LOGISTIC MODEL (3): Backward Elimination Bonus=Basement_Area|Fireplaces|Lot_Shape_2

Model Information		
Data Set	STAT1.AMESHOUSING3	
Response Variable	Bonus	Sale Price > $175,000
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	300
Number of Observations Used	299

Response Profile		
Ordered Value	**Bonus**	**Total Frequency**
1	0	255
2	1	44

Probability modeled is Bonus='1'.

Note: 1 observation was deleted due to missing values for the response or explanatory variables.

Backward Elimination Procedure

Class Level Information			
Class	**Value**	**Design Variables**	
Fireplaces	**0**	0	0
	1	1	0
	2	0	1
Lot_Shape_2	**Irregular**	1	
	Regular	0	

Step 0. The following effects were entered:

Intercept Basement_Area Fireplaces Basement_*Fireplaces Lot_Shape_2 Basement_*Lot_Shape_ Fireplace*Lot_Shape_

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

LOGISTIC MODEL (3): Backward Elimination Bonus=Basement_Area|Fireplaces|Lot_Shape_2

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	251.812	141.737
SC	255.513	178.741
-2 Log L	249.812	121.737

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	128.0756	9	<.0001
Score	109.4005	9	<.0001
Wald	40.8304	9	<.0001

Step 1. Effect Fireplace*Lot_Shape_ is removed:

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	251.812	141.166
SC	255.513	170.769
-2 Log L	249.812	125.166

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	124.6462	7	<.0001
Score	106.9810	7	<.0001
Wald	42.3266	7	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
3.4592	2	0.1774

Step 2. Effect Basement_*Fireplaces is removed:

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

LOGISTIC MODEL (3): Backward Elimination Bonus=Basement_Area|Fireplaces|Lot_Shape_2

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	251.812	138.872
SC	255.513	161.074
-2 Log L	249.812	126.872

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	122.9405	5	<.0001
Score	102.6370	5	<.0001
Wald	42.9826	5	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
5.5364	4	0.2365

Note: No (additional) effects met the 0.1 significance level for removal from the model.

Summary of Backward Elimination						
Step	Effect Removed	DF	Number In	Wald Chi-Square	Pr > ChiSq	Variable Label
1	Fireplace*Lot_Shape_	2	5	3.2305	0.1988	
2	Basement_*Fireplaces	2	4	1.7237	0.4224	

Joint Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
Basement_Area	1	18.2896	<.0001
Fireplaces	2	4.7171	0.0946
Lot_Shape_2	1	5.0247	0.0250
Basement_*Lot_Shape_	1	3.1127	0.0777

Note: Under full-rank parameterizations, Type 3 effect tests are replaced by joint tests. The joint test for an effect is a test that all the parameters associated with that effect are zero. Such joint tests might not be equivalent to Type 3 effect tests under GLM parameterization.

