

James Hahn
STAT1221
Homework #9
MINITAB Output

Chapter 16

9b)

Regression Analysis: YHouse versus X1House, X2House, ... se, X4House

Forward Selection of Terms

Candidate terms: X1House, X2House, X3House, X4House

	----Step 1----		----Step 2----		----Step 3----	
	Coef	P	Coef	P	Coef	P
Constant	-17.1		-4.2		-4.9	
X3House	14.72	0.000	10.14	0.000	10.53	0.000
X1House			1.303	0.005	0.815	0.138
X4House					0.458	0.145
S	5.72604		5.04127		4.92751	
R-sq	74.17%		80.69%		82.24%	
R-sq(adj)	73.25%		79.26%		80.19%	
R-sq(pred)	62.43%		68.98%		70.69%	
Mallows' Cp	13.04		5.18		4.85	

α to enter = 0.15

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	3	2922.72	974.240	40.12	0.000
X1House	1	56.96	56.956	2.35	0.138
X3House	1	632.29	632.290	26.04	0.000
X4House	1	54.90	54.900	2.26	0.145
Error	26	631.29	24.280		
Lack-of-Fit	18	631.29	35.072	*	*

Pure Error	8	0.00	0.000
Total	29	3554.01	

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
4.92751	82.24%	80.19%	70.69%

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-4.9	10.6	-0.47	0.645	
X1House	0.815	0.532	1.53	0.138	3.34
X3House	10.53	2.06	5.10	0.000	2.13
X4House	0.458	0.305	1.50	0.145	1.98

Regression Equation

YHouse = -4.9 + 0.815 X1House + 10.53 X3House + 0.458 X4House

Fits and Diagnostics for Unusual Observations

Obs	YHouse	Fit	Resid	Std Resid	
3	83.10	83.78	-0.68	-0.19	X
17	40.60	56.52	-15.92	-3.90	R

R Large residual

X Unusual X

9b)

Regression Analysis: YHouse versus X1House, X2House, ... se, X4House

Backward Elimination of Terms

Candidate terms: X1House, X2House, X3House, X4House

	----Step 1----		----Step 2----	
	Coef	P	Coef	P
Constant	-7.7		-4.9	
X1House	0.804	0.137	0.815	0.138
X2House	3.62	0.186		
X3House	9.22	0.000	10.53	0.000
X4House	0.614	0.067	0.458	0.145
S		4.84906		4.92751

R-sq	83.46%	82.24%
R-sq(adj)	80.81%	80.19%
R-sq(pred)	69.79%	70.69%
Mallows' Cp	5.00	4.85

α to remove = 0.15

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	3	2922.72	974.240	40.12	0.000
X1House	1	56.96	56.956	2.35	0.138
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Model Summary

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X4House	0.458	0.305	1.50	0.145	1.98

Regression Equation

$$Y_{\text{House}} = -4.9 + 0.815 X_{1\text{House}} + 10.53 X_{3\text{House}} + 0.458 X_{4\text{House}}$$

Fits and Diagnostics for Unusual Observations

Obs	YHouse	Fit	Resid	Std Resid	
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X Unusual X