

**Review OLS Example**  
A. Colin Cameron U.C.-Davis

For this course I assume you can analyze the following data, especially the first page.  
If you need further details read an undergraduate econometrics text  
or see <http://cameron.econ.ucdavis.edu/e240a/reviewbivariate.pdf>

The data are on house price (in \$) and size (in square feet) and other house characteristics for 29 houses sold in Central Davis in 1999.

```
. summarize /* Gives descriptive statistics */
```

Variable	Obs	Mean	Std. Dev.	Min	Max
listpric	29	257.8241	40.86026	199.9	386
salepric	29	253910.3	37390.71	204000	375000
sqfeet	29	1882.759	398.2721	1400	3300
lotsize	29	2.137931	.6930336	1	3
bedrooms	29	3.793103	.6750296	3	6
bathroom	29	2.206897	.3411441	2	3
yearblt	29	1962.586	7.118975	1948	1976
mnthsold	29	5.965517	1.679344	3	8

```
. regress salepric sqfeet
```

Source	SS	df	MS	Number of obs =	29
Model	2.4171e+10	1	2.4171e+10	F( 1, 27) =	43.58
Residual	1.4975e+10	27	554633395	Prob > F =	0.0000
Total	3.9146e+10	28	1.3981e+09	R-squared =	0.6175
				Adj R-squared =	0.6033
				Root MSE =	23551

salepric	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
sqfeet	73.77104	11.17491	6.60	0.000	50.84202 96.70006
_cons	115017.3	21489.36	5.35	0.000	70924.76 159109.8

1. What is the fitted relationship between house price and size?
2. What method is used to obtain this fitted relationship? Give an appropriate formula.
3. By how much does house price increase when house size increases by one square foot?
4. How well does the model explain the data? Give an appropriate statistic and an explanation of that statistic.
5. Is the relationship between house price and size statistically significant at 5 percent?
6. What model assumptions are necessary for your answer to the preceding question?
7. Test at five percent the hypothesis  $H_0 : \beta_{sqfeet} = 50$  against the alternative  $H_a : \beta_{sqfeet} \neq 50$ .



Figure 1 Regression of house sale price on size

```
. regress salepric sqfeet lotsize bedrooms bathroom yearblt mnthsold
```

Source	SS	df	MS	Number of obs =	29
Model	2.5466e+10	6	4.2444e+09	F( 6, 22) =	6.83
Residual	1.3679e+10	22	621790812	Prob > F =	0.0003
Total	3.9146e+10	28	1.3981e+09	R-squared =	0.6506
				Adj R-squared =	0.5552
				Root MSE =	24936

salepric	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sqfeet	68.36942	15.38947	4.44	0.000	36.45361	100.2852
lotsize	2303.221	7226.535	0.32	0.753	-12683.7	17290.14
bedrooms	2685.315	9192.526	0.29	0.773	-16378.82	21749.45
bathroom	6832.88	15721.19	0.43	0.668	-25770.88	39436.64
yearblt	833.0386	719.3345	1.16	0.259	-658.7699	2324.847
mnthsold	-2088.504	3520.898	-0.59	0.559	-9390.399	5213.392
_cons	-1527453	1401600	-1.09	0.288	-4434193	1379287

8. By how much does house price increase when house size increases by one square foot, controlling for other factors?
9. Is the relationship between house price and size statistically significant at 5 percent, after controlling for other factors?
10. Are any of the other factors statistically significant at 5 percent?
11. How well does the model explain the data?
12. Are the regressor jointly statistically significant at 5 percent?
13. Does the full model explain the data better than the model with just sale price as a regressor?