

## Selecting the Best Model using Honest Assessment

### The GLMSELECT Procedure

<b>Data Set</b>	STAT1.AMESHOUSING3
<b>Dependent Variable</b>	SalePrice
<b>Selection Method</b>	Stepwise
<b>Select Criterion</b>	AIC
<b>Stop Criterion</b>	AIC
<b>Choose Criterion</b>	Validation ASE
<b>Effect Hierarchy Enforced</b>	Single
<b>Random Number Seed</b>	8675309

<b>Number of Observations Read</b>	300
<b>Number of Observations Used</b>	294
<b>Number of Observations Used for Training</b>	197
<b>Number of Observations Used for Validation</b>	97

Class Level Information		
Class	Levels	Values
House_Style2	5	1.5Fin 1Story 2Story SFront SLvl
Overall_Qual2	3	4 5 6
Overall_Cond2	3	4 5 6
Fireplaces	3	0 1 2
Season_Sold	4	1 2 3 4
Garage_Type_2	3	Attached Detached NA
Foundation_2	3	Brick/Tile/Stone Cinder Block Concrete/Slab
Heating_QC	4	Ex Fa Gd TA
Masonry_Veneer	2	N Y
Lot_Shape_2	2	Irregular Regular
Central_Air	2	N Y

Dimensions	
<b>Number of Effects</b>	20
<b>Number of Parameters</b>	32

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Stepwise Selection Summary							
Step	Effect Entered	Effect Removed	Number Effects In	NumberParms In	AIC	ASE	Validation ASE
0	Intercept		1	1	4335.7651	1303938780	1656501303
1	Basement_Area		2	2	4222.6053	726746007	767937080
2	Gr_Liv_Area		3	3	4153.7335	507157741	590152215
3	Age_Sold		4	4	4070.6947	329360476	379123329
4	Garage_Area		5	5	4040.9787	280383339	349351979
5	Overall_Cond2		6	7	4017.8121	244265684	348031039
6	Fireplaces		7	9	4001.1755	219972414	328829426
7	Overall_Qual2		8	11	3991.0799	204782951	328466410
8	House_Style2		9	15	3981.7659	187553153	302046363
9	Deck_Porch_Area		10	16	3975.3902	179746298	298786920
10	Heating_QC		11	19	3971.6360	171063090	290197323*
11	Lot_Area		12	20	3966.5960	165057936	290656975
12	Bedroom_AbvGr		13	21	3961.0693	158870625	291293258
13	Total_Bathroom		14	22	3959.6794	156160207	292267671
14		House_Style2	13	18	3958.4479*	161618790	302466608

