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	1 29	257.8241	40.86026	199.9	386
salepric	29	253910.3	37390.71	204000	375000
sqfeet	l 29	1882.759	398.2721	1400	3300
lotsize	l 29	2.137931	.6930336	1	3
bedrooms	l 29	3.793103	.6750296	3	6
	+				
bathroom	l 29	2.206897	.3411441	2	3
yearblt	l 29	1962.586	7.118975	1948	1976
${\tt mnthsold}$	l 29	5.965517	1.679344	3	8

. regress salepric sqfeet

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

salepric		Std. Err.	t	P> t	[95% Conf	. Interval]
	73.77104	11.17491 21489.36		0.000	50.84202 70924.76	96.70006 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 $H_a: \beta_{sqfeet} \neq 50$.

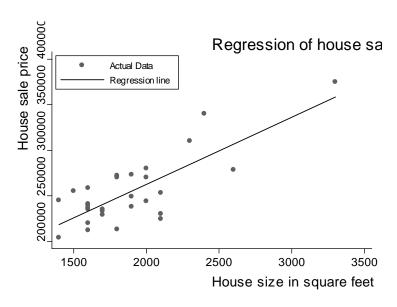


Figure 1 Regression of house sale price on size

. regress salepric sqfeet lotsize bedrooms bathroom yearblt mnthsold

Source	SS	df	MS		Number of obs	
Model Residual	2.5466e+10 1.3679e+10		144e+09 1790812		F(6, 22) Prob > F R-squared	= 0.0003 = 0.6506
Total	3.9146e+10	28 1.39	981e+09		Adj R-squared Root MSE	= 0.5552 = 24936
salepric	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
sqfeet lotsize bedrooms bathroom yearblt mnthsold _cons	68.36942 2303.221 2685.315 6832.88 833.0386 -2088.504 -1527453	15.38947 7226.535 9192.526 15721.19 719.3345 3520.898 1401600	4.44 0.32 0.29 0.43 1.16 -0.59 -1.09	0.000 0.753 0.773 0.668 0.259 0.559	36.45361 -12683.7 -16378.82 -25770.88 -658.7699 -9390.399 -4434193	100.2852 17290.14 21749.45 39436.64 2324.847 5213.392 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?