

### The CONTENTS Procedure

<b>Data Set Name</b>	WORK.TRAIN	<b>Observations</b>	1460
<b>Member Type</b>	DATA	<b>Variables</b>	81
<b>Engine</b>	V9	<b>Indexes</b>	0
<b>Created</b>	04/14/2019 11:43:12	<b>Observation Length</b>	472
<b>Last Modified</b>	04/14/2019 11:43:12	<b>Deleted Observations</b>	0
<b>Protection</b>		<b>Compressed</b>	NO
<b>Data Set Type</b>		<b>Sorted</b>	NO
<b>Label</b>			
<b>Data Representation</b>	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
<b>Encoding</b>	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
<b>Data Set Page Size</b>	131072
<b>Number of Data Set Pages</b>	6
<b>First Data Page</b>	1
<b>Max Obs per Page</b>	277
<b>Obs in First Data Page</b>	250
<b>Number of Data Set Repairs</b>	0
<b>Filename</b>	/saswork/SAS_workFA250000C0A6_odaws01-prod-us/SAS_work7E120000C0A6_odaws01-prod-us/train.sas7bdat
<b>Release Created</b>	9.0401M5
<b>Host Created</b>	Linux
<b>Inode Number</b>	627212
<b>Access Permission</b>	rw-r--r--
<b>Owner Name</b>	eric.balke
<b>File Size</b>	896KB
<b>File Size (bytes)</b>	917504

Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
44	1stFlrSF	Num	8	BEST12.	BEST32.
45	2ndFlrSF	Num	8	BEST12.	BEST32.
70	3SsnPorch	Num	8	BEST12.	BEST32.
7	Alley	Char	2	\$2.	\$2.
52	BedroomAbvGr	Num	8	BEST12.	BEST32.
16	BldgType	Char	6	\$6.	\$6.
32	BsmtCond	Char	2	\$2.	\$2.
33	BsmtExposure	Char	2	\$2.	\$2.
35	BsmtFinSF1	Num	8	BEST12.	BEST32.

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Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
37	BsmtFinSF2	Num	8	BEST12.	BEST32.
34	BsmtFinType1	Char	3	\$3.	\$3.
36	BsmtFinType2	Char	3	\$3.	\$3.
48	BsmtFullBath	Num	8	BEST12.	BEST32.
49	BsmtHalfBath	Num	8	BEST12.	BEST32.
31	BsmtQual	Char	2	\$2.	\$2.
38	BsmtUnfSF	Num	8	BEST12.	BEST32.
42	CentralAir	Char	1	\$1.	\$1.
14	Condition1	Char	6	\$6.	\$6.
15	Condition2	Char	6	\$6.	\$6.
43	Electrical	Char	5	\$5.	\$5.
69	EnclosedPorch	Num	8	BEST12.	BEST32.
29	ExterCond	Char	2	\$2.	\$2.
28	ExterQual	Char	2	\$2.	\$2.
24	Exterior1st	Char	7	\$7.	\$7.
25	Exterior2nd	Char	7	\$7.	\$7.
74	Fence	Char	5	\$5.	\$5.
58	FireplaceQu	Char	2	\$2.	\$2.
57	Fireplaces	Num	8	BEST12.	BEST32.
30	Foundation	Char	6	\$6.	\$6.
50	FullBath	Num	8	BEST12.	BEST32.
56	Functional	Char	4	\$4.	\$4.
63	GarageArea	Num	8	BEST12.	BEST32.
62	GarageCars	Num	8	BEST12.	BEST32.
65	GarageCond	Char	2	\$2.	\$2.
61	GarageFinish	Char	3	\$3.	\$3.
64	GarageQual	Char	2	\$2.	\$2.
59	GarageType	Char	7	\$7.	\$7.
60	GarageYrBlt	Num	8	BEST12.	BEST32.
47	GrLivArea	Num	8	BEST12.	BEST32.
51	HalfBath	Num	8	BEST12.	BEST32.
40	Heating	Char	4	\$4.	\$4.
41	HeatingQC	Char	2	\$2.	\$2.
17	HouseStyle	Char	6	\$6.	\$6.
1	Id	Num	8	BEST12.	BEST32.
53	KitchenAbvGr	Num	8	BEST12.	BEST32.

### The CONTENTS Procedure

Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
54	KitchenQual	Char	2	\$2.	\$2.
9	LandContour	Char	3	\$3.	\$3.
12	LandSlope	Char	3	\$3.	\$3.
5	LotArea	Num	8	BEST12.	BEST32.
11	LotConfig	Char	7	\$7.	\$7.
4	LotFrontage	Num	8	BEST12.	BEST32.
8	LotShape	Char	3	\$3.	\$3.
46	LowQualFinSF	Num	8	BEST12.	BEST32.
2	MSSubClass	Char	3	\$3.	\$3.
3	MSZoning	Char	2	\$2.	\$2.
27	MasVnrArea	Num	8	BEST12.	BEST32.
26	MasVnrType	Char	7	\$7.	\$7.
75	MiscFeature	Char	4	\$4.	\$4.
76	MiscVal	Num	8	BEST12.	BEST32.
77	MoSold	Num	8	BEST12.	BEST32.
13	Neighborhood	Char	7	\$7.	\$7.
68	OpenPorchSF	Num	8	BEST12.	BEST32.
19	OverallCond	Num	8	BEST12.	BEST32.
18	OverallQual	Num	8	BEST12.	BEST32.
66	PavedDrive	Char	1	\$1.	\$1.
72	PoolArea	Num	8	BEST12.	BEST32.
73	PoolQC	Char	2	\$2.	\$2.
23	RoofMatl	Char	7	\$7.	\$7.
22	RoofStyle	Char	5	\$5.	\$5.
80	SaleCondition	Char	7	\$7.	\$7.
81	SalePrice	Num	8	BEST12.	BEST32.
79	SaleType	Char	3	\$3.	\$3.
71	ScreenPorch	Num	8	BEST12.	BEST32.
6	Street	Char	4	\$4.	\$4.
55	TotRmsAbvGrd	Num	8	BEST12.	BEST32.
39	TotalBsmtSF	Num	8	BEST12.	BEST32.
10	Utilities	Char	6	\$6.	\$6.
67	WoodDeckSF	Num	8	BEST12.	BEST32.
20	YearBuilt	Num	8	BEST12.	BEST32.
21	YearRemodAdd	Num	8	BEST12.	BEST32.
78	YrSold	Num	8	BEST12.	BEST32.

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
1	1	60	RL	65	8450	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
2	2	20	RL	80	9600	Pave	NA	Reg	Lvl	AllPub	FR2	Gtl
3	3	60	RL	68	11250	Pave	NA	IR1	Lvl	AllPub	Inside	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
1	CollgCr	Norm	Norm	1Fam	2Story	7	5	2003	2003	Gable
2	Veenker	Feedr	Norm	1Fam	1Story	6	8	1976	1976	Gable
3	CollgCr	Norm	Norm	1Fam	2Story	7	5	2001	2002	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
1	CompShg	VinylSd	VinylSd	BrkFace	196	Gd	TA	PCconc	Gd	TA
2	CompShg	MetalSd	MetalSd	None	0	TA	TA	CBlock	Gd	TA
3	CompShg	VinylSd	VinylSd	BrkFace	162	Gd	TA	PCconc	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
1	No	GLQ	706	Unf	0	150	856	GasA	Ex
2	Gd	ALQ	978	Unf	0	284	1262	GasA	Ex
3	Mn	GLQ	486	Unf	0	434	920	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
1	Y	SBrkr	856	854	0	1710	1	0	2	1
2	Y	SBrkr	1262	0	0	1262	0	1	2	0
3	Y	SBrkr	920	866	0	1786	1	0	2	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
1	3	1	Gd	8	Typ	0	NA	Attchd	2003
2	3	1	TA	6	Typ	1	TA	Attchd	1976
3	3	1	Gd	6	Typ	1	TA	Attchd	2001

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
1	RFn	2	548	TA	TA	Y	0	61	0
2	RFn	2	460	TA	TA	Y	298	0	0
3	RFn	2	608	TA	TA	Y	0	42	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
1	0	0	0	NA	NA	NA	0	2	2008	WD	Normal	208500
2	0	0	0	NA	NA	NA	0	5	2007	WD	Normal	181500
3	0	0	0	NA	NA	NA	0	9	2008	WD	Normal	223500

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
4	4	70	RL	60	9550	Pave	NA	IR1	Lvl	AllPub	Corner	Gtl
5	5	60	RL	84	14260	Pave	NA	IR1	Lvl	AllPub	FR2	Gtl
6	6	50	RL	85	14115	Pave	NA	IR1	Lvl	AllPub	Inside	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
4	Crawfor	Norm	Norm	1Fam	2Story	7	5	1915	1970	Gable
5	NoRidge	Norm	Norm	1Fam	2Story	8	5	2000	2000	Gable
6	Mitchel	Norm	Norm	1Fam	1.5Fin	5	5	1993	1995	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
4	CompShg	Wd Sdng	Wd Shng	None	0	TA	TA	BrkTil	TA	Gd
5	CompShg	VinylSd	VinylSd	BrkFace	350	Gd	TA	PCconc	Gd	TA
6	CompShg	VinylSd	VinylSd	None	0	TA	TA	Wood	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
4	No	ALQ	216	Unf	0	540	756	GasA	Gd
5	Av	GLQ	655	Unf	0	490	1145	GasA	Ex
6	No	GLQ	732	Unf	0	64	796	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
4	Y	SBrkr	961	756	0	1717	1	0	1	0
5	Y	SBrkr	1145	1053	0	2198	1	0	2	1
6	Y	SBrkr	796	566	0	1362	1	0	1	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
4	3	1	Gd	7	Typ	1	Gd	Detchd	1998
5	4	1	Gd	9	Typ	1	TA	Attchd	2000
6	1	1	TA	5	Typ	0	NA	Attchd	1993

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
4	Unf	3	642	TA	TA	Y	0	35	272
5	RFn	3	836	TA	TA	Y	192	84	0
6	Unf	2	480	TA	TA	Y	40	30	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
4	0	0	0	NA	NA	NA	0	2	2006	WD	Abnorml	140000
5	0	0	0	NA	NA	NA	0	12	2008	WD	Normal	250000
6	320	0	0	NA	MnPrv	Shed	700	10	2009	WD	Normal	143000

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
7	7	20	RL	75	10084	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
8	8	60	RL	.	10382	Pave	NA	IR1	Lvl	AllPub	Corner	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
7	Somerst	Norm	Norm	1Fam	1Story	8	5	2004	2005	Gable
8	NWAmes	PosN	Norm	1Fam	2Story	7	6	1973	1973	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
7	CompShg	VinylSd	VinylSd	Stone	186	Gd	TA	PConc	Ex	TA
8	CompShg	HdBoard	HdBoard	Stone	240	TA	TA	CBlock	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
7	Av	GLQ	1369	Unf	0	317	1686	GasA	Ex
8	Mn	ALQ	859	BLQ	32	216	1107	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
7	Y	SBrkr	1694	0	0	1694	1	0	2	0
8	Y	SBrkr	1107	983	0	2090	1	0	2	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
7	3	1	Gd	7	Typ	1	Gd	Attchd	2004
8	3	1	TA	7	Typ	2	TA	Attchd	1973

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
7	RFn	2	636	TA	TA	Y	255	57	0
8	RFn	2	484	TA	TA	Y	235	204	228

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
7	0	0	0	NA	NA	NA	0	8	2007	WD	Normal	307000
8	0	0	0	NA	NA	Shed	350	11	2009	WD	Normal	200000

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
9	9	50	RM	51	6120	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
10	10	190	RL	50	7420	Pave	NA	Reg	Lvl	AllPub	Corner	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
9	OldTown	Artery	Norm	1Fam	1.5Fin	7	5	1931	1950	Gable
10	BrkSide	Artery	Artery	2fmCon	1.5Unf	5	6	1939	1950	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
9	CompShg	BrkFace	Wd Shng	None	0	TA	TA	BrkTil	TA	TA
10	CompShg	MetalSd	MetalSd	None	0	TA	TA	BrkTil	TA	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
9	No	Unf	0	Unf	0	952	952	GasA	Gd
10	No	GLQ	851	Unf	0	140	991	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
9	Y	FuseF	1022	752	0	1774	0	0	2	0
10	Y	SBrkr	1077	0	0	1077	1	0	1	0

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
9	2	2	TA	8	Min1	2	TA	Detchd	1931
10	2	2	TA	5	Typ	2	TA	Attchd	1939

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
9	Unf	2	468	Fa	TA	Y	90	0	205
10	RFn	1	205	Gd	TA	Y	0	4	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
9	0	0	0	NA	NA	NA	0	4	2008	WD	Abnorml	129900
10	0	0	0	NA	NA	NA	0	1	2008	WD	Normal	118000

**The FREQ Procedure**

MSSubClass	Frequency	Percent	Cumulative Frequency	Cumulative Percent
120	87	5.96	87	5.96
160	63	4.32	150	10.27
180	10	0.68	160	10.96
190	30	2.05	190	13.01
20	536	36.71	726	49.73
30	69	4.73	795	54.45
40	4	0.27	799	54.73
45	12	0.82	811	55.55
50	144	9.86	955	65.41
60	299	20.48	1254	85.89
70	60	4.11	1314	90.00
75	16	1.10	1330	91.10
80	58	3.97	1388	95.07
85	20	1.37	1408	96.44
90	52	3.56	1460	100.00

### The FREQ Procedure

Neighborhood	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Blmgtn	17	1.16	17	1.16
Blueste	2	0.14	19	1.30
BrDale	16	1.10	35	2.40
BrkSide	58	3.97	93	6.37
ClearCr	28	1.92	121	8.29
CollgCr	150	10.27	271	18.56
Crawfor	51	3.49	322	22.05
Edwards	100	6.85	422	28.90
Gilbert	79	5.41	501	34.32
IDOTRR	37	2.53	538	36.85
MeadowV	17	1.16	555	38.01
Mitchel	49	3.36	604	41.37
NAmes	225	15.41	829	56.78
NPkVill	9	0.62	838	57.40
NWAmes	73	5.00	911	62.40
NoRidge	41	2.81	952	65.21
NridgHt	77	5.27	1029	70.48
OldTown	113	7.74	1142	78.22
SWISU	25	1.71	1167	79.93
Sawyer	74	5.07	1241	85.00
SawyerW	59	4.04	1300	89.04
Somerst	86	5.89	1386	94.93
StoneBr	25	1.71	1411	96.64
Timber	38	2.60	1449	99.25
Veenker	11	0.75	1460	100.00

RoofMatl	Frequency	Percent	Cumulative Frequency	Cumulative Percent
ClyTile	1	0.07	1	0.07
CompShg	1434	98.22	1435	98.29
Membran	1	0.07	1436	98.36
Metal	1	0.07	1437	98.42
Roll	1	0.07	1438	98.49
Tar&Grv	11	0.75	1449	99.25
WdShake	5	0.34	1454	99.59
WdShngl	6	0.41	1460	100.00

**The MEANS Procedure**

Variable	N Miss
YearBuilt	0
BsmtFinSF1	0
GrLivArea	0
OverallQual	0
OverallCond	0

### The MI Procedure

Model Information	
<b>Data Set</b>	WORK.TRAIN
<b>Method</b>	MCMC
<b>Multiple Imputation Chain</b>	Single Chain
<b>Initial Estimates for MCMC</b>	EM Posterior Mode
<b>Start</b>	Starting Value
<b>Prior</b>	Jeffreys
<b>Number of Imputations</b>	25
<b>Number of Burn-in Iterations</b>	200
<b>Number of Iterations</b>	100
<b>Seed for random number generator</b>	1518971

Missing Data Patterns						
Group	LotFrontage	GarageYrBlt	Freq	Percent	Group Means	
					LotFrontage	GarageYrBlt
1	X	X	1127	77.19	70.683230	1978.543035
2	X	.	74	5.07	60.405405	.
3	.	X	252	17.26	.	1978.341270
4	O	O	7	0.48	.	.

Univariate Statistics						
Variable	N	Mean	Std Dev	Minimum	Maximum	Missing Values
						Count Percent
LotFrontage	1201	70.04996	24.28475	21.00000	313.00000	259 17.74
GarageYrBlt	1379	1979	24.68972	1900	2010	81 5.55

Pairwise Correlations		
	LotFrontage	GarageYrBlt
LotFrontage	1.000000000	0.070249782
GarageYrBlt	0.070249782	1.000000000

Initial Parameter Estimates for EM			
_TYPE_	_NAME_	LotFrontage	GarageYrBlt
MEAN		70.049958	1978.506164
COV	LotFrontage	589.749169	0
COV	GarageYrBlt	0	609.582509

### The MI Procedure

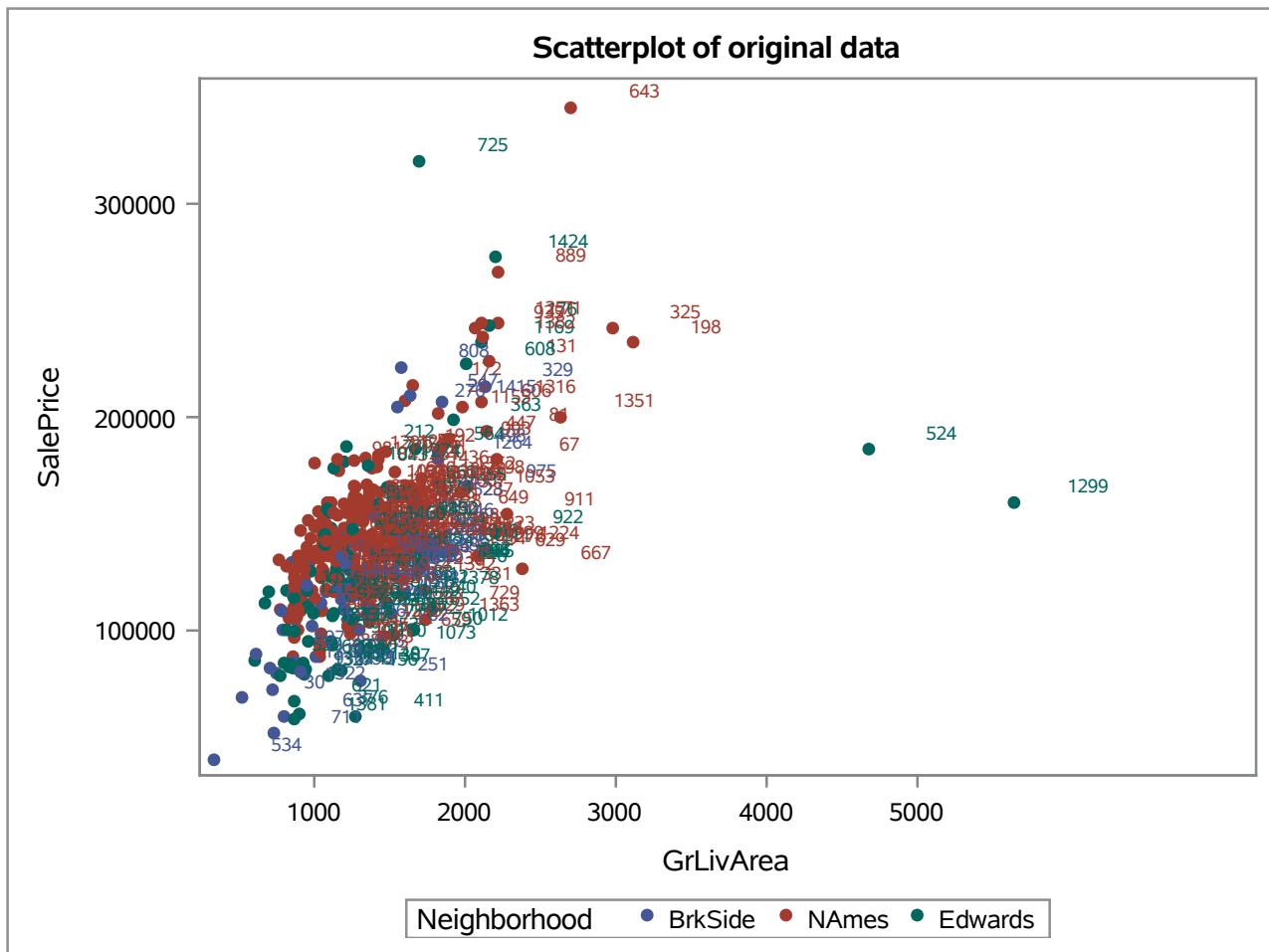
EM (MLE) Iteration History			
_Iteration_	-2 Log L	LotFrontage	GarageYrBlt
0	19083	70.049958	1978.506164
1	19078	70.049958	1978.506164
2	19078	70.048356	1978.477716
3	19078	70.048153	1978.471929
4	19078	70.048152	1978.470959
5	19078	70.048158	1978.470803
6	19078	70.048161	1978.470779

