

Stata Textbook Examples**Introductory Econometrics: A Modern Approach by Jeffrey M. Wooldridge (1st & 2nd eds.)****Chapter 13 - Pooling Cross Sections Across Time. Simple Panel Data Methods****Example 13.1: Woman's Fertility Over Time**

```
use http://fmwww.bc.edu/ec-p/data/wooldridge/FERTIL1
```

```
reg kids educ age agesq black east northcen west farm othrural town smcity y74 y76  
y78 y80 y82 y84
```

Source	SS	df	MS	Number of obs =	1129
Model	399.610888	17	23.5065228	F(17, 1111) =	9.72
Residual	2685.89841	1111	2.41755033	Prob > F =	0.0000
				R-squared =	0.1295
				Adj R-squared =	0.1162
Total	3085.5093	1128	2.73538059	Root MSE =	1.5548

kids	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
educ	-.1284268	.0183486	-7.00	0.000	-.1644286 -.092425
age	.5321346	.1383863	3.85	0.000	.2606065 .8036626
agesq	-.005804	.0015643	-3.71	0.000	-.0088733 -.0027347
black	1.075658	.1735356	6.20	0.000	.7351631 1.416152
east	.217324	.1327878	1.64	0.102	-.0432192 .4778672
northcen	.363114	.1208969	3.00	0.003	.125902 .6003261
west	.1976032	.1669134	1.18	0.237	-.1298978 .5251041
farm	-.0525575	.14719	-0.36	0.721	-.3413592 .2362443
othrural	-.1628537	.175442	-0.93	0.353	-.5070887 .1813814
town	.0843532	.124531	0.68	0.498	-.1599893 .3286957
smcity	.2118791	.160296	1.32	0.187	-.1026379 .5263961
y74	.2681825	.172716	1.55	0.121	-.0707039 .6070689
y76	-.0973795	.1790456	-0.54	0.587	-.448685 .2539261
y78	-.0686665	.1816837	-0.38	0.706	-.4251483 .2878154
y80	-.0713053	.1827707	-0.39	0.697	-.42992 .2873093
y82	-.5224842	.1724361	-3.03	0.003	-.8608214 -.184147
y84	-.5451661	.1745162	-3.12	0.002	-.8875846 -.2027477
_cons	-7.742457	3.051767	-2.54	0.011	-13.73033 -1.754579

```
test y74 y76 y78 y80 y82 y84
```

```
( 1)  y74 = 0.0  
( 2)  y76 = 0.0  
( 3)  y78 = 0.0  
( 4)  y80 = 0.0  
( 5)  y82 = 0.0  
( 6)  y84 = 0.0
```

```

F( 6, 1111) = 5.87
Prob > F = 0.0000

```

Example 13.2: Changes in the Return to Education and the Gender Wage Gap

use http://fmwww.bc.edu/ec-p/data/wooldridge/CPS78_85

```
reg lwage y85 educ y85educ exper expersq union female y85fem
```

Source	SS	df	MS	Number of obs = 1084			
Model	135.992074	8	16.9990092	F(8, 1075) = 99.80			
Residual	183.099094	1075	.170324738	Prob > F = 0.0000			
Total	319.091167	1083	.29463635	R-squared = 0.4262			
				Adj R-squared = 0.4219			
				Root MSE = .4127			

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
y85	.1178062	.1237817	0.95	0.341	-.125075	.3606874
educ	.0747209	.0066764	11.19	0.000	.0616206	.0878212
y85educ	.0184605	.0093542	1.97	0.049	.000106	.036815
exper	.0295843	.0035673	8.29	0.000	.0225846	.036584
expersq	-.0003994	.0000775	-5.15	0.000	-.0005516	-.0002473
union	.2021319	.0302945	6.67	0.000	.1426888	.2615749
female	-.3167086	.0366215	-8.65	0.000	-.3885663	-.244851
y85fem	.085052	.051309	1.66	0.098	-.0156251	.185729
_cons	.4589329	.0934485	4.91	0.000	.2755707	.642295

Example 13.3: Effect of a Garbage Incinerator's Location on Housing Prices

use <http://fmwww.bc.edu/ec-p/data/wooldridge/KIELMC>

```
reg rprice nearinc if year==1981
```