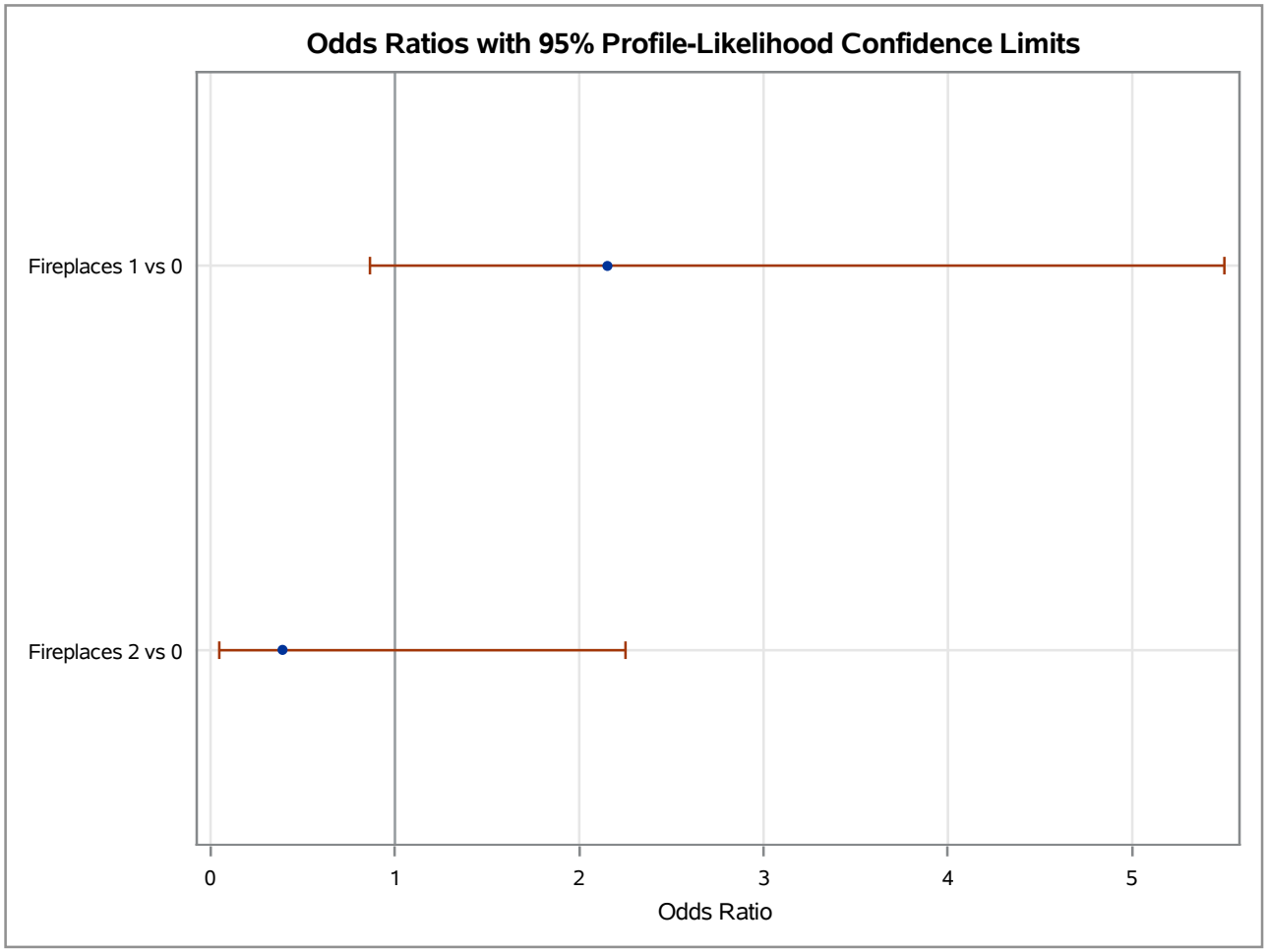
Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-15.3017	3.2407	22.2952	<.0001
Basement_Area		1	0.0109	0.00254	18.2896	<.0001
Fireplaces	1	1	0.7671	0.4687	2.6781	0.1017
Fireplaces	2	1	-0.9405	0.9503	0.9795	0.3223

LOGISTIC MODEL (3): Backward Elimination Bonus=Basement_Area|Fireplaces|Lot_Shape_2

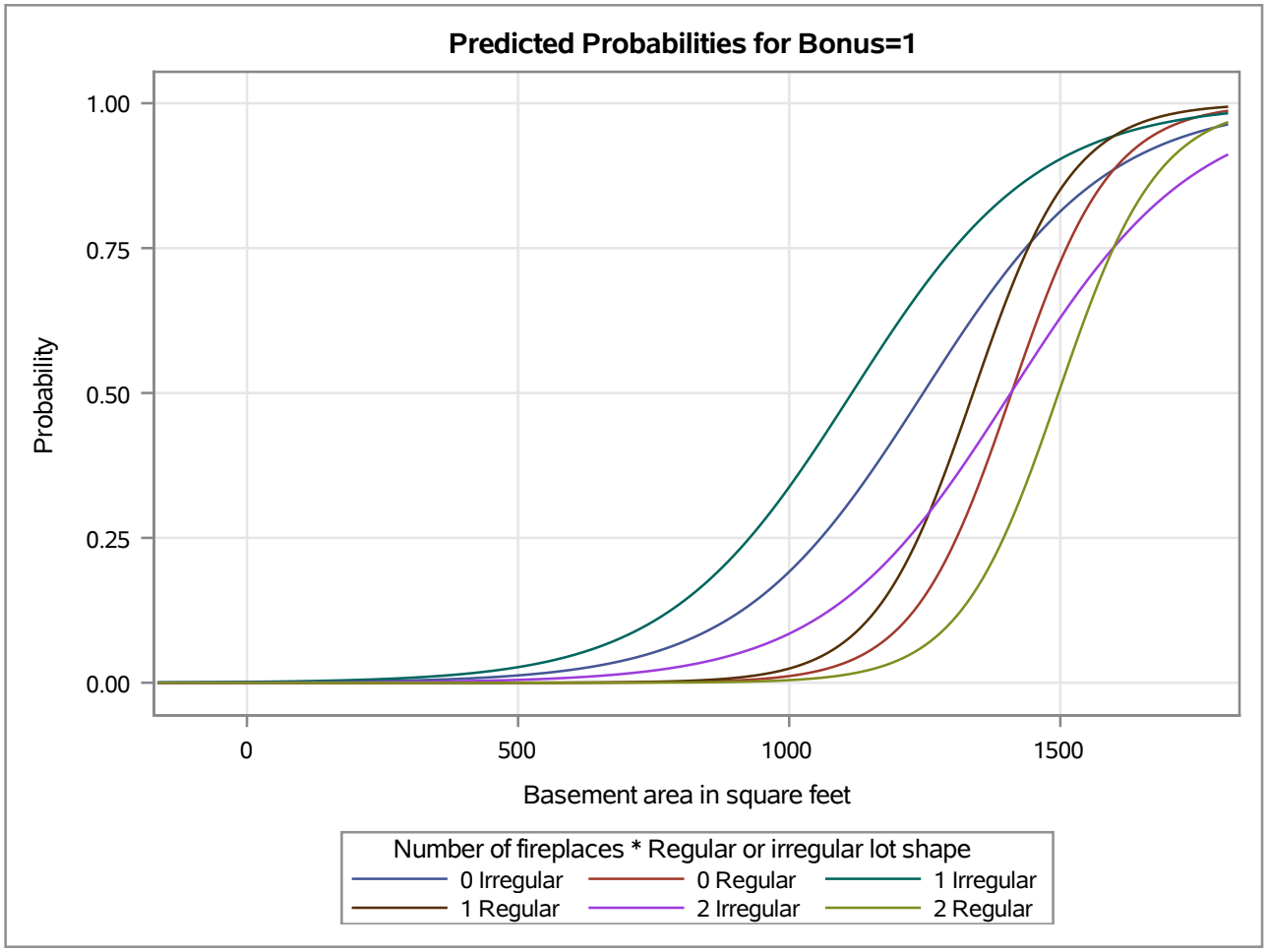
Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Lot_Shape_2	Irregular	1	8.0362	3.5850	5.0247	0.0250
Basement_*Lot_Shape_	Irregular	1	-0.00503	0.00285	3.1127	0.0777