EM (MLE) Parameter Estimates			
_TYPE_	_NAME_	LotFrontage	GarageYrBlt
MEAN		70.048161	1978.470779
COV	LotFrontage	589.022788	40.284406
COV	GarageYrBlt	40.284406	609.144644

EM (Posterior Mode) Estimates			
_TYPE_	_NAME_	LotFrontage	GarageYrBlt
MEAN		70.048161	1978.470762
COV	LotFrontage	587.563592	40.203142
COV	GarageYrBlt	40.203142	607.822866

Variance Information (25 Imputations)							
Variable	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
LotFrontage	0.074947	0.404015	0.481960	522.88	0.192925	0.163545	0.993501
GarageYrBlt	0.021082	0.420020	0.441945	1207.4	0.052201	0.049806	0.998012

Parameter Estimates (25 Imputations)										
Variable	Mean	Std Error	95% Confidence Limits			DF	Minimum	Maximum	Mu0	t for H0: Mean=Mu0
LotFrontage	70.051987	0.694233	68.688 - 71.416			522.88	69.486129	70.707023	0	100.91 <.0001
GarageYrBlt	1978.427947	0.664789	1977.124 - 1979.732			1207.4	1978.097104	1978.695220	0	2976.02 <.0001



Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig
1	10	190	RL	50	7420	Pave	NA	Reg	Lvl	AllPub	Corner
2	15	20	RL	.	10920	Pave	NA	IR1	Lvl	AllPub	Corner

Obs	LandSlope	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt
1	Gtl	BrkSide	Artery	Artery	2fmCon	1.5Unf	5	6	1939
2	Gtl	NAmes	Norm	Norm	1Fam	1Story	6	5	1960

Obs	YearRemodAdd	RoofStyle	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond
1	1950	Gable	CompShg	MetalSd	MetalSd	None	0	TA	TA
2	1960	Hip	CompShg	MetalSd	MetalSd	BrkFace	212	TA	TA

Obs	Foundation	BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF
1	BrkTil	TA	TA	No	GLQ	851	Unf	0	140
2	CBlock	TA	TA	No	BLQ	733	Unf	0	520

Obs	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath
1	991	GasA	Ex	Y	SBrkr	1077	0	0	1077	1
2	1253	GasA	TA	Y	SBrkr	1253	0	0	1253	1

Obs	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces
1	0	1	0	2	2	TA	5	Typ	2
2	0	1	1	2	1	TA	5	Typ	1

Obs	FireplaceQu	GarageType	GarageYrBlt	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive
1	TA	Attchd	1939	RFn	1	205	Gd	TA	Y
2	Fa	Attchd	1960	RFn	1	352	TA	TA	Y

Obs	WoodDeckSF	OpenPorchSF	EnclosedPorch	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal
1	0	4	0	0	0	0	NA	NA	NA	0
2	0	213	176	0	0	0	NA	GdWo	NA	0

Obs	MoSold	YrSold	SaleType	SaleCondition	SalePrice	N_Dummy	E_Dummy	int_e	int_n
1	1	2008	WD	Normal	118000	0	0	0	0
2	5	2008	WD	Normal	157000	1	0	0	1253

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig
3	16	45	RM	51	6120	Pave	NA	Reg	Lvl	AllPub	Corner
4	17	20	RL	.	11241	Pave	NA	IR1	Lvl	AllPub	CulDSac

Obs	LandSlope	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt
3	Gtl	BrkSide	Norm	Norm	1Fam	1.5Unf	7	8	1929
4	Gtl	NAmes	Norm	Norm	1Fam	1Story	6	7	1970

Obs	YearRemodAdd	RoofStyle	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond
3	2001	Gable	CompShg	Wd Sdng	Wd Sdng	None	0	TA	TA
4	1970	Gable	CompShg	Wd Sdng	Wd Sdng	BrkFace	180	TA	TA

Obs	Foundation	BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF
3	BrkTil	TA	TA	No	Unf	0	Unf	0	832
4	CBlock	TA	TA	No	ALQ	578	Unf	0	426

Obs	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath
3	832	GasA	Ex	Y	FuseA	854	0	0	854	0
4	1004	GasA	Ex	Y	SBrkr	1004	0	0	1004	1

Obs	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces
3	0	1	0	2	1	TA	5	Typ	0
4	0	1	0	2	1	TA	5	Typ	1

Obs	FireplaceQu	GarageType	GarageYrBlt	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive
3	NA	Detchd	1991	Unf	2	576	TA	TA	Y
4	TA	Attchd	1970	Fin	2	480	TA	TA	Y

Obs	WoodDeckSF	OpenPorchSF	EnclosedPorch	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal
3	48	112	0	0	0	0	NA	GdPrv	NA	0
4	0	0	0	0	0	0	NA	NA	Shed	700

Obs	MoSold	YrSold	SaleType	SaleCondition	SalePrice	N_Dummy	E_Dummy	int_e	int_n
3	7	2007	WD	Normal	132000	0	0	0	0
4	3	2010	WD	Normal	149000	1	0	0	1004

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig
5	20	20	RL	70	7560	Pave	NA	Reg	Lvl	AllPub	Inside
6	27	20	RL	60	7200	Pave	NA	Reg	Lvl	AllPub	Corner

Obs	LandSlope	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt
5	Gtl	NAmes	Norm	Norm	1Fam	1Story	5	6	1958
6	Gtl	NAmes	Norm	Norm	1Fam	1Story	5	7	1951

Obs	YearRemodAdd	RoofStyle	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond
5	1965	Hip	CompShg	BrkFace	Plywood	None	0	TA	TA
6	2000	Gable	CompShg	Wd Sdng	Wd Sdng	None	0	TA	TA

Obs	Foundation	BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF
5	CBlock	TA	TA	No	LwQ	504	Unf	0	525
6	CBlock	TA	TA	Mn	BLQ	234	Rec	486	180

Obs	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath
5	1029	GasA	TA	Y	SBrkr	1339	0	0	1339	0
6	900	GasA	TA	Y	SBrkr	900	0	0	900	0

Obs	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces
5	0	1	0	3	1	TA	6	Min1	0
6	1	1	0	3	1	Gd	5	Typ	0

Obs	FireplaceQu	GarageType	GarageYrBlt	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive
5	NA	Attchd	1958	Unf	1	294	TA	TA	Y
6	NA	Detchd	2005	Unf	2	576	TA	TA	Y

Obs	WoodDeckSF	OpenPorchSF	EnclosedPorch	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal
5	0	0	0	0	0	0	NA	MnPrv	NA	0
6	222	32	0	0	0	0	NA	NA	NA	0

Obs	MoSold	YrSold	SaleType	SaleCondition	SalePrice	N_Dummy	E_Dummy	int_e	int_n
5	5	2009	COD	Abnorml	139000	1	0	0	1339
6	5	2010	WD	Normal	134800	1	0	0	900

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig
7	29	20	RL	47	16321	Pave	NA	IR1	Lvl	AllPub	CulDSac
8	30	30	RM	60	6324	Pave	NA	IR1	Lvl	AllPub	Inside

Obs	LandSlope	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt
7	Gtl	NAmes	Norm	Norm	1Fam	1Story	5	6	1957
8	Gtl	BrkSide	Feedr	RRNn	1Fam	1Story	4	6	1927

Obs	YearRemodAdd	RoofStyle	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond
7	1997	Gable	CompShg	MetalSd	MetalSd	None	0	TA	TA
8	1950	Gable	CompShg	MetalSd	MetalSd	None	0	TA	TA

Obs	Foundation	BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF
7	CBlock	TA	TA	Gd	BLQ	1277	Unf	0	207
8	BrkTil	TA	TA	No	Unf	0	Unf	0	520

Obs	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath
7	1484	GasA	TA	Y	SBrkr	1600	0	0	1600	1
8	520	GasA	Fa	N	SBrkr	520	0	0	520	0

Obs	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces
7	0	1	0	2	1	TA	6	Typ	2
8	0	1	0	1	1	Fa	4	Typ	0

Obs	FireplaceQu	GarageType	GarageYrBlt	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive
7	Gd	Attchd	1957	RFn	1	319	TA	TA	Y
8	NA	Detchd	1920	Unf	1	240	Fa	TA	Y

Obs	WoodDeckSF	OpenPorchSF	EnclosedPorch	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal
7	288	258	0	0	0	0	NA	NA	NA	0
8	49	0	87	0	0	0	NA	NA	NA	0

Obs	MoSold	YrSold	SaleType	SaleCondition	SalePrice	N_Dummy	E_Dummy	int_e	int_n
7	12	2006	WD	Normal	207500	1	0	0	1600
8	5	2008	WD	Normal	68500	0	0	0	0

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig
9	34	20	RL	70	10552	Pave	NA	IR1	Lvl	AllPub	Inside
10	38	20	RL	74	8532	Pave	NA	Reg	Lvl	AllPub	Inside

Obs	LandSlope	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt
9	Gtl	NAmes	Norm	Norm	1Fam	1Story	5	5	1959
10	Gtl	NAmes	Norm	Norm	1Fam	1Story	5	6	1954

Obs	YearRemodAdd	RoofStyle	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond
9	1959	Hip	CompShg	BrkFace	BrkFace	None	0	TA	TA
10	1990	Hip	CompShg	Wd Sdng	Wd Sdng	BrkFace	650	TA	TA

Obs	Foundation	BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF
9	CBlock	TA	TA	No	Rec	1018	Unf	0	380
10	CBlock	TA	TA	No	Rec	1213	Unf	0	84

Obs	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath
9	1398	GasA	Gd	Y	SBrkr	1700	0	0	1700	0
10	1297	GasA	Gd	Y	SBrkr	1297	0	0	1297	0

Obs	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces
9	1	1	1	4	1	Gd	6	Typ	1
10	1	1	0	3	1	TA	5	Typ	1

Obs	FireplaceQu	GarageType	GarageYrBlt	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive
9	Gd	Attchd	1959	RFn	2	447	TA	TA	Y
10	TA	Attchd	1954	Fin	2	498	TA	TA	Y

Obs	WoodDeckSF	OpenPorchSF	EnclosedPorch	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal
9	0	38	0	0	0	0	NA	NA	NA	0
10	0	0	0	0	0	0	NA	NA	NA	0

Obs	MoSold	YrSold	SaleType	SaleCondition	SalePrice	N_Dummy	E_Dummy	int_e	int_n
9	4	2010	WD	Normal	165500	1	0	0	1700
10	10	2009	WD	Normal	153000	1	0	0	1297

**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

<b>Number of Observations Read</b>	383
<b>Number of Observations Used</b>	383

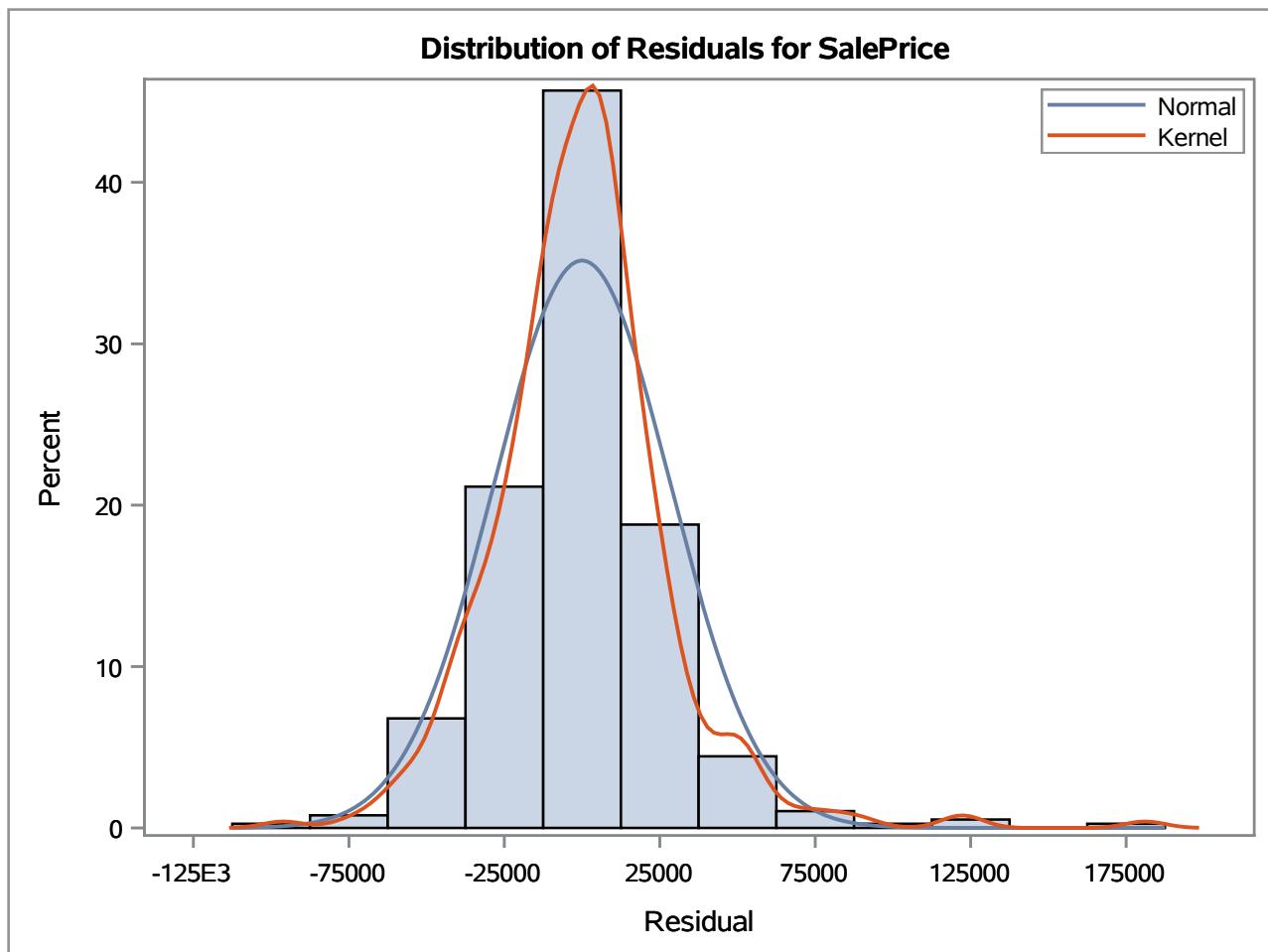
<b>Analysis of Variance</b>					
<b>Source</b>	<b>DF</b>	<b>Sum of Squares</b>	<b>Mean Square</b>	<b>F Value</b>	<b>Pr &gt; F</b>
<b>Model</b>	5	2.48809E11	49761808941	61.04	<.0001
<b>Error</b>	377	3.073431E11	815233644		
<b>Corrected Total</b>	382	5.561521E11			

<b>Root MSE</b>	28552	<b>R-Square</b>	0.4474
<b>Dependent Mean</b>	138063	<b>Adj R-Sq</b>	0.4400
<b>Coeff Var</b>	20.68070		

<b>Parameter Estimates</b>					
<b>Variable</b>	<b>DF</b>	<b>Parameter Estimate</b>	<b>Standard Error</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
<b>Intercept</b>	1	19972	12351	1.62	0.1067
<b>GrLivArea</b>	1	87.16253	9.78196	8.91	<.0001
<b>E_Dummy</b>	1	68382	13970	4.90	<.0001
<b>N_Dummy</b>	1	54705	13882	3.94	<.0001
<b>int_e</b>	1	-57.41223	10.71767	-5.36	<.0001
<b>int_n</b>	1	-32.84667	10.81538	-3.04	0.0026