Source	SS	df	MS	Number of obs = 142			
Model	2.7059e+10	1	2.7059e+10	F(1, 140) = 27.73			
Residual	1.3661e+11	140	975815069	Prob > F = 0.0000			
Total	1.6367e+11	141	1.1608e+09	R-squared = 0.1653			
				Adj R-squared = 0.1594			
				Root MSE = 31238			

rprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	

nearinc		-30688.27	5827.709	-5.27	0.000	-42209.97	-19166.58
_cons		101307.5	3093.027	32.75	0.000	95192.43	107422.6

```
scalar b1=_b[nearinc]
```

```
reg rprice nearinc if year==1978
```

Source		SS	df	MS	Number of obs	=	179
Model		1.3636e+10	1	1.3636e+10	F(1, 177)	=	15.74
Residual		1.5332e+11	177	866239953	Prob > F	=	0.0001
Total		1.6696e+11	178	937979126	R-squared	=	0.0817
					Adj R-squared	=	0.0765
					Root MSE	=	29432

rprice		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
nearinc		-18824.37	4744.594	-3.97	0.000	-28187.62 -9461.118
_cons		82517.23	2653.79	31.09	0.000	77280.09 87754.37

```
scalar b2=_b[nearinc]
```

The difference in two coefficients on nearinc

```
display b1-b2
```

```
-11863.903
```

```
reg rprice nearinc y81 y81nrinc
```

Source		SS	df	MS	Number of obs	=	321
Model		6.1055e+10	3	2.0352e+10	F(3, 317)	=	22.25
Residual		2.8994e+11	317	914632749	Prob > F	=	0.0000
Total		3.5099e+11	320	1.0969e+09	R-squared	=	0.1739
					Adj R-squared	=	0.1661
					Root MSE	=	30243

rprice		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
nearinc		-18824.37	4875.322	-3.86	0.000	-28416.45 -9232.293
y81		18790.29	4050.065	4.64	0.000	10821.88 26758.69
y81nrinc		-11863.9	7456.646	-1.59	0.113	-26534.67 2806.866
_cons		82517.23	2726.91	30.26	0.000	77152.1 87882.36

```
reg rprice nearinc y81 y81nrinc age agesq
```

Source		SS	df	MS	Number of obs	=	321
--------	--	----	----	----	---------------	---	-----

-----+-----				F(5, 315) =	44.59
Model	1.4547e+11	5	2.9094e+10	Prob > F	= 0.0000
Residual	2.0552e+11	315	652459465	R-squared	= 0.4144
-----+-----				Adj R-squared	= 0.4052
Total	3.5099e+11	320	1.0969e+09	Root MSE	= 25543

rprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
nearinc	9397.936	4812.222	1.95	0.052	-70.22392	18866.1
y81	21321.04	3443.631	6.19	0.000	14545.62	28096.47
y81nrinc	-21920.27	6359.745	-3.45	0.001	-34433.22	-9407.322
age	-1494.424	131.8603	-11.33	0.000	-1753.862	-1234.986
agesq	8.691277	.8481268	10.25	0.000	7.022567	10.35999
_cons	89116.54	2406.051	37.04	0.000	84382.57	93850.5

```
reg rprice nearinc y81 y81nrinc age agesq intst land area rooms baths
```

Source	SS	df	MS	Number of obs =		321
-----+-----				F(10, 310) =	60.19	
Model	2.3167e+11	10	2.3167e+10	Prob > F	= 0.0000	
Residual	1.1932e+11	310	384905873	R-squared	= 0.6600	
-----+-----				Adj R-squared	= 0.6491	
Total	3.5099e+11	320	1.0969e+09	Root MSE	= 19619	

rprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
nearinc	3780.334	4453.415	0.85	0.397	-4982.41	12543.08
y81	13928.48	2798.747	4.98	0.000	8421.533	19435.42
y81nrinc	-14177.93	4987.267	-2.84	0.005	-23991.11	-4364.759
age	-739.451	131.1272	-5.64	0.000	-997.4629	-481.4391
agesq	3.45274	.8128214	4.25	0.000	1.853395	5.052084
intst	-.5386353	.1963359	-2.74	0.006	-.9249549	-.1523158
land	.1414196	.0310776	4.55	0.000	.0802698	.2025693
area	18.08621	2.306064	7.84	0.000	13.54869	22.62373
rooms	3304.225	1661.248	1.99	0.048	35.47769	6572.973
baths	6977.318	2581.321	2.70	0.007	1898.192	12056.44
_cons	13807.67	11166.59	1.24	0.217	-8164.23	35779.58

```
reg lprice nearinc y81 y81nrinc
```