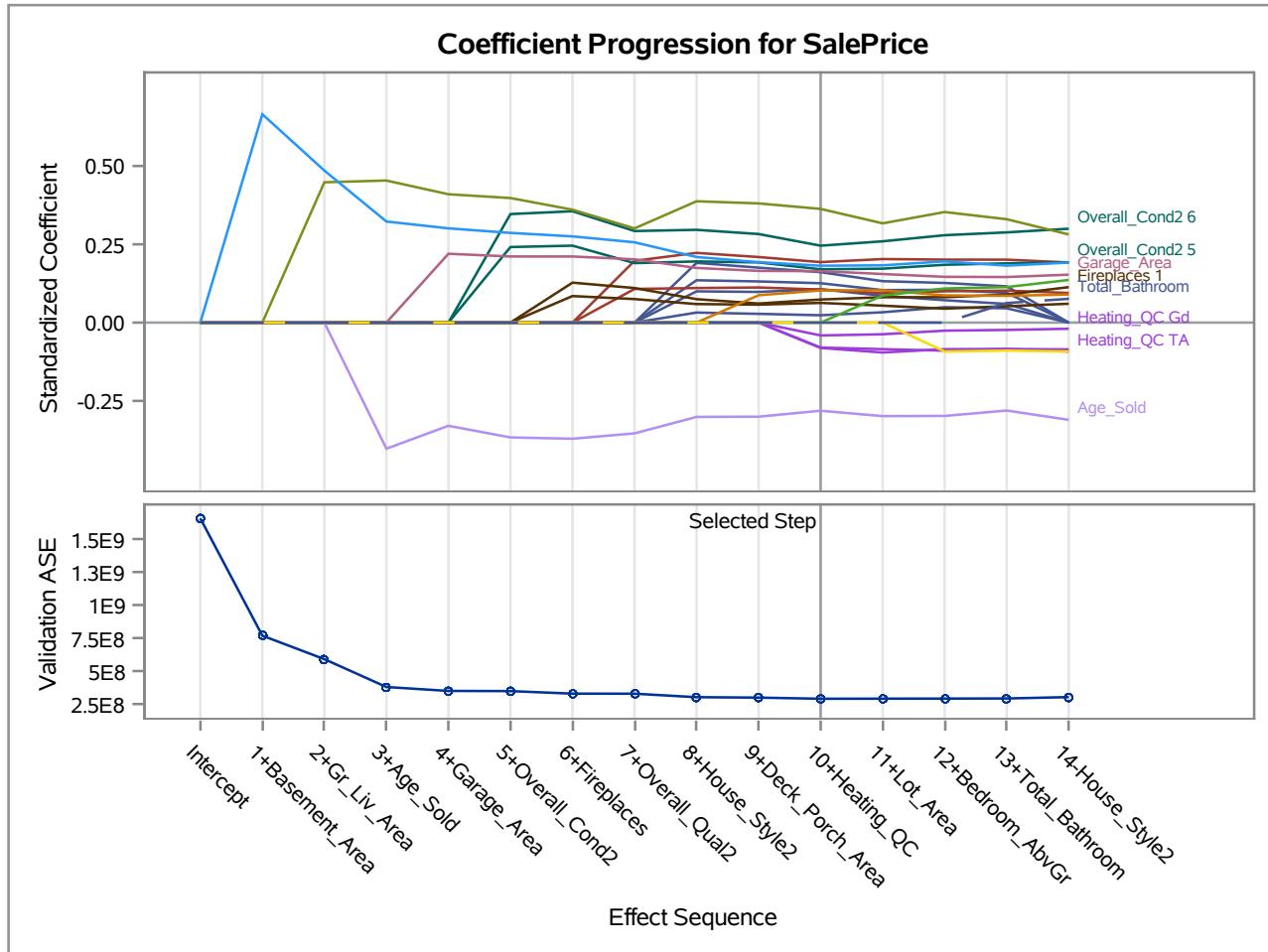
\* Optimal Value of Criterion

Selection stopped at a local minimum of the AIC criterion.

Stop Details				
Candidate For	Effect	Candidate AIC	Compare AIC	
Entry	Masonry_Veneer	3959.1313	>	3958.4479
Removal	Total_Bathroom	3961.4810	>	3958.4479