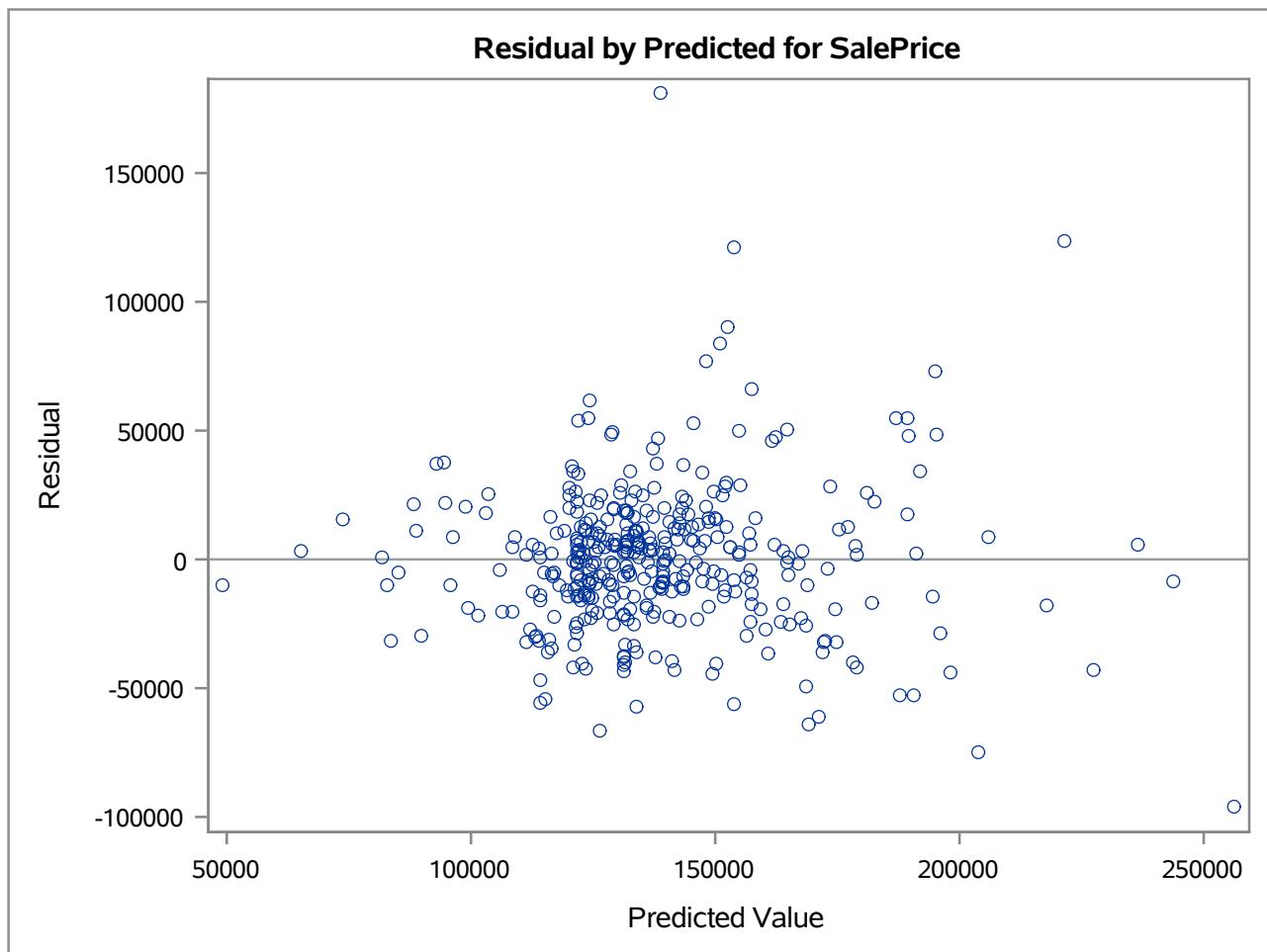
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



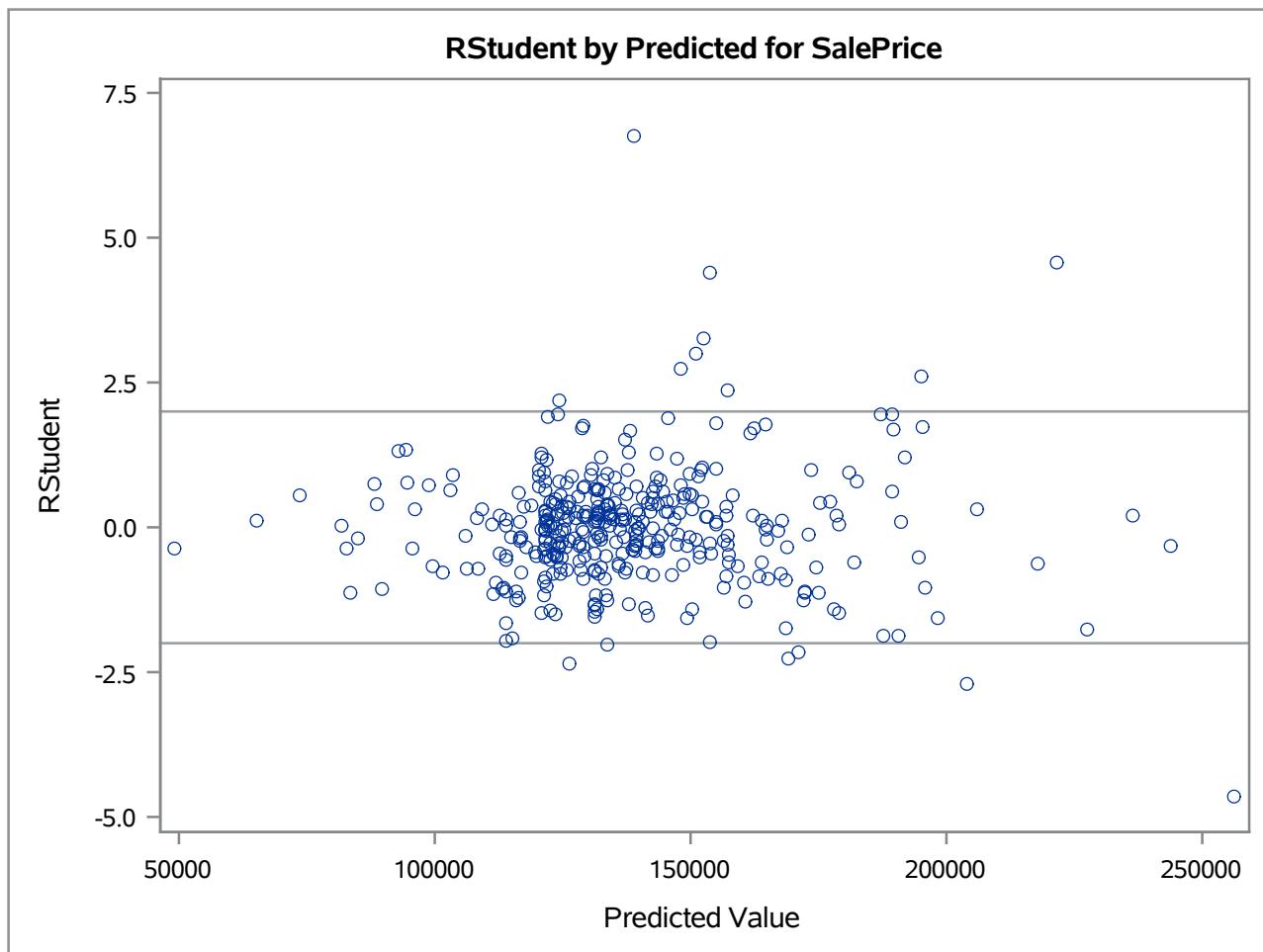
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



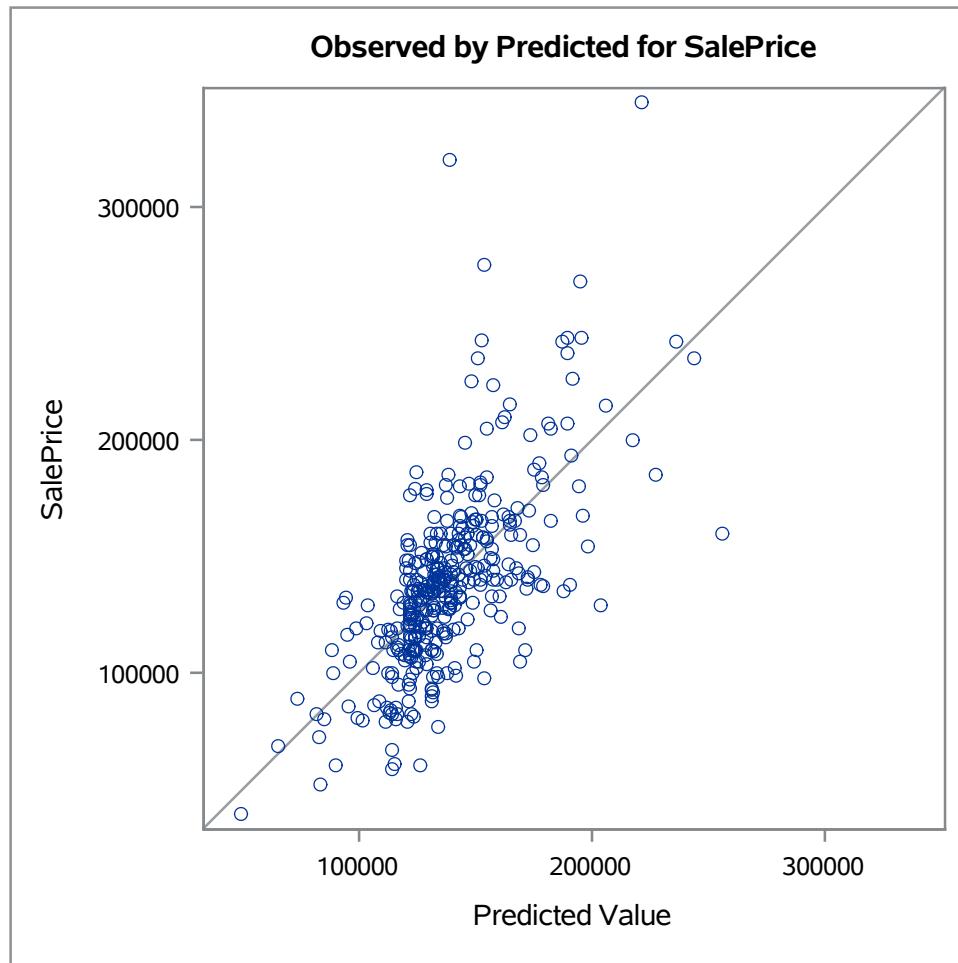
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



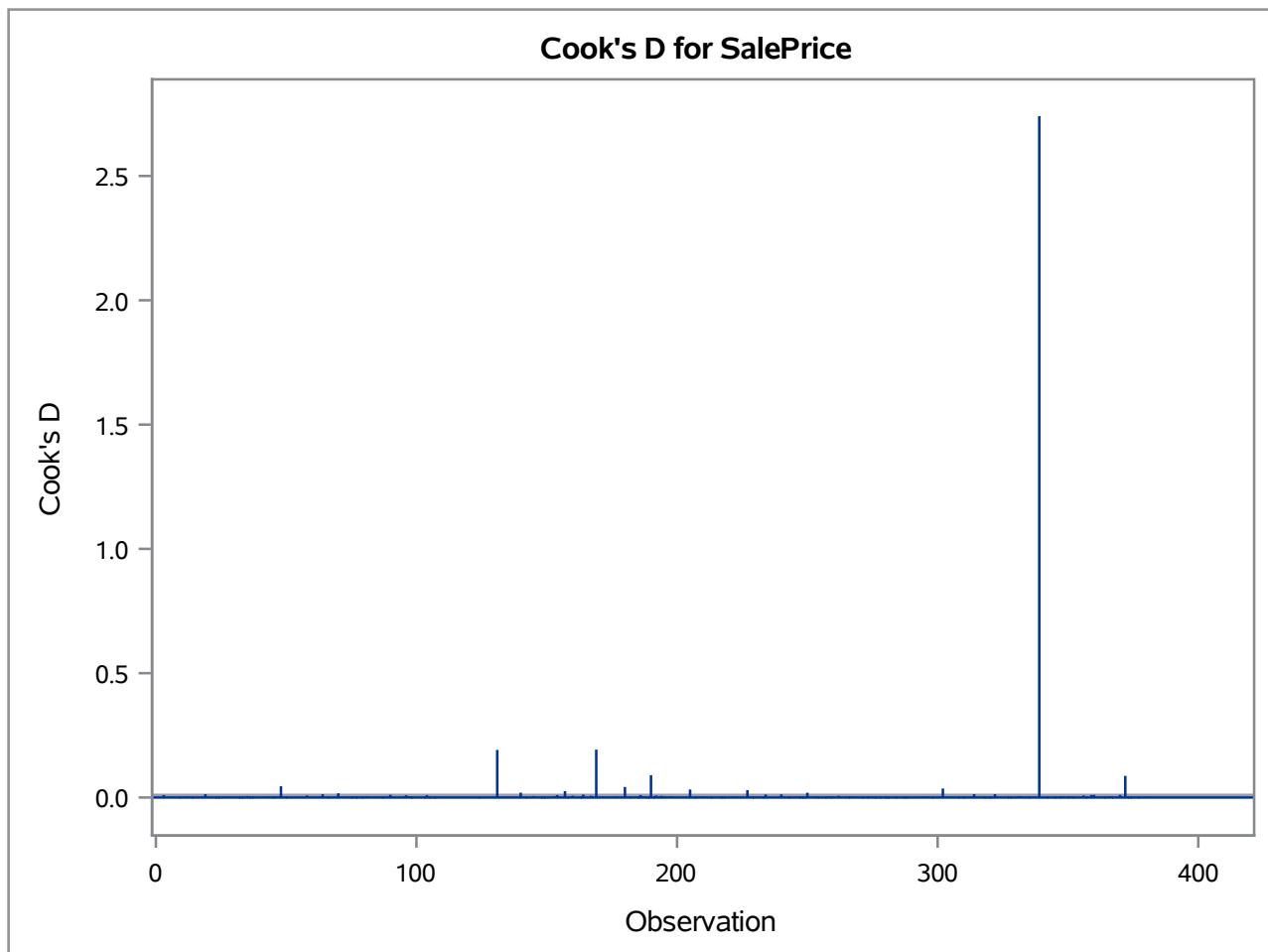
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



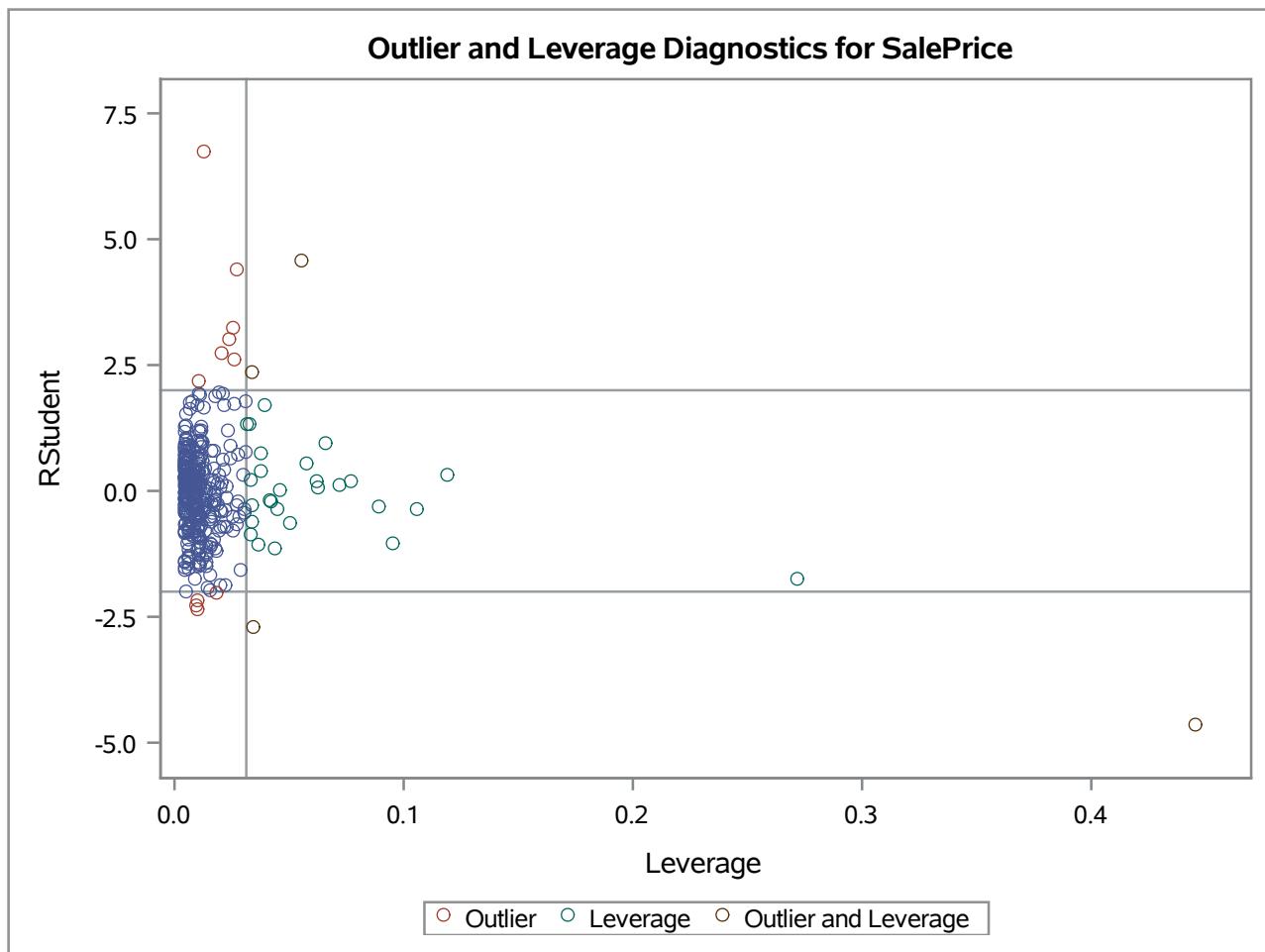
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



