
corr(u\_i, X) = 0 (assumed) Prob > chi2 = 0.0000

fatal	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
beertax	.0442768	.1204613	0.37	0.713	-.191823 .2803765
spircons	.3024711	.0642954	4.70	0.000	.1764546 .4284877
unrate	-.0491381	.0098197	-5.00	0.000	-.0683843 -.0298919
perinck	-.0110727	.0194746	-0.57	0.570	-.0492423 .0270968
_cons	2.001973	.3811247	5.25	0.000	1.254983 2.748964
sigma_u	.41675665				
sigma_e	.15678965				
rho	.87601197 (fraction of variance due to u_i)				

. qui xtreg fatal beertax spircons unrate perinck, fe

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. estimates store fix
. qui xtreg fatal beertax spircons unrate perincK, re
. hausman fix .

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	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fix	(B) .		
beertax	-.4840728	.0442768	-.5283495	.1090815
spircons	.8169652	.3024711	.514494	.0462668
unrate	-.0290499	-.0491381	.0200882	.
perincK	.1047103	-.0110727	.115783	.0067112

```

          b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
      chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
              =      130.93
      Prob>chi2 =      0.0000
      (V_b-V_B is not positive definite)

```