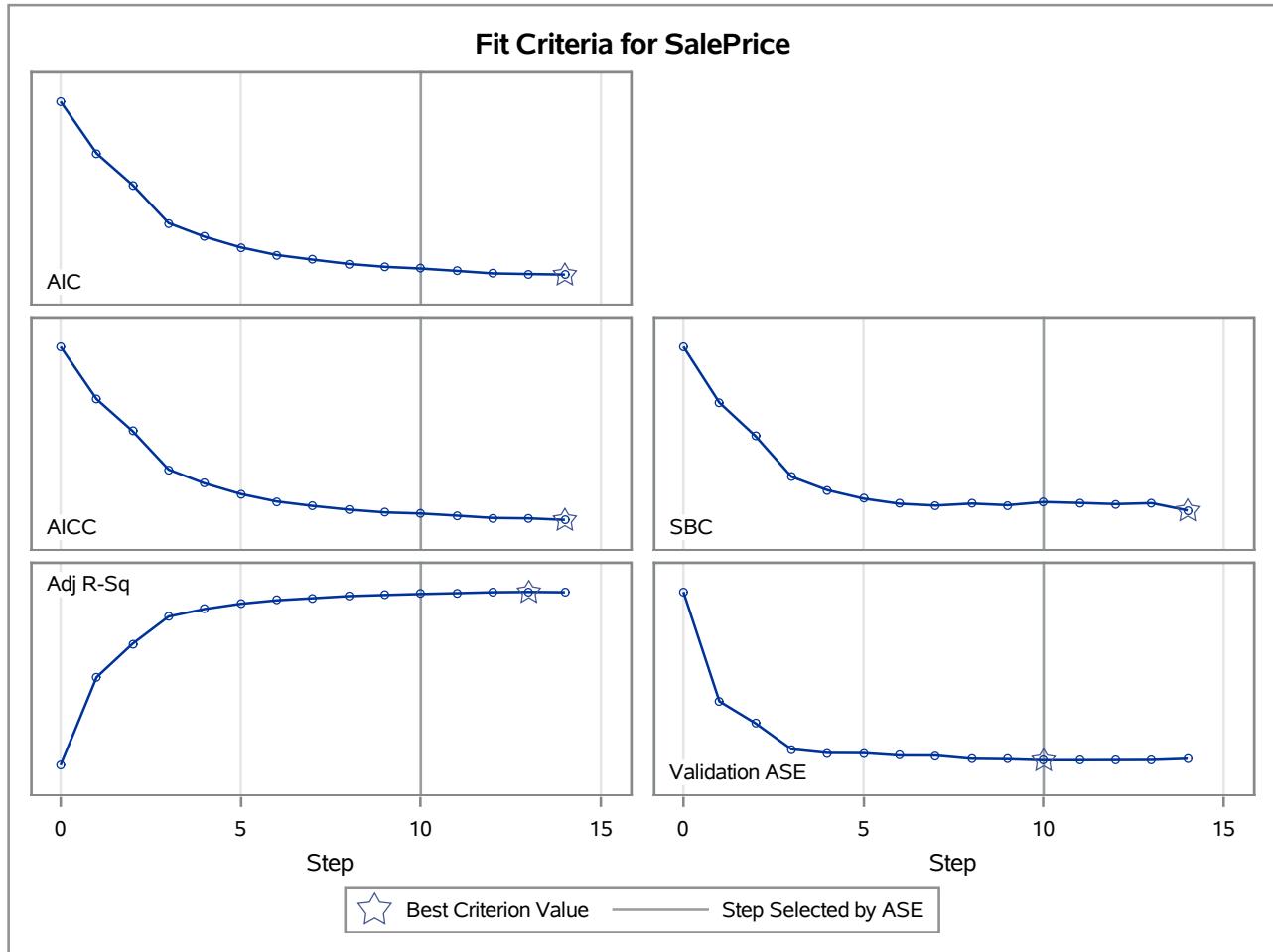
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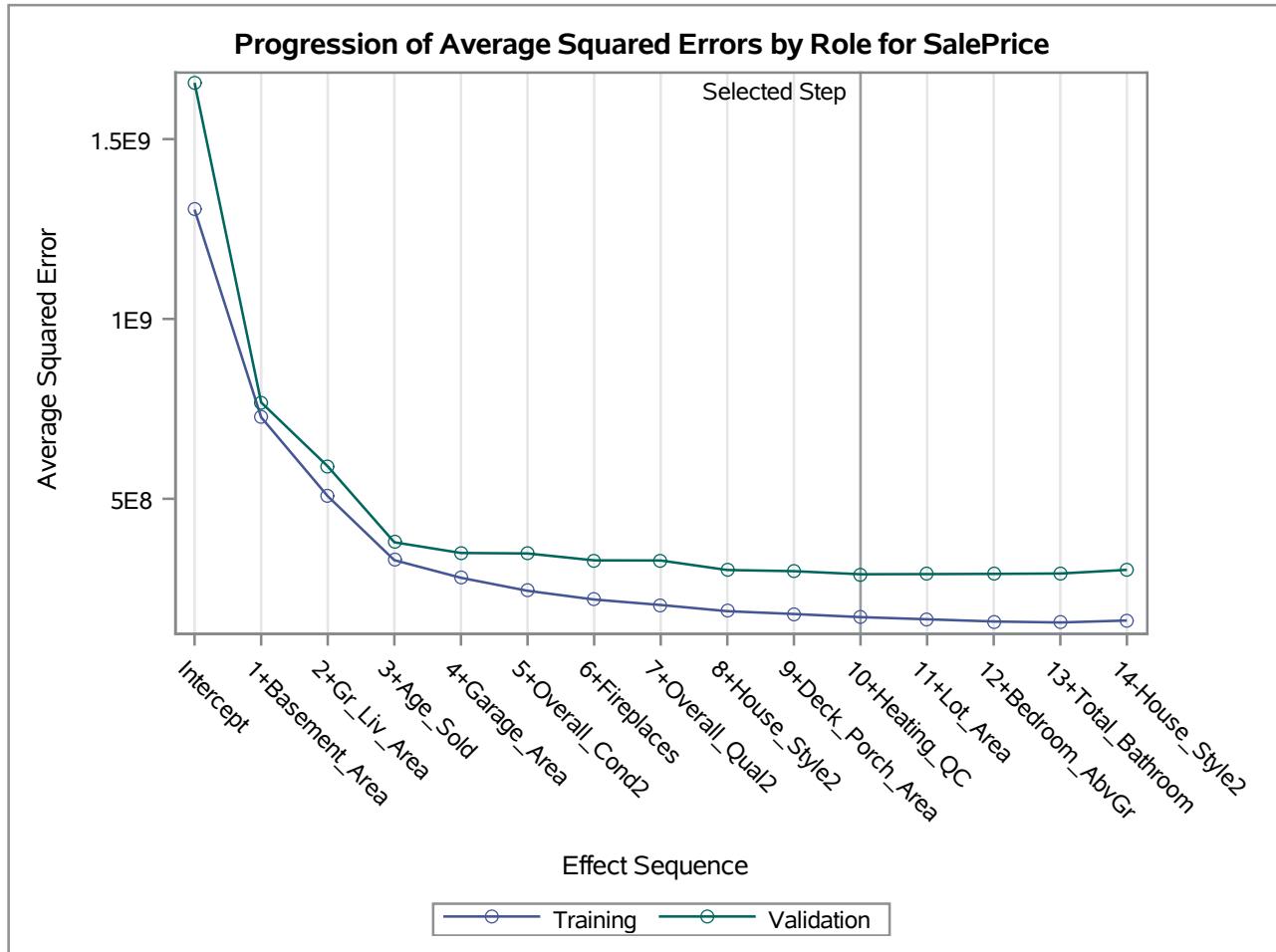
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### The GLMSELECT Procedure Selected Model