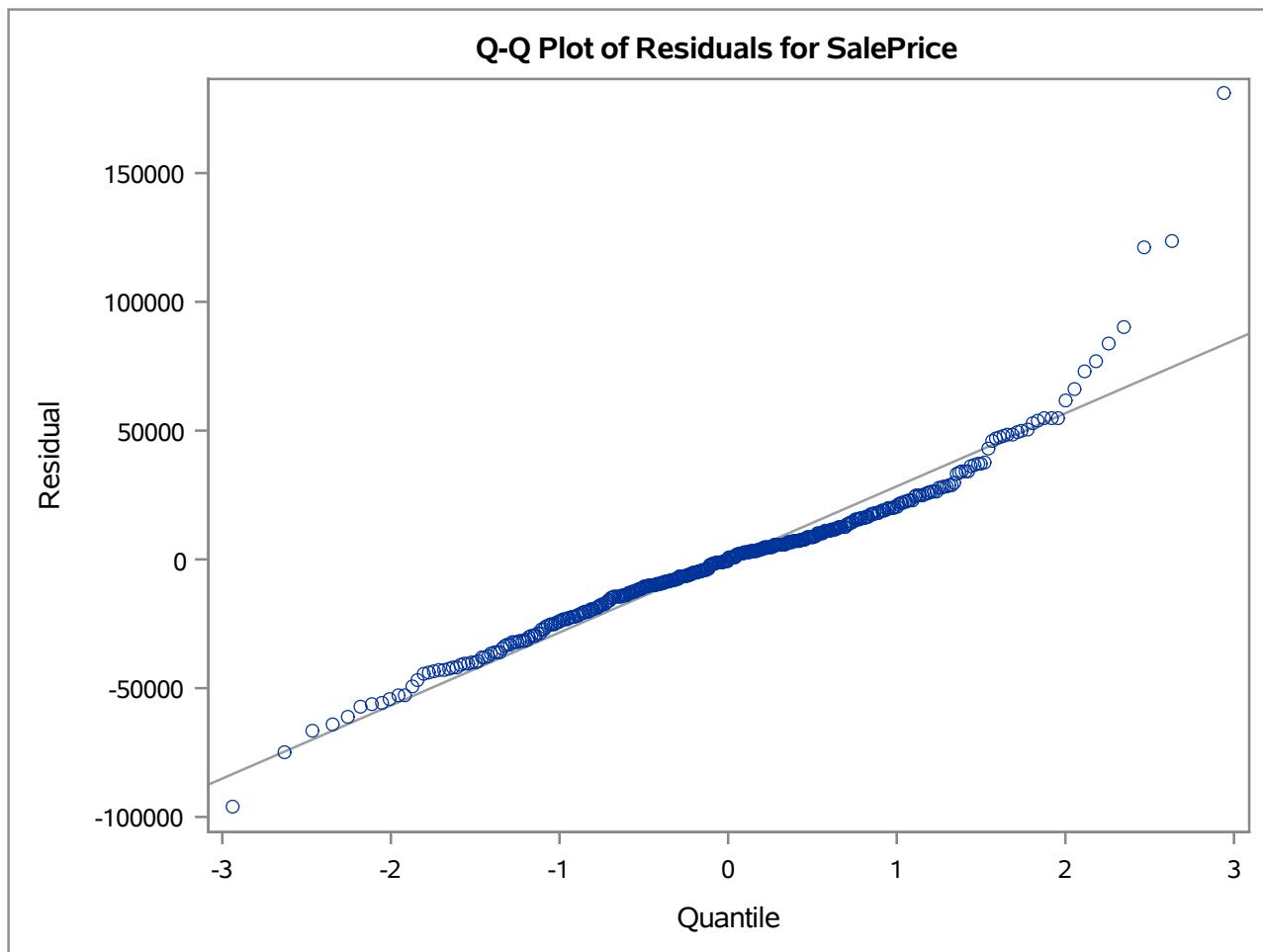
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



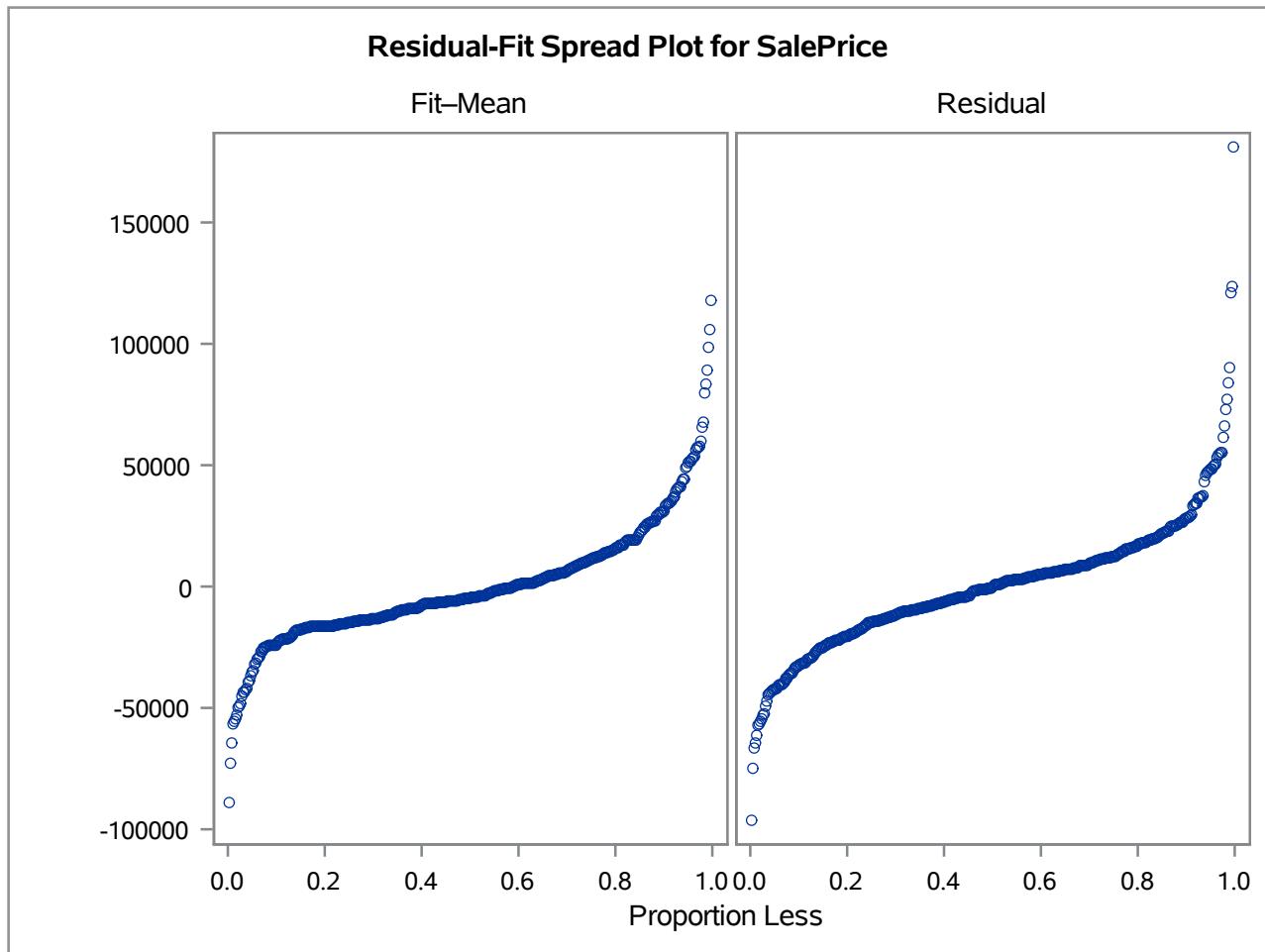
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



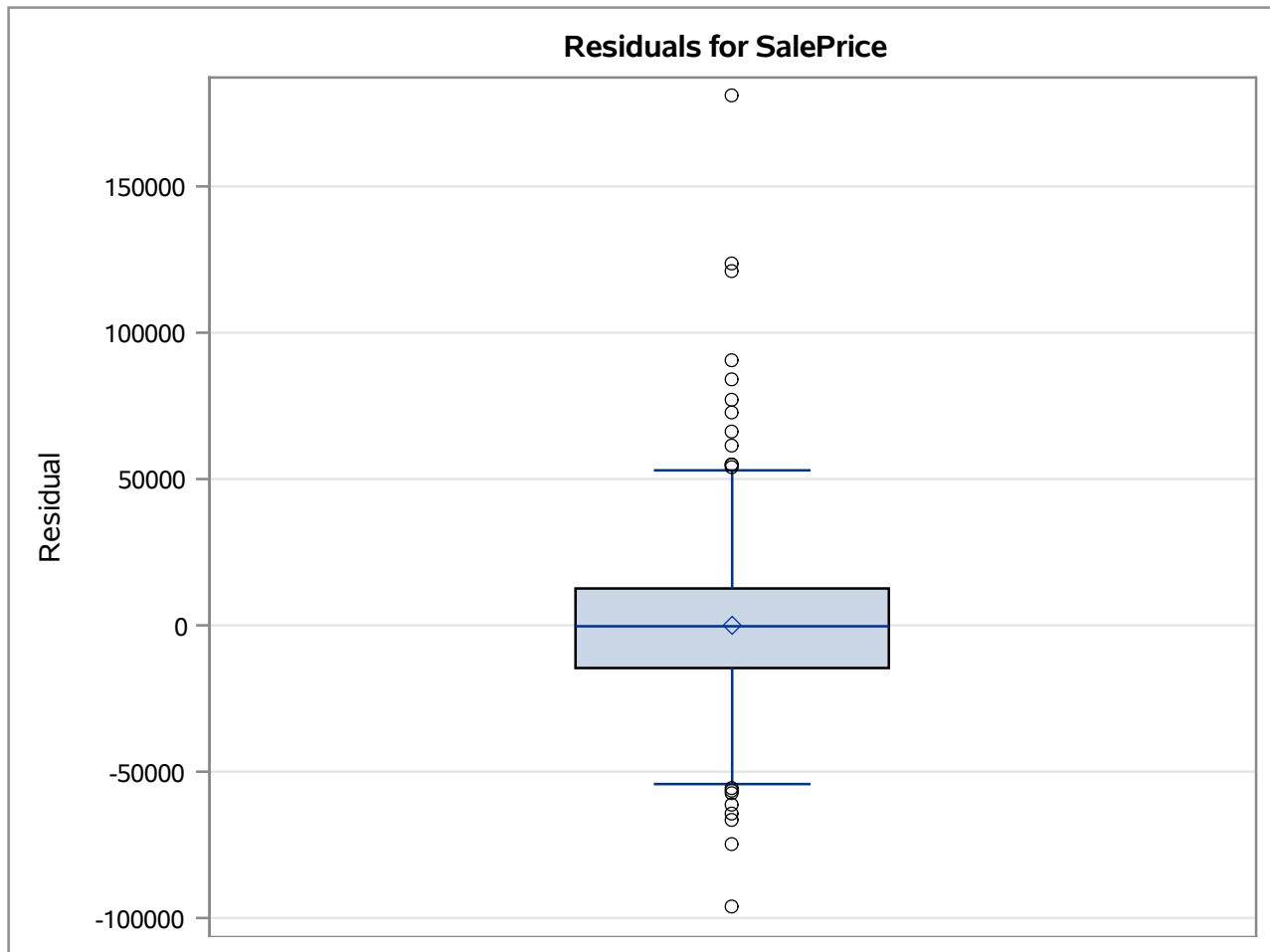
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



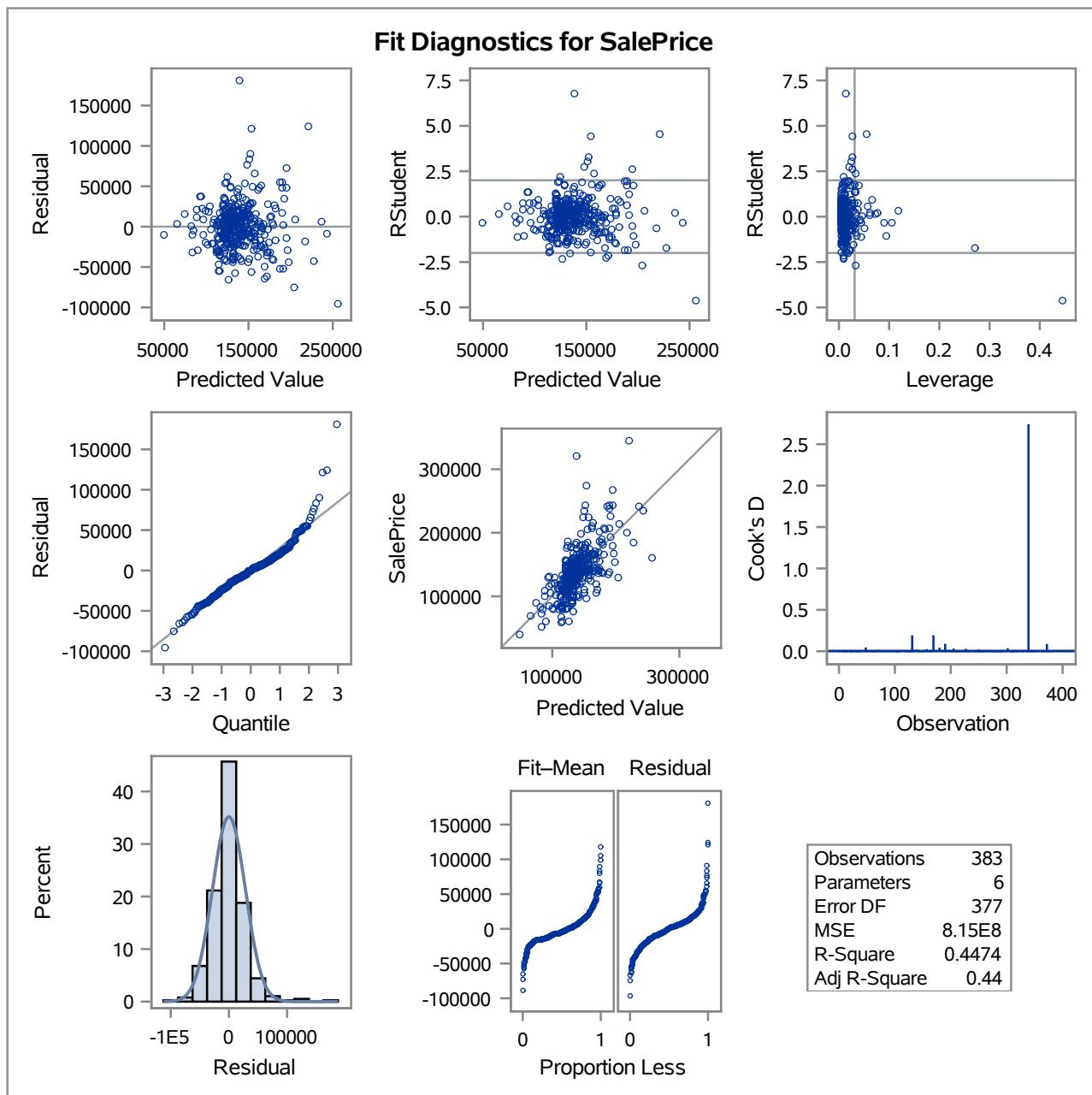
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



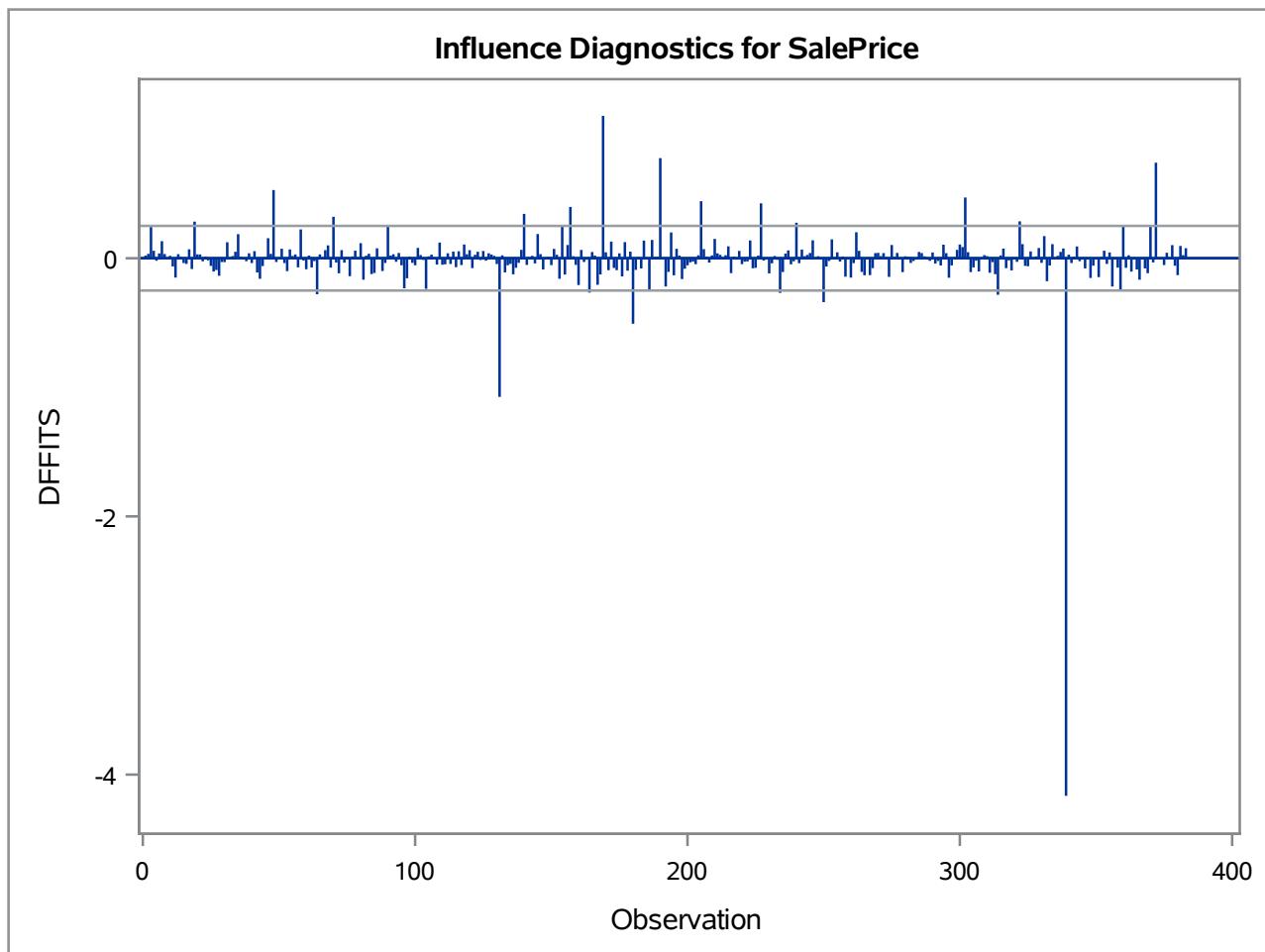
# Linear-Linear MLR with Dummy and Interactions with Influential Point 1299