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	93.8	Somers' D	0.876
Percent Discordant	6.2	Gamma	0.876
Percent Tied	0.1	Tau-a	0.221
Pairs	11220	c	0.938

Odds Ratio Estimates and Profile-Likelihood Confidence Intervals				
Effect	Unit	Estimate	95% Confidence Limits	
Fireplaces 1 vs 0	1.0000	2.153	0.865	5.500
Fireplaces 2 vs 0	1.0000	0.390	0.047	2.251



LOGISTIC MODEL (3): Backward Elimination Bonus=Basement_Area|Fireplaces|Lot_Shape_2



LOGISTIC MODEL (3.1): Bonus=Basement_Area|Lot_Shape_2 Fireplaces

Model Information		
Data Set	STAT1.AMESHOUSING3	
Response Variable	Bonus	Sale Price > $175,000
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	300
Number of Observations Used	299

Response Profile		
Ordered Value	**Bonus**	**Total Frequency**
1	0	255
2	1	44

Probability modeled is Bonus='1'.

Note: 1 observation was deleted due to missing values for the response or explanatory variables.

Class Level Information			
Class	**Value**	**Design Variables**	
Fireplaces	**0**	0	0
	1	1	0
	2	0	1
Lot_Shape_2	**Irregular**	1	
	Regular	0	

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	251.812	138.872
SC	255.513	161.074
-2 Log L	249.812	126.872

LOGISTIC MODEL (3.1): Bonus=Basement_Area|Lot_Shape_2 Fireplaces

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	122.9405	5	<.0001
Score	102.6370	5	<.0001
Wald	42.9826	5	<.0001