The selected model, based on Validation ASE, is the model at Step 10.

<b>Effects:</b>	Intercept House_Style2 Overall_Qual2 Overall_Cond2 Fireplaces Heating_QC Gr_Liv_Area Basement_Area Garage_Area Deck_Porch_Area Age_Sold
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Analysis of Variance				
Source	DF	Sum of Squares	Mean Square	F Value
<b>Model</b>	18	2.231765E11	12398695049	65.49
<b>Error</b>	178	33699428801	189322634	
<b>Corrected Total</b>	196	2.568759E11		

<b>Root MSE</b>	13759
<b>Dependent Mean</b>	133582
<b>R-Square</b>	0.8688
<b>Adj R-Sq</b>	0.8555
<b>AIC</b>	3971.63597
<b>AICC</b>	3976.40870
<b>SBC</b>	3835.01684
<b>ASE (Train)</b>	171063090
<b>ASE (Validate)</b>	290197323

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### The GLMSELECT Procedure Selected Model

Parameter Estimates				
Parameter	DF	Estimate	Standard Error	t Value
Intercept	1	27334	10120	2.70
House_Style2 1Story	1	12267	4203.159135	2.92
House_Style2 2Story	1	2456.477699	4386.235156	0.56
House_Style2 SFoyer	1	20779	7050.033468	2.95
House_Style2 SLvl	1	17117	5527.649598	3.10
Overall_Qual2 5	1	7841.596393	3417.138088	2.29
Overall_Qual2 6	1	14024	3806.928311	3.68
Overall_Cond2 5	1	12475	4949.669709	2.52
Overall_Cond2 6	1	17766	4841.031305	3.67
Fireplaces 1	1	5832.276234	2471.249968	2.36
Fireplaces 2	1	10886	4999.141012	2.18
Heating_QC Fa	1	-13782	5544.767861	-2.49
Heating_QC Gd	1	-3687.706899	2867.792984	-1.29
Heating_QC TA	1	-5944.139856	2467.507946	-2.41
Gr_Liv_Area	1	54.360524	6.486247	8.38
Basement_Area	1	18.329197	3.964241	4.62
Garage_Area	1	33.820604	6.692579	5.05
Deck_Porch_Area	1	27.291527	8.243101	3.31
Age_Sold	1	-379.483707	54.640384	-6.95