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



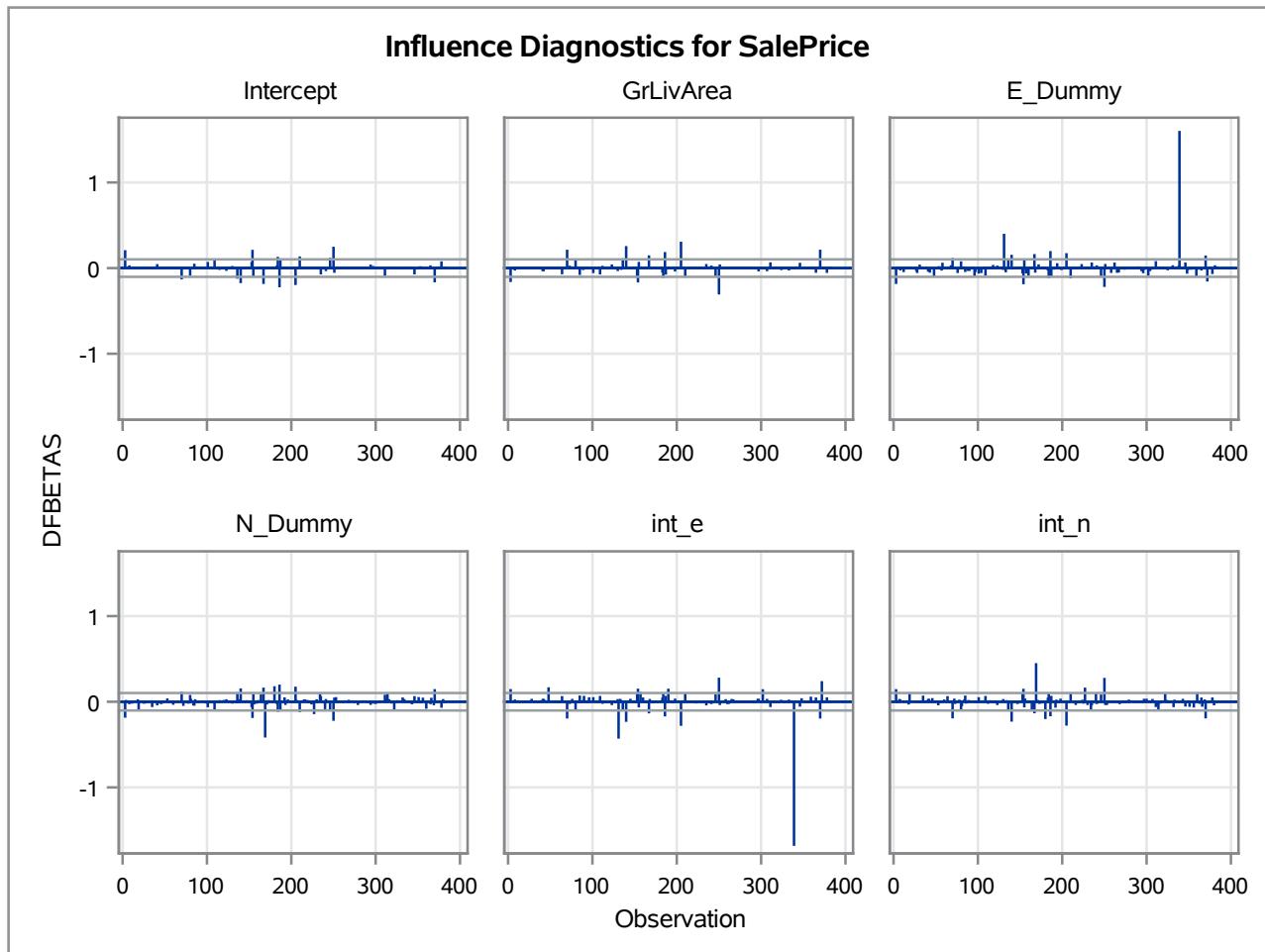
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



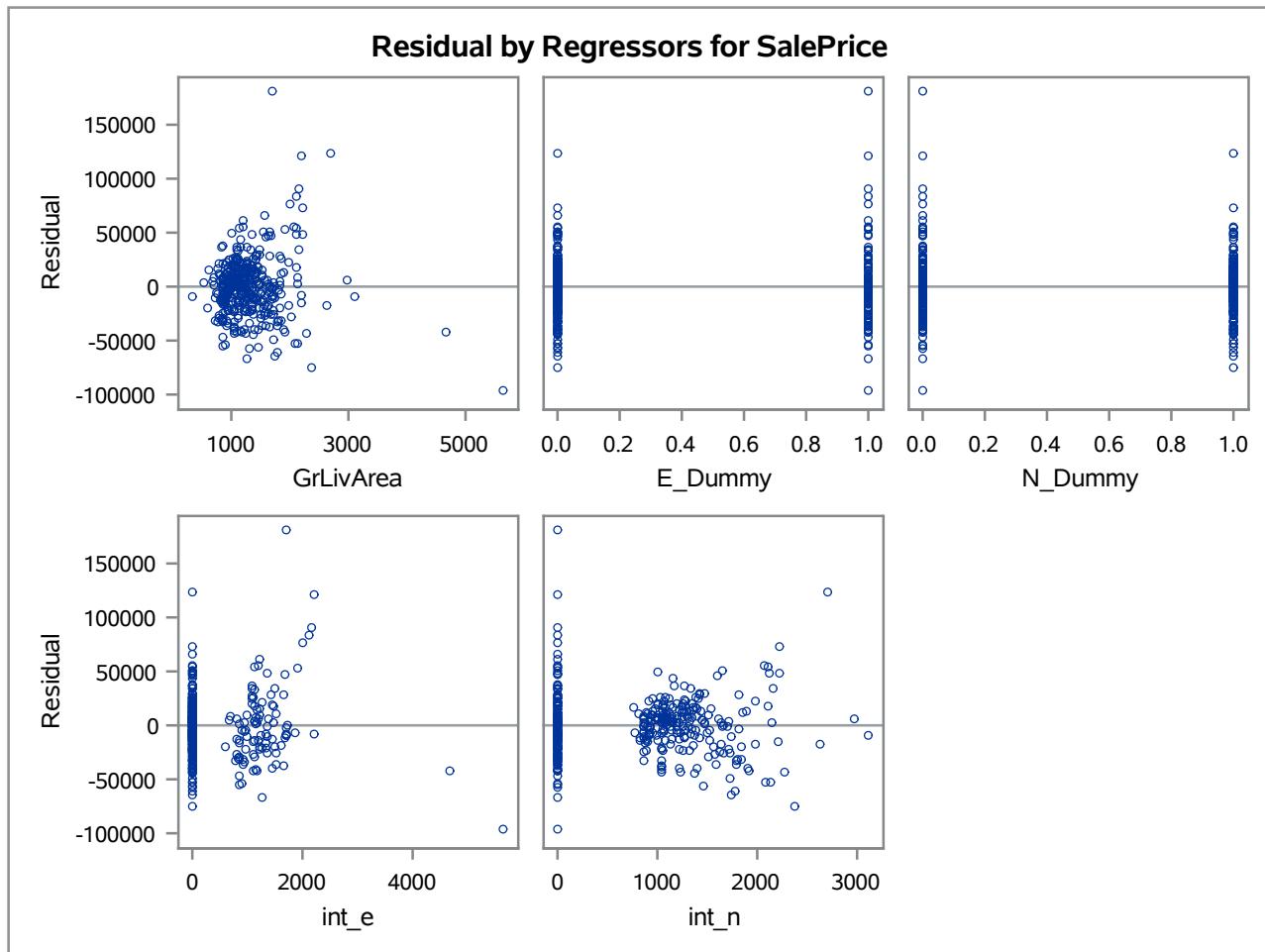
**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



**Linear-Linear MLR with Dummy and Interactions with Influential Point 1299**

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice**



**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice**

Number of Observations Read	382
Number of Observations Used	382

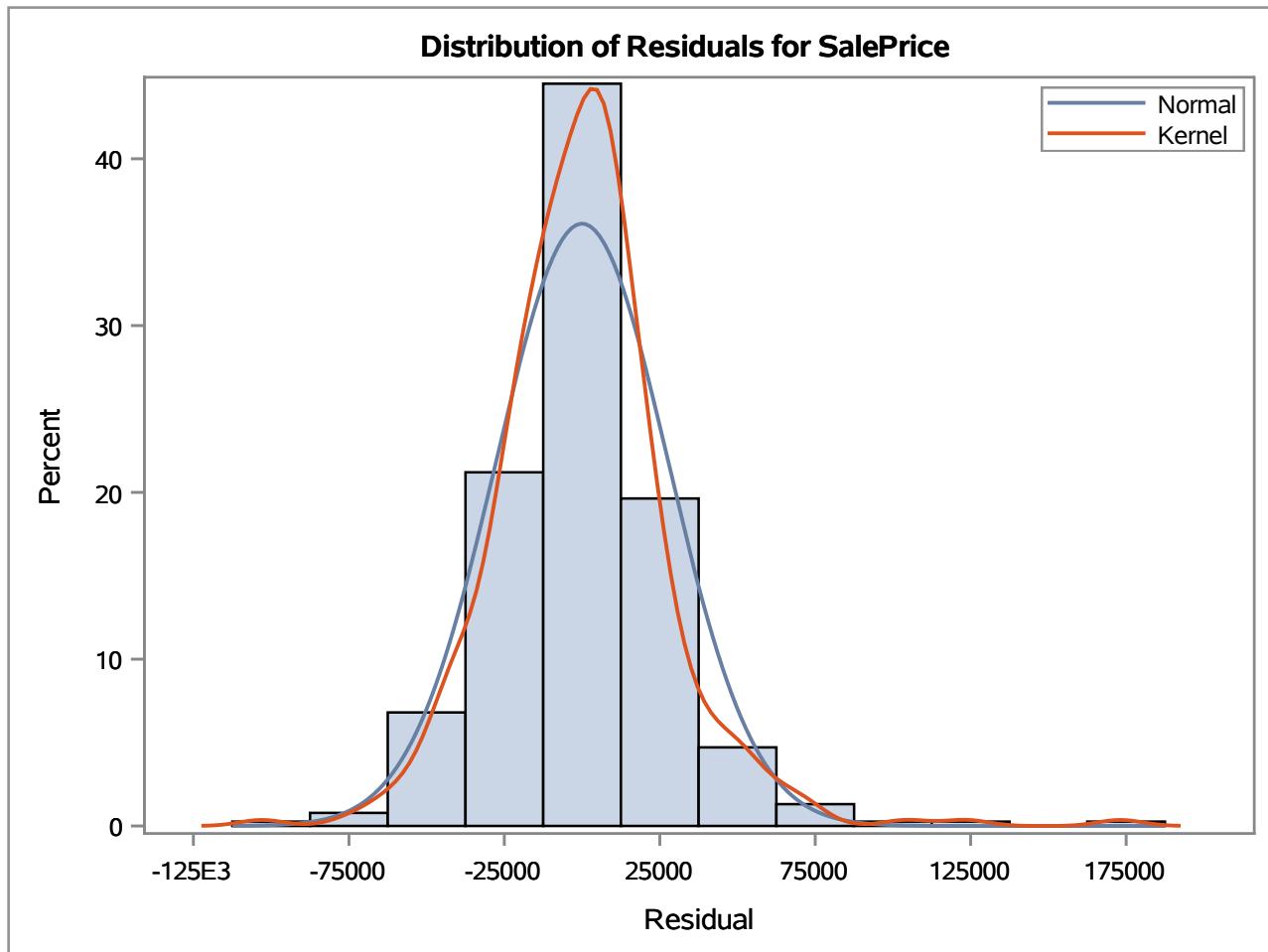
Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
<b>Model</b>	5	2.650162E11	53003234724	68.57	<.0001
<b>Error</b>	376	2.906534E11	773014472		
<b>Corrected Total</b>	381	5.556696E11			

Root MSE	27803	R-Square	0.4769
Dependent Mean	138005	Adj R-Sq	0.4700
Coeff Var	20.14646		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	1	19972	12027	1.66	0.0976
<b>GrLivArea</b>	1	87.16253	9.52530	9.15	<.0001
<b>E_Dummy</b>	1	46585	14389	3.24	0.0013
<b>N_Dummy</b>	1	54705	13518	4.05	<.0001
<b>int_e</b>	1	-39.85230	11.09962	-3.59	0.0004
<b>int_n</b>	1	-32.84667	10.53160	-3.12	0.0020

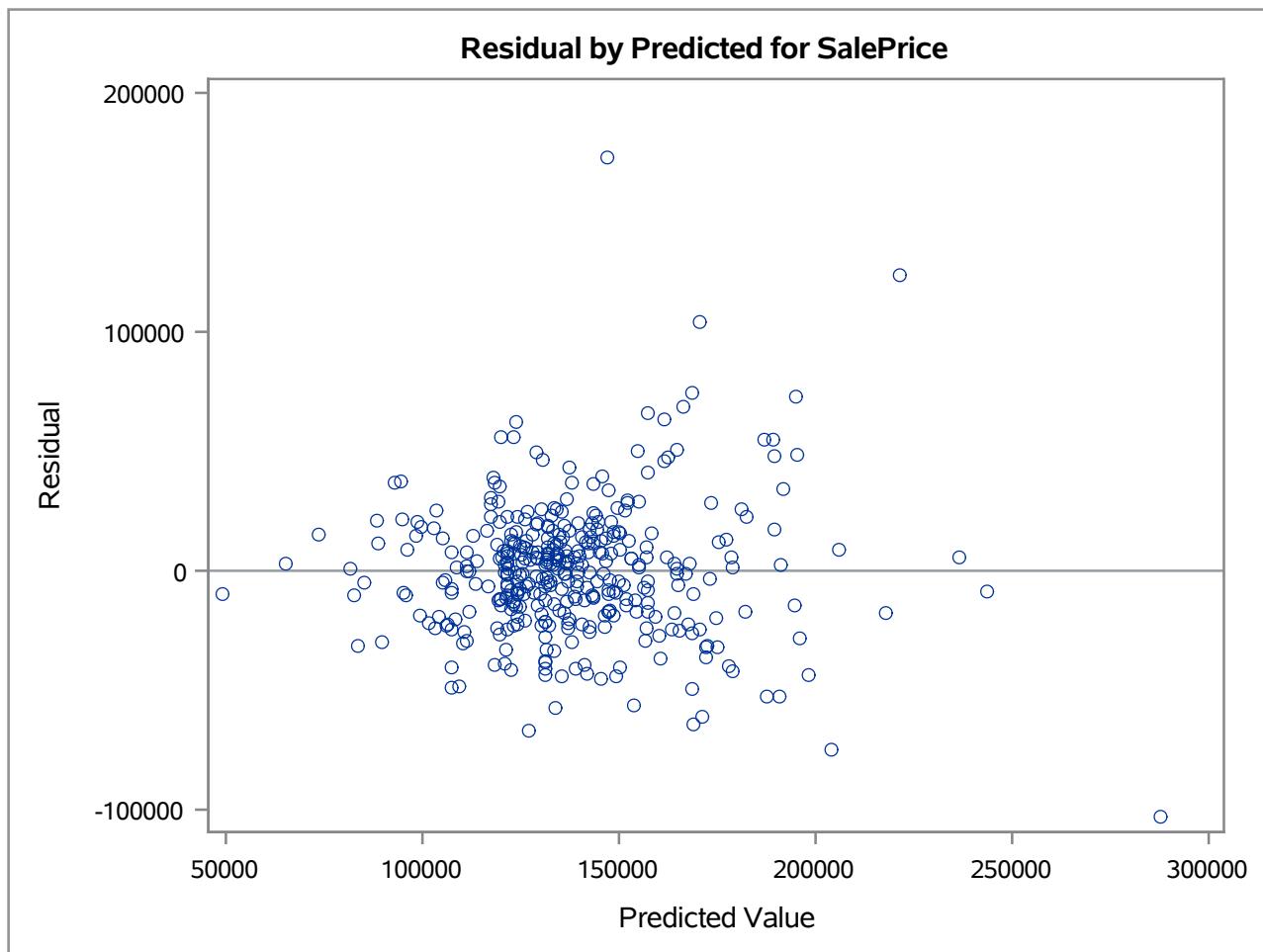
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



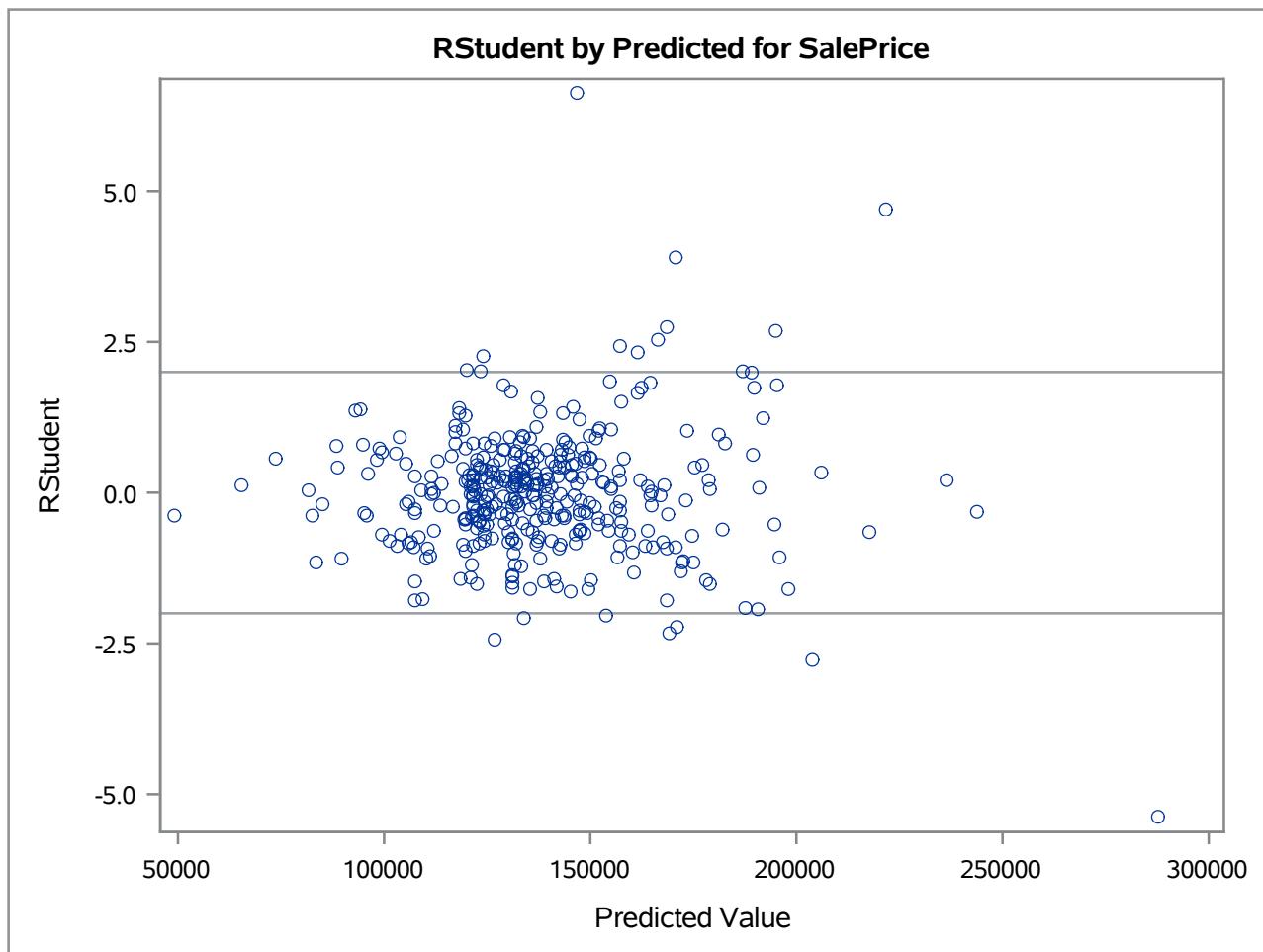
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