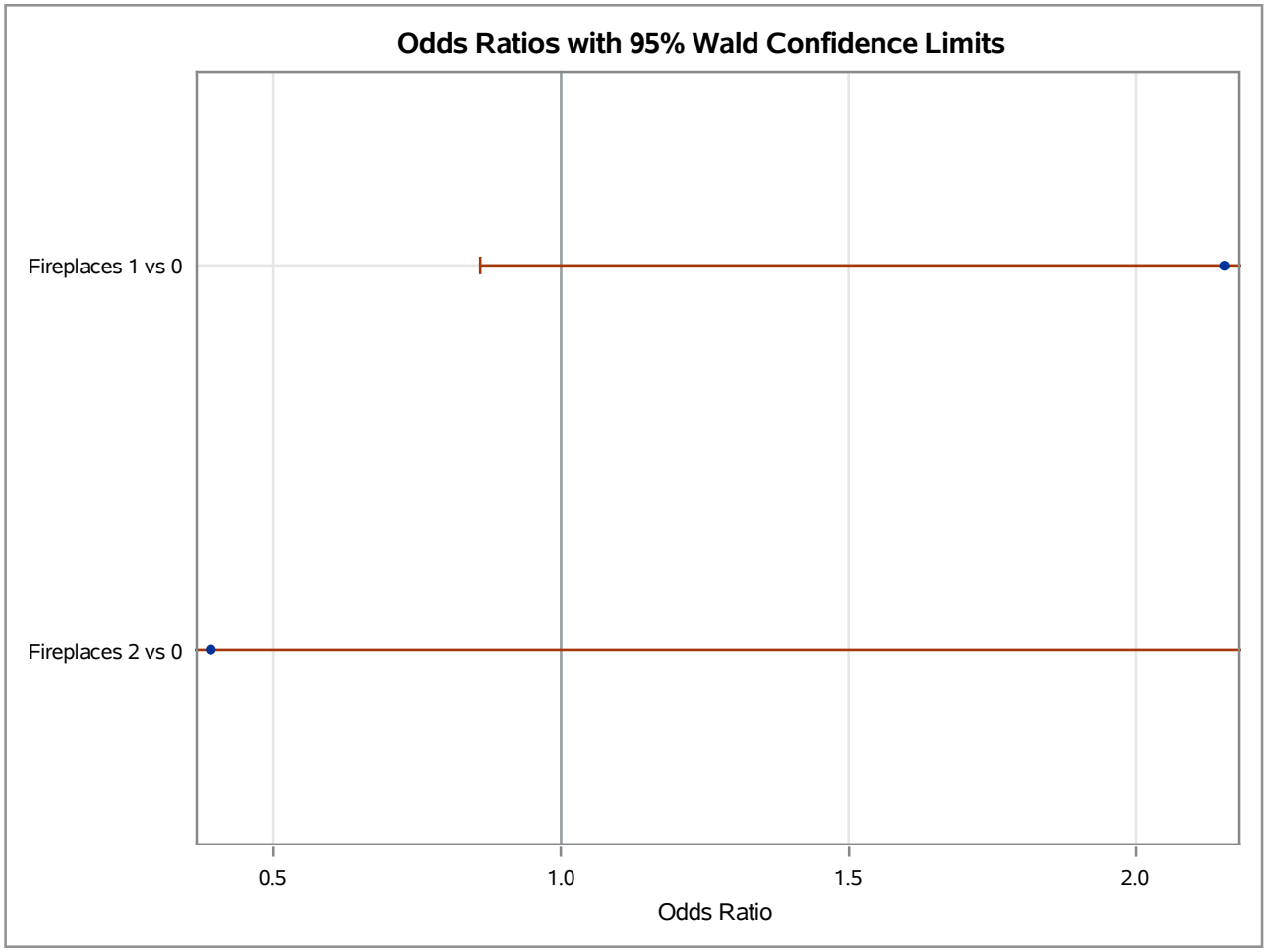
Joint Tests			
Effect	**DF**	**Wald Chi-Square**	**Pr > ChiSq**
Basement_Area	1	18.2896	<.0001
Lot_Shape_2	1	5.0247	0.0250
Basement_*Lot_Shape_	1	3.1127	0.0777
Fireplaces	2	4.7171	0.0946

Note: Under full-rank parameterizations, Type 3 effect tests are replaced by joint tests. The joint test for an effect is a test that all the parameters associated with that effect are zero. Such joint tests might not be equivalent to Type 3 effect tests under GLM parameterization.

Analysis of Maximum Likelihood Estimates						
Parameter		**DF**	**Estimate**	**Standard Error**	**Wald Chi-Square**	**Pr > ChiSq**
Intercept		1	-15.3017	3.2407	22.2952	<.0001
Basement_Area		1	0.0109	0.00254	18.2896	<.0001
Lot_Shape_2	**Irregular**	1	8.0362	3.5850	5.0247	0.0250
Basement_*Lot_Shape_	**Irregular**	1	-0.00503	0.00285	3.1127	0.0777
Fireplaces	**1**	1	0.7671	0.4687	2.6781	0.1017
Fireplaces	**2**	1	-0.9405	0.9503	0.9795	0.3223

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
Fireplaces 1 vs 0	2.153	0.859	5.396
Fireplaces 2 vs 0	0.390	0.061	2.514

LOGISTIC MODEL (3.1): Bonus=Basement_Area|Lot_Shape_2 Fireplaces



Association of Predicted Probabilities and Observed Responses			
Percent Concordant	93.8	**Somers' D**	0.876
Percent Discordant	6.2	**Gamma**	0.876
Percent Tied	0.1	**Tau-a**	0.221
Pairs	11220	**c**	0.938

Odds Ratio Estimates and Profile-Likelihood Confidence Intervals			
Odds Ratio	**Estimate**	**95% Confidence Limits**	
Basement_Area units=100 at Lot_Shape_2=Irregular	1.791	1.421	2.396
Basement_Area units=100 at Lot_Shape_2=Regular	2.960	1.932	5.315
Lot_Shape_2 Irregular vs Regular at Basement_Area=1000	20.278	4.623	146.987
Lot_Shape_2 Irregular vs Regular at Basement_Area=1500	1.643	0.283	9.145

LOGISTIC MODEL (3.1): Bonus=Basement_Area|Lot_Shape_2 Fireplaces