Source	SS	df	MS	Number of obs =		321
-----+-----				F(3, 317) =	73.15	
Model	25.1331556	3	8.37771854	Prob > F	= 0.0000	
Residual	36.3057473	317	.114529171	R-squared	= 0.4091	
-----+-----				Adj R-squared	= 0.4035	
Total	61.4389029	320	.191996572	Root MSE	= .33842	

lprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
nearinc	-.3399216	.0545554	-6.23	0.000	-.4472581	-.2325851
y81	.4569954	.0453207	10.08	0.000	.367828	.5461628
y81nrinc	-.0626505	.0834408	-0.75	0.453	-.2268181	.1015172
_cons	11.28542	.0305144	369.84	0.000	11.22539	11.34546

Example 13.4: Effect of Worker Compensation laws on Duration

use <http://fmwww.bc.edu/ec-p/data/wooldridge/INJURY>

reg ldurat afchnge highearn afhigh if ky

Source	SS	df	MS	Number of obs = 5626		
Model	191.071427	3	63.6904757	F(3, 5622) = 39.54		
Residual	9055.93393	5622	1.6108029	Prob > F = 0.0000		
				R-squared = 0.0207		
				Adj R-squared = 0.0201		
				Root MSE = 1.2692		
Total	9247.00536	5625	1.64391206			

ldurat	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
afchnge	.0076573	.0447173	0.17	0.864	-.0800058	.0953204
highearn	.2564785	.0474464	5.41	0.000	.1634652	.3494918
afhigh	.1906012	.0685089	2.78	0.005	.0562973	.3249051
_cons	1.125615	.0307368	36.62	0.000	1.065359	1.185871

Example 13.5: Sleeping Versus Working

use http://fmwww.bc.edu/ec-p/data/wooldridge/SLP75_81

reg cslnpnap ctotwrk ceduc cmarr cyngkid cgdhlth

Source	SS	df	MS	Number of obs = 239		
Model	14674698.2	5	2934939.64	F(5, 233) = 8.19		
Residual	83482611.7	233	358294.471	Prob > F = 0.0000		
				R-squared = 0.1495		
				Adj R-squared = 0.1313		
				Root MSE = 598.58		
Total	98157309.9	238	412425.672			

cslnpnap	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
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```

-----+-----
      ctotwrk |   -0.2266694    0.036054   -6.29    0.000   -0.2977029   -0.1556359
      ceduc   |   -0.0244717   48.75938   -0.00    1.000   -96.09007    96.04113
      cmarr    |   104.2139    92.85536    1.12    0.263   -78.72946   287.1574
      cyngkid   |    94.6654    87.65252    1.08    0.281   -78.02738   267.3582
      cgdhlth   |    87.57785    76.59913    1.14    0.254   -63.33758   238.4933
      _cons    |   -92.63404    45.8659   -2.02    0.045   -182.9989   -2.269154
-----+-----

```

```
test ceduc cmarr cyngkid cgdhlth
```

```

( 1)  ceduc = 0.0
( 2)  cmarr = 0.0
( 3)  cyngkid = 0.0
( 4)  cgdhlth = 0.0

```

```

      F(   4,   233) =    0.86
      Prob > F      =    0.4857

```

Example 13.6: Distributed Lag of Crime Rate on Clear-up Rate

```
use http://fmwww.bc.edu/ec-p/data/wooldridge/CRIME3
```

```
reg clcrime cclrprc1 cclrprc2
```

Source	SS	df	MS	Number of obs =	53
Model	1.42294706	2	.711473529	F(2, 50) =	5.99
Residual	5.93723982	50	.118744796	Prob > F =	0.0046
				R-squared =	0.1933
				Adj R-squared =	0.1611
Total	7.36018687	52	.141542055	Root MSE =	.34459

clcrime	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
cclrprc1	-.0040475	.0047199	-0.86	0.395	-.0135276 .0054326
cclrprc2	-.0131966	.0051946	-2.54	0.014	-.0236302 -.0027629
_cons	.0856556	.0637825	1.34	0.185	-.0424553 .2137665

Example 13.7: Effect of Drunk Driving Laws on Traffic Fatalities