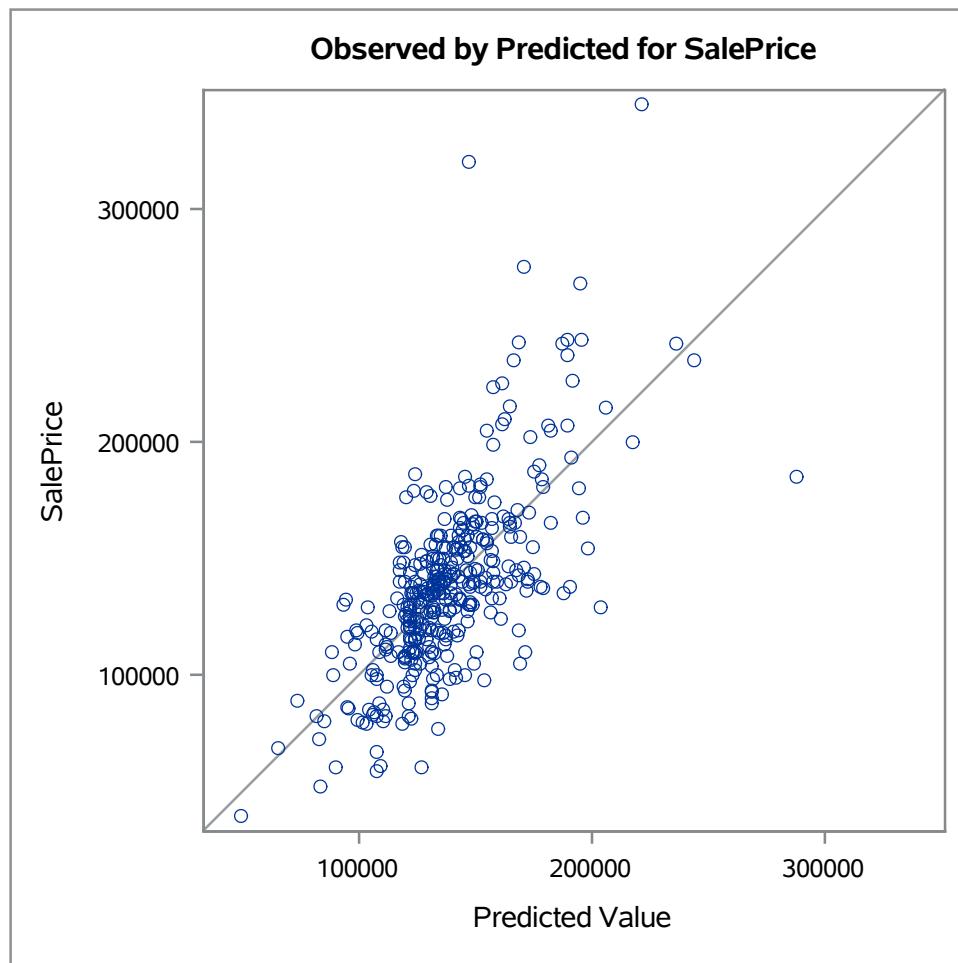
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



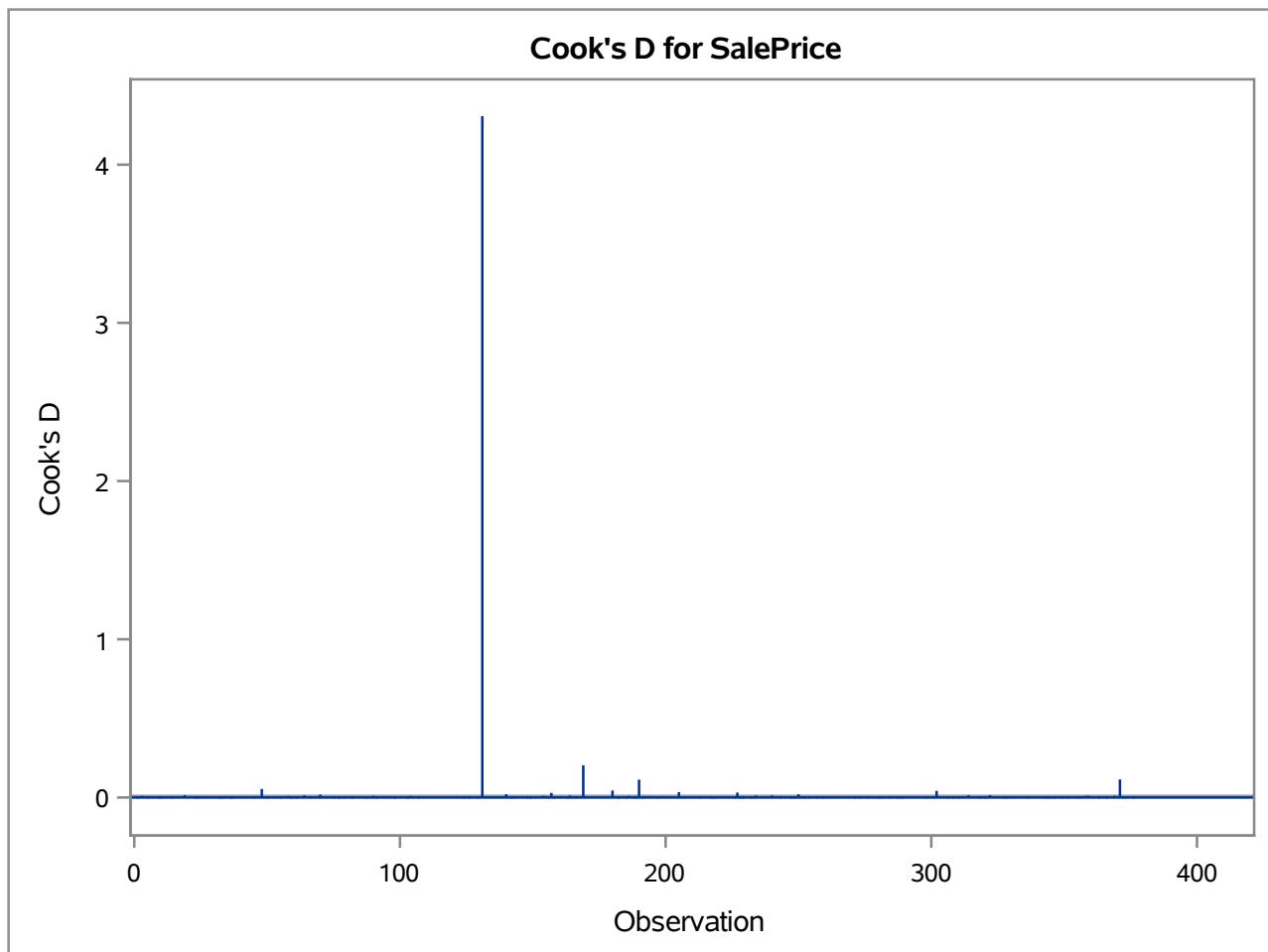
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



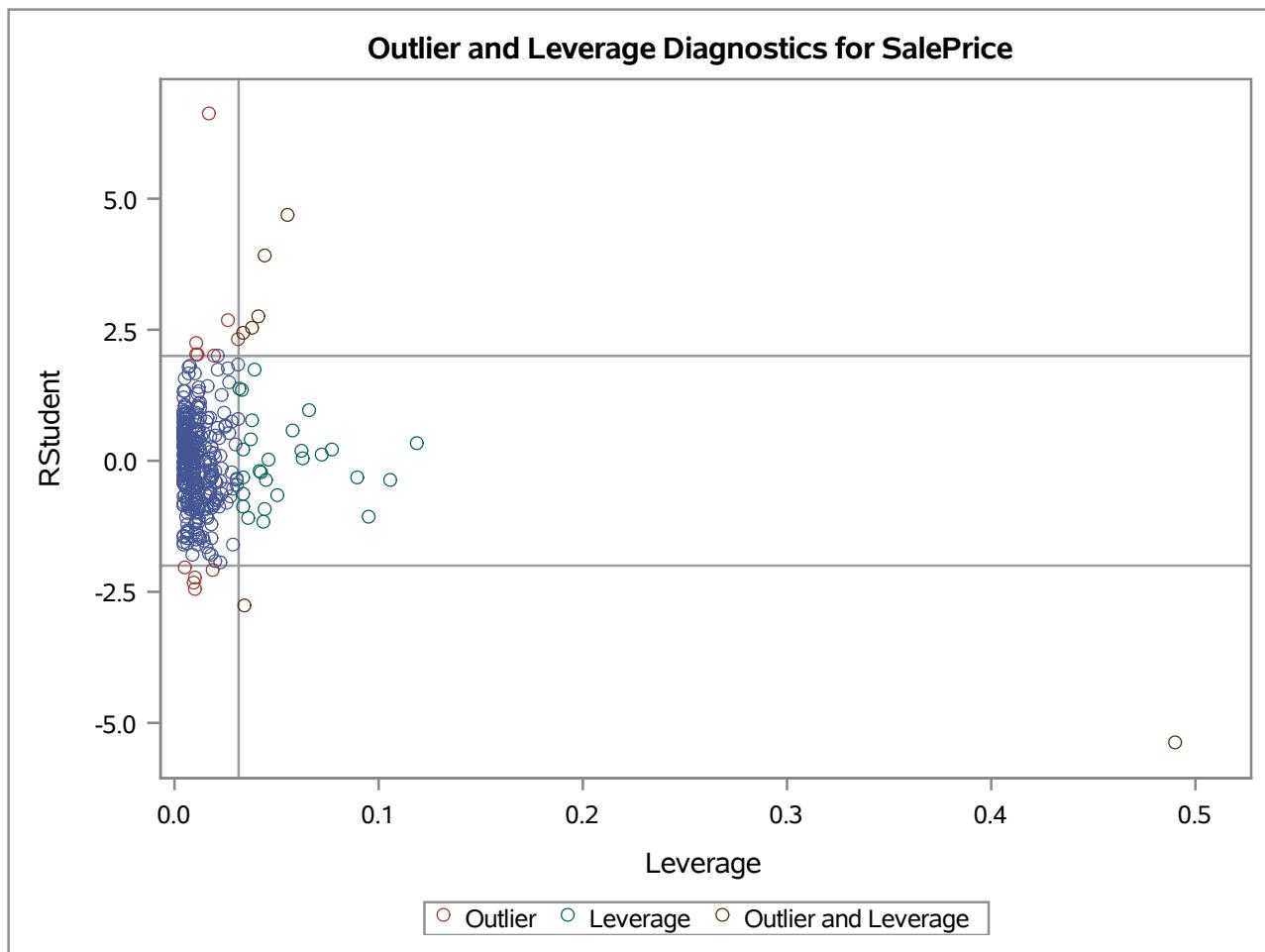
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



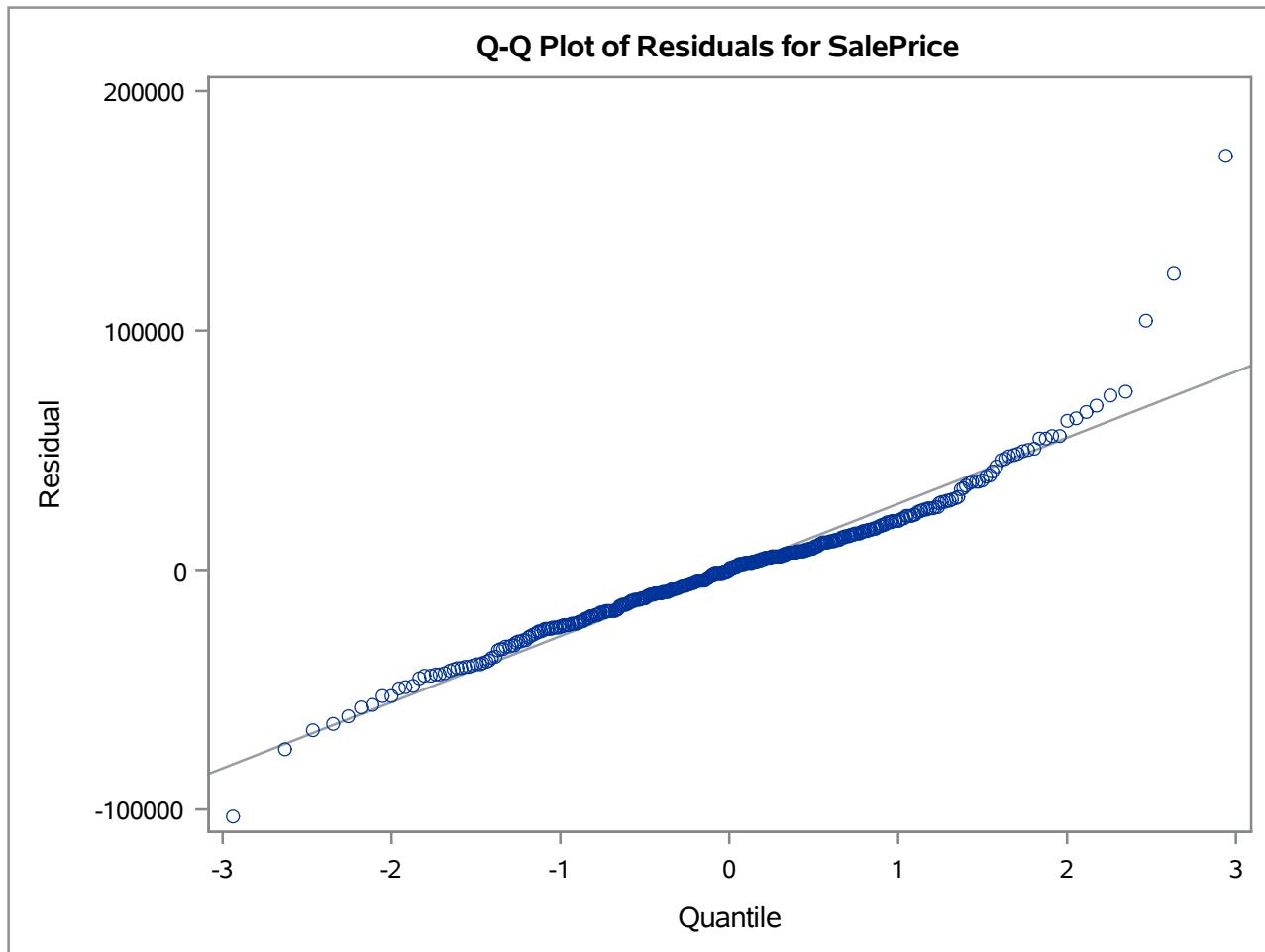
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



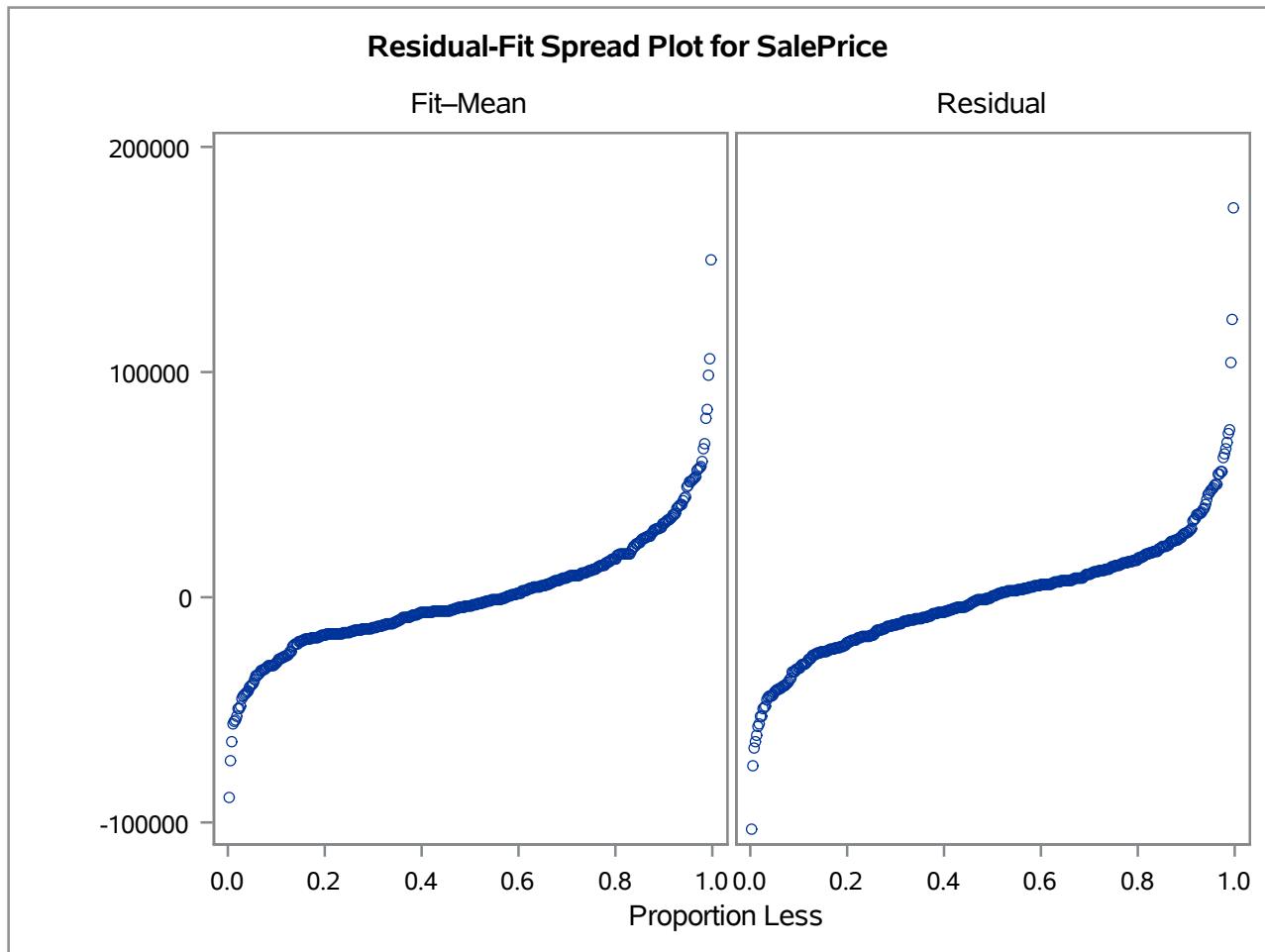
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



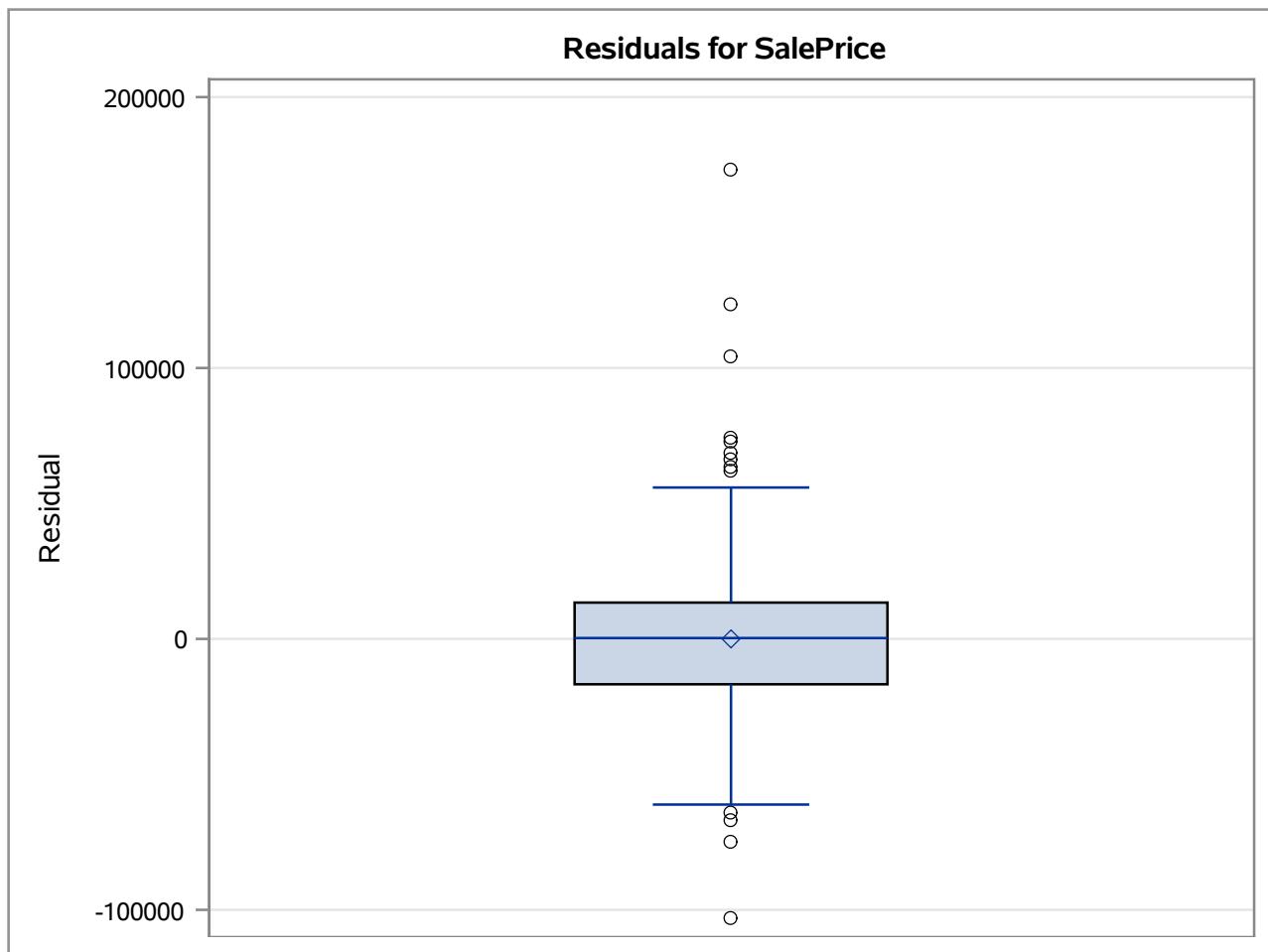
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



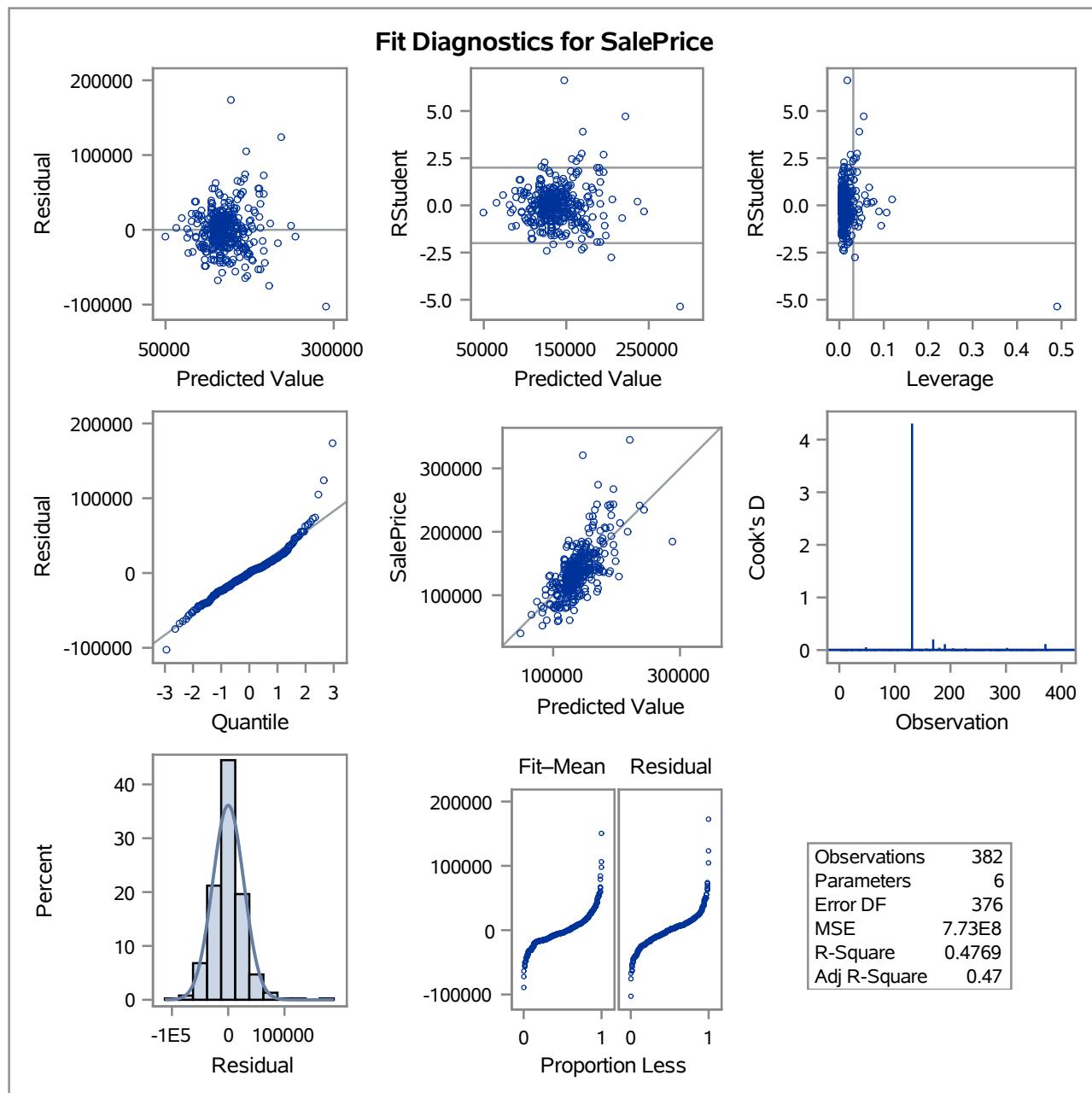
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



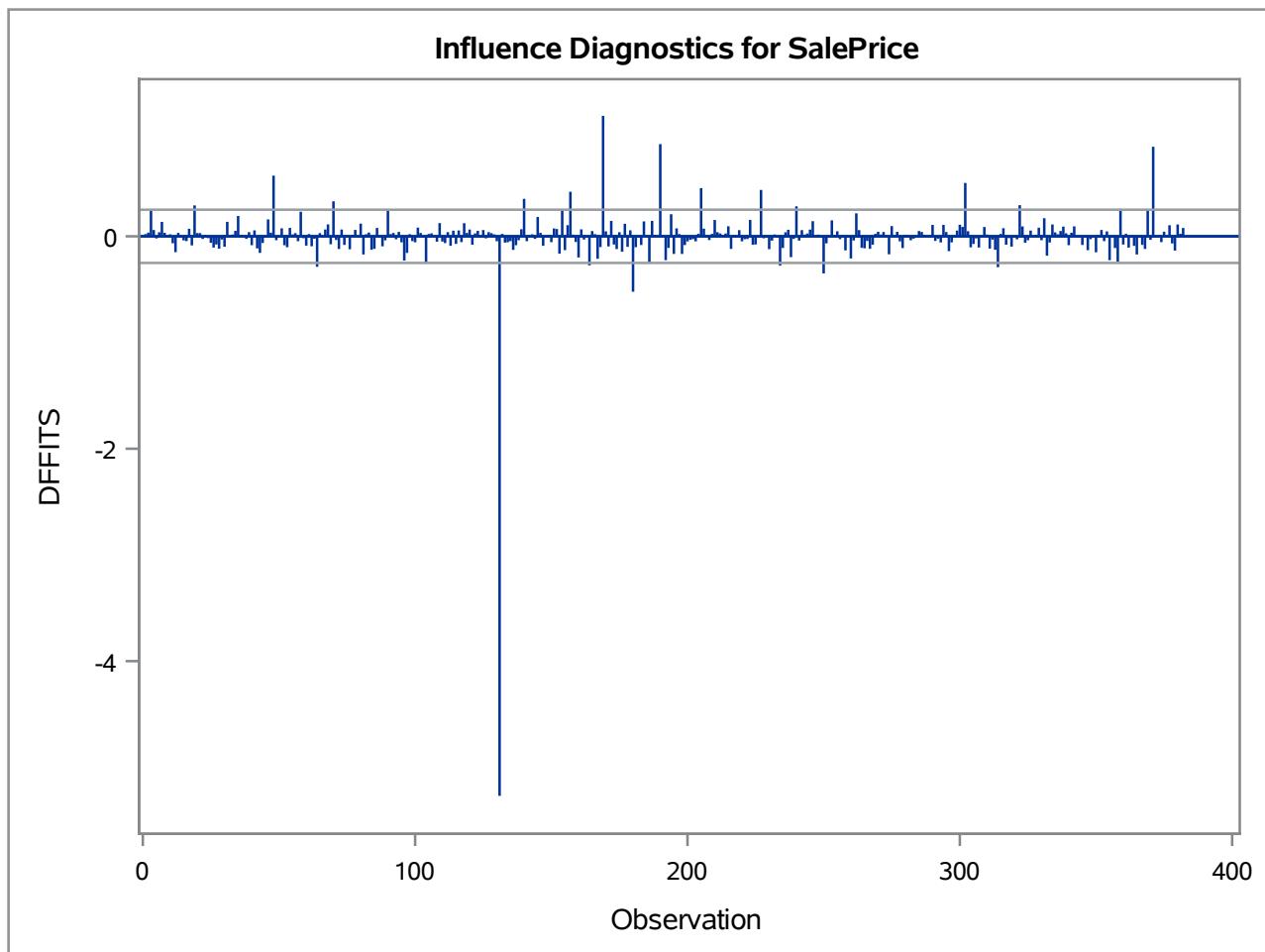
# Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



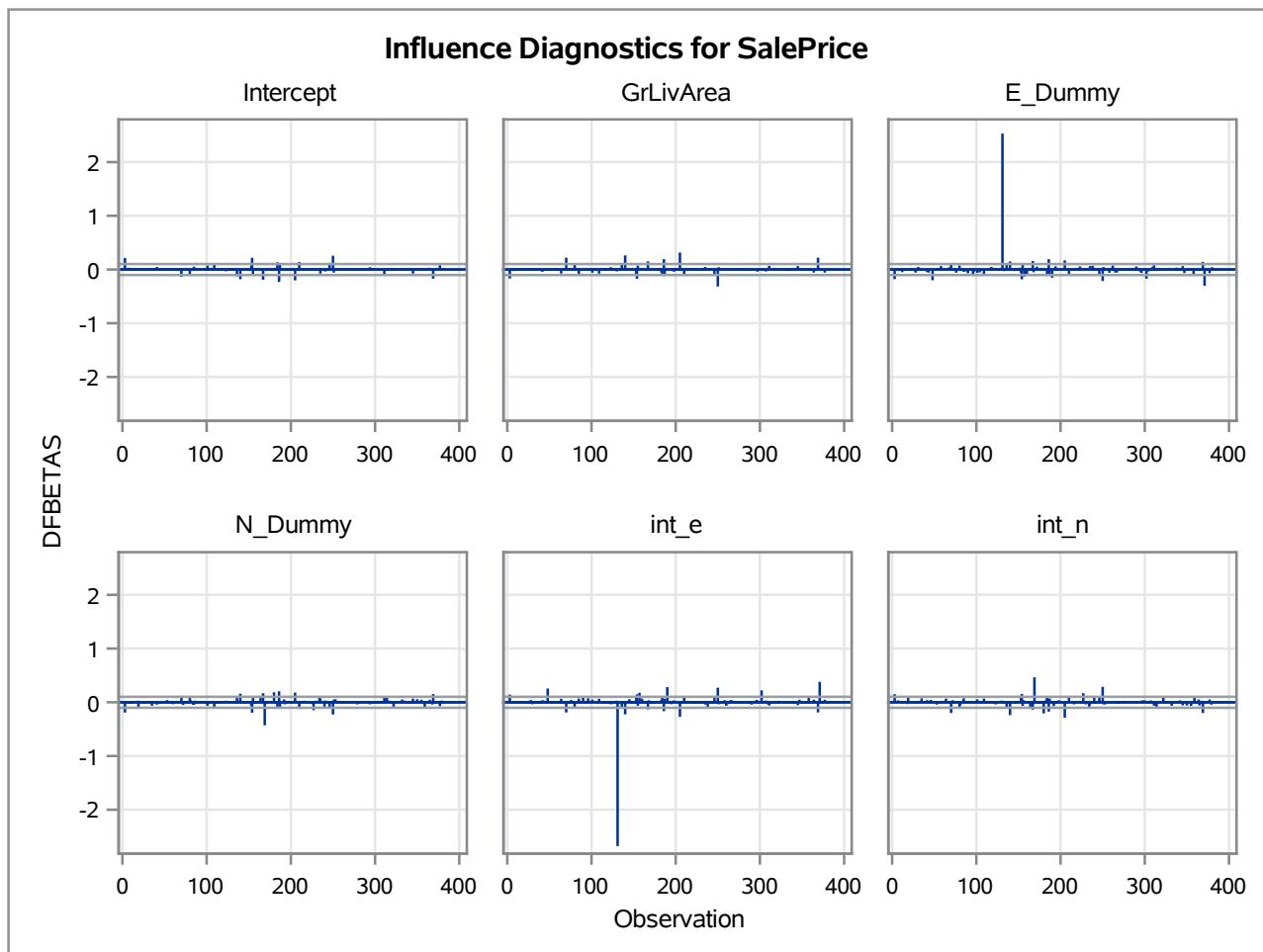
**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



**Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice

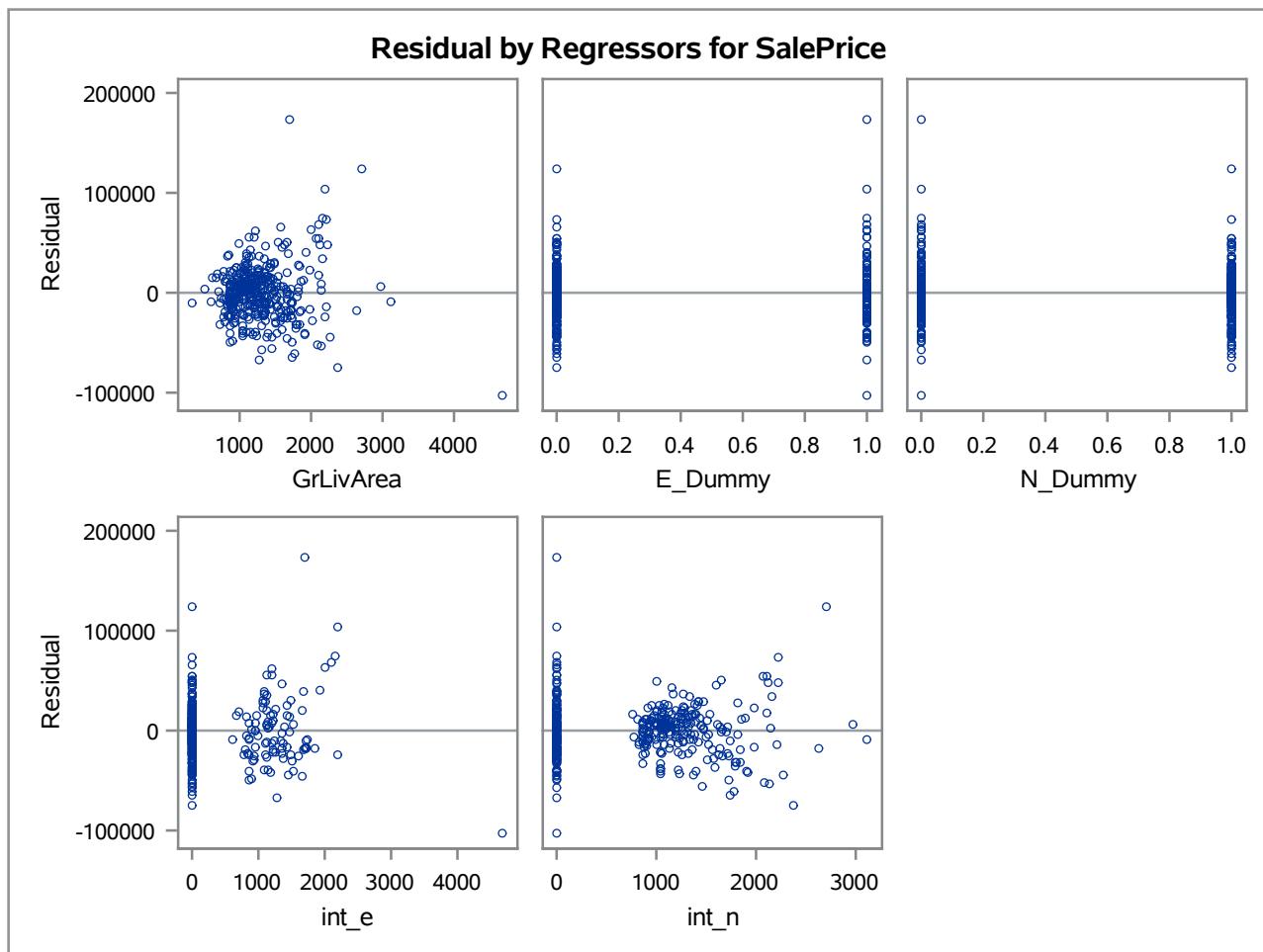


Linear-Linear MLR with Dummy and Interactions w/o Influential Point 1299

## The REG Procedure

**Model: MODEL1**

## Dependent Variable: SalePrice



## Log-Linear MLR with Dummy and Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**

Number of Observations Read	383
Number of Observations Used	383

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
<b>Model</b>	5	13.31148	2.66230	65.79	<.0001
<b>Error</b>	377	15.25484	0.04046		
<b>Corrected Total</b>	382	28.56633			