```
use http://fmwww.bc.edu/ec-p/data/wooldridge/TRAFFIC1
```

```
reg cdthrte copen cadmn
```

Source	SS	df	MS	Number of obs =	51
Model	.762579679	2	.38128984	F(2, 48) =	3.23
Residual	5.6636945	48	.117993635	Prob > F =	0.0482
				R-squared =	0.1187
				Adj R-squared =	0.0819
Total	6.42627418	50	.128525484	Root MSE =	.3435

cdthrte	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
copen	-.4196787	.2055948	-2.04	0.047	-.8330547	-.0063028
cadmn	-.1506024	.1168223	-1.29	0.204	-.3854894	.0842846
_cons	-.4967872	.0524256	-9.48	0.000	-.6021959	-.3913784

Example 13.8: Effect of Enterprise Zones on Unemployment Claims

use <http://fmwww.bc.edu/ec-p/data/wooldridge/EZUNEM>

reg guclms d82 d83 d84 d85 d86 d87 d88 cez

Source	SS	df	MS	Number of obs =	176
Model	12.8826331	8	1.61032914	F(8, 167) =	34.50
Residual	7.79583789	167	.046681664	Prob > F =	0.0000
				R-squared =	0.6230
				Adj R-squared =	0.6049
Total	20.678471	175	.118162691	Root MSE =	.21606

guclms	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
d82	.7787595	.0651444	11.95	0.000	.6501469	.9073721
d83	-.0331192	.0651444	-0.51	0.612	-.1617318	.0954934
d84	-.0171382	.0685455	-0.25	0.803	-.1524655	.118189
d85	.323081	.0666774	4.85	0.000	.1914418	.4547202
d86	.292154	.0651444	4.48	0.000	.1635413	.4207666
d87	.0539481	.0651444	0.83	0.409	-.0746645	.1825607
d88	-.0170526	.0651444	-0.26	0.794	-.1456652	.11156
cez	-.1818775	.0781862	-2.33	0.021	-.3362382	-.0275169
_cons	-.3216319	.046064	-6.98	0.000	-.4125748	-.230689

bpagan d82 d83 d84 d85 d86 d87 d88 cez

Breusch-Pagan LM statistic: 6.58428 Chi-sq(8) P-value = .5821

Example 13.9: Country Crime Rates in North Carolina

use <http://fmwww.bc.edu/ec-p/data/wooldridge/CRIME4>

```
reg clcrmte d83 d84 d85 d86 d87 clprbarr clprbcon clprbpri clavgscn clpolpc
```

Source	SS	df	MS	Number of obs =	540
Model	9.60042816	10	.960042816	F(10, 529) =	40.32
Residual	12.5963761	529	.023811675	Prob > F =	0.0000
				R-squared =	0.4325
				Adj R-squared =	0.4218
Total	22.1968043	539	.041181455	Root MSE =	.15431

clcrmte	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
d83	-.0998658	.0238953	-4.18	0.000	-.1468071	-.0529246
d84	-.0479374	.0235021	-2.04	0.042	-.0941063	-.0017686
d85	-.0046111	.0234998	-0.20	0.845	-.0507756	.0415533
d86	.0275143	.0241494	1.14	0.255	-.0199261	.0749548
d87	.0408267	.0244153	1.67	0.095	-.0071361	.0887895
clprbarr	-.3274942	.0299801	-10.92	0.000	-.3863889	-.2685994
clprbcon	-.2381066	.0182341	-13.06	0.000	-.2739268	-.2022864
clprbpri	-.1650462	.025969	-6.36	0.000	-.2160613	-.1140312
clavgscn	-.0217607	.0220909	-0.99	0.325	-.0651574	.0216361
clpolpc	.3984264	.026882	14.82	0.000	.3456177	.4512351
_cons	.0077134	.0170579	0.45	0.651	-.0257961	.0412229

whitetst, fitted

White's special test statistic : 118.4921 Chi-sq(2) P-value = 1.9e-26

This page prepared by Oleksandr Talavera (revised 8 Nov 2002)

Send your questions/comments/suggestions to Kit Baum at baum@bc.edu
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