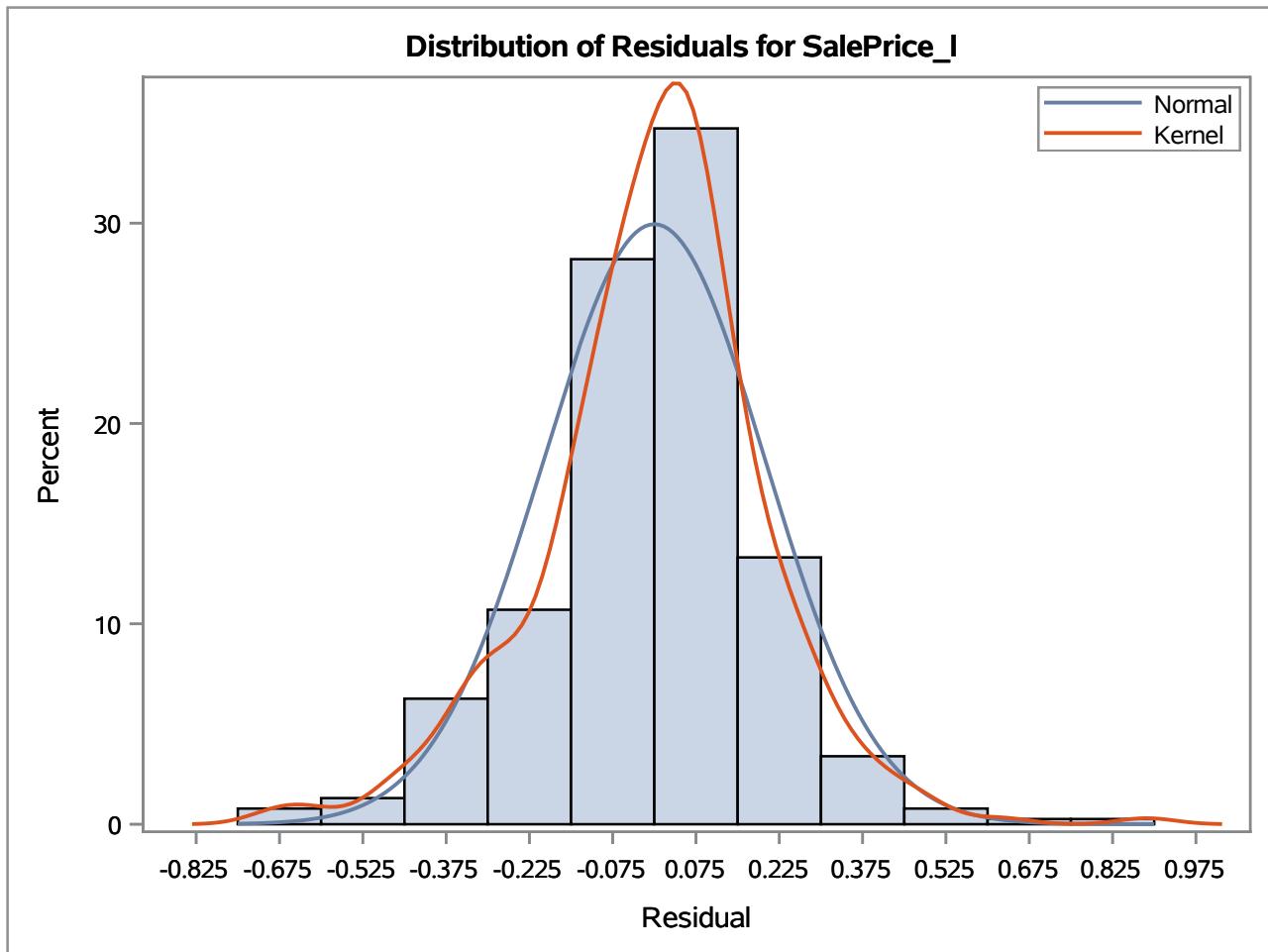
<b>Root MSE</b>	0.20116	<b>R-Square</b>	0.4660
<b>Dependent Mean</b>	11.79887	<b>Adj R-Sq</b>	0.4589
<b>Coeff Var</b>	1.70488		

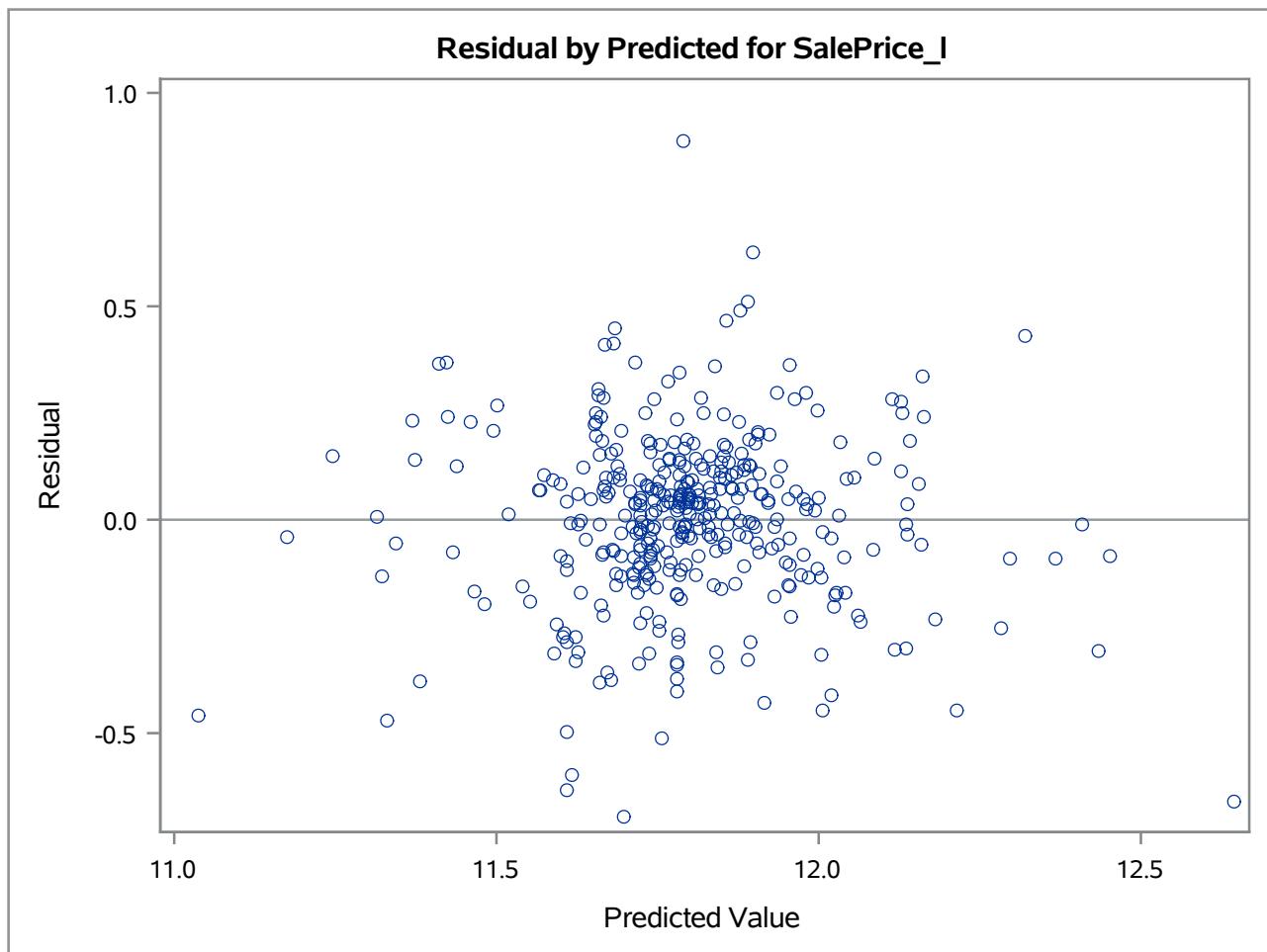
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	1	10.79159	0.08702	124.02	<.0001
<b>GrLivArea</b>	1	0.00073822	0.00006892	10.71	<.0001
<b>E_Dummy</b>	1	0.63035	0.09842	6.40	<.0001
<b>N_Dummy</b>	1	0.65175	0.09780	6.66	<.0001
<b>int_e</b>	1	-0.00052153	0.00007551	-6.91	<.0001
<b>int_n</b>	1	-0.00041410	0.00007620	-5.43	<.0001

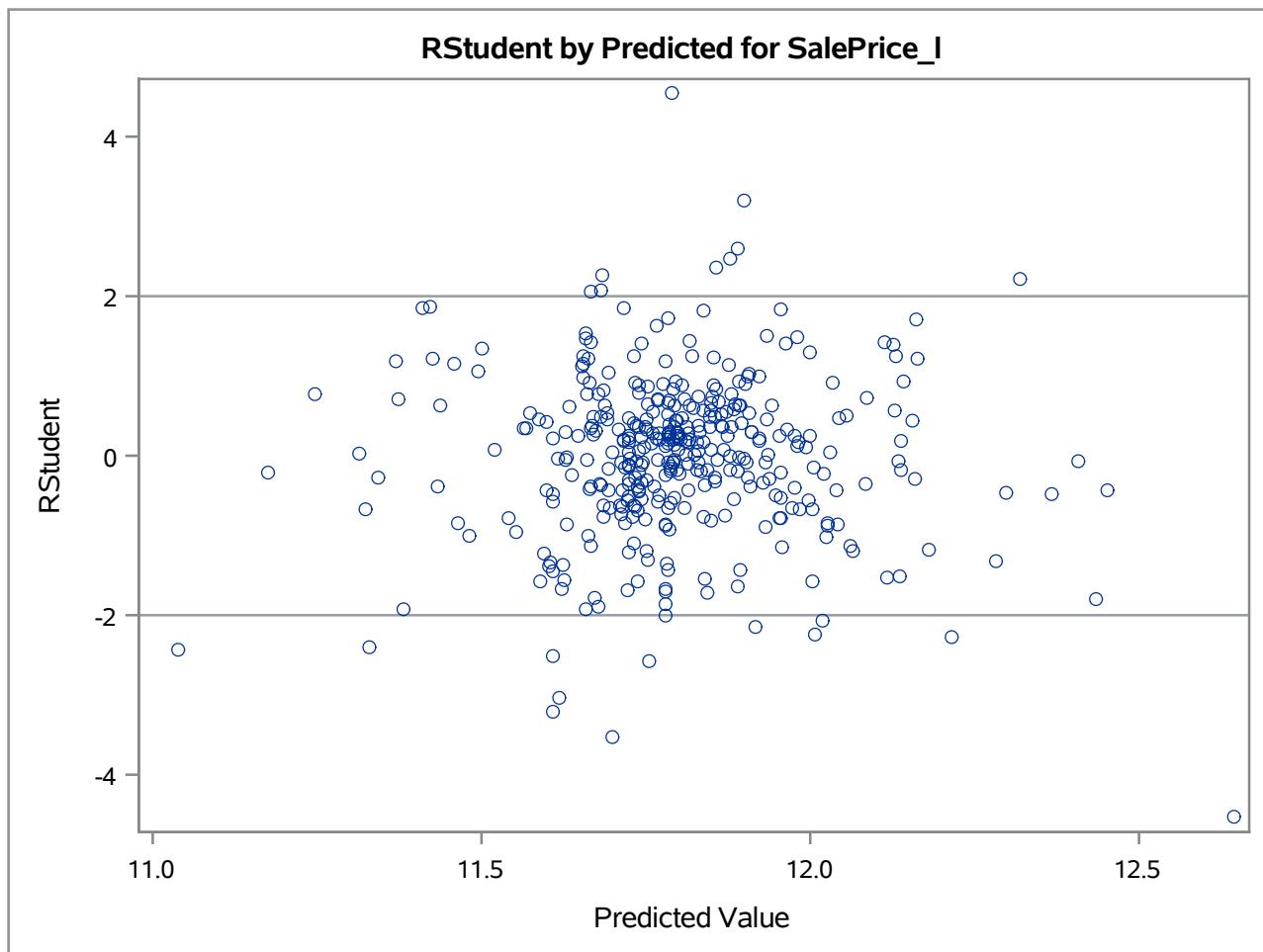
**Log-Linear MLR with Dummy and Interactions****The REG Procedure**

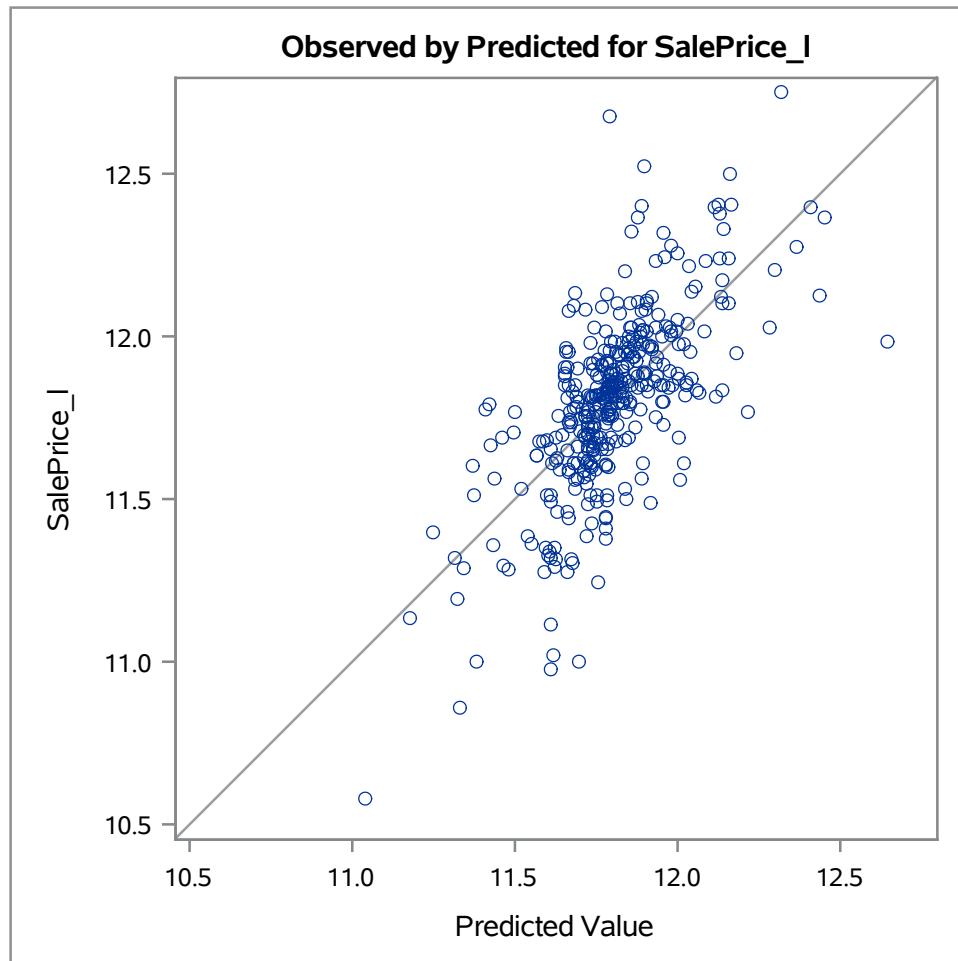
Model: MODEL1

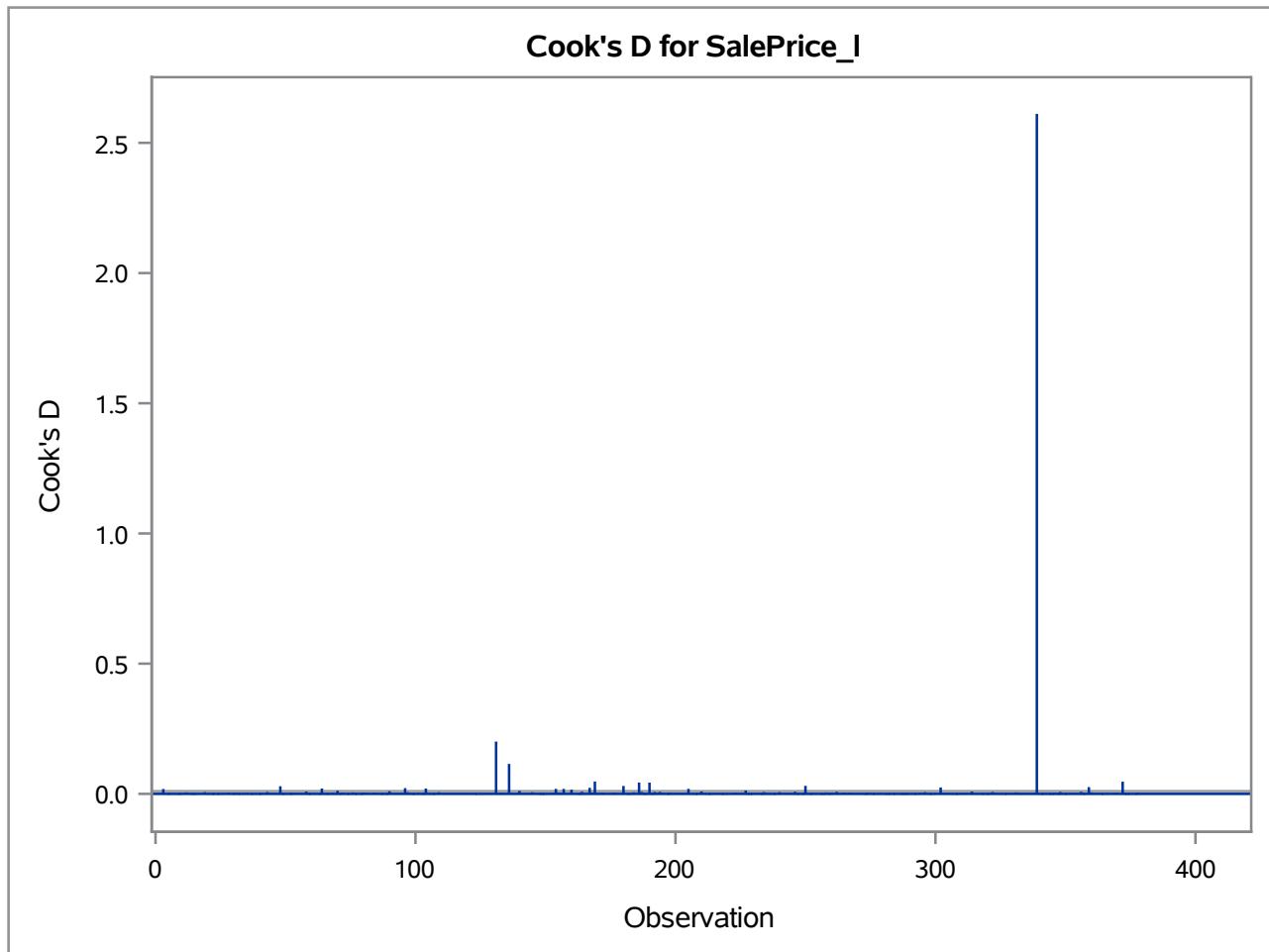
Dependent Variable: SalePrice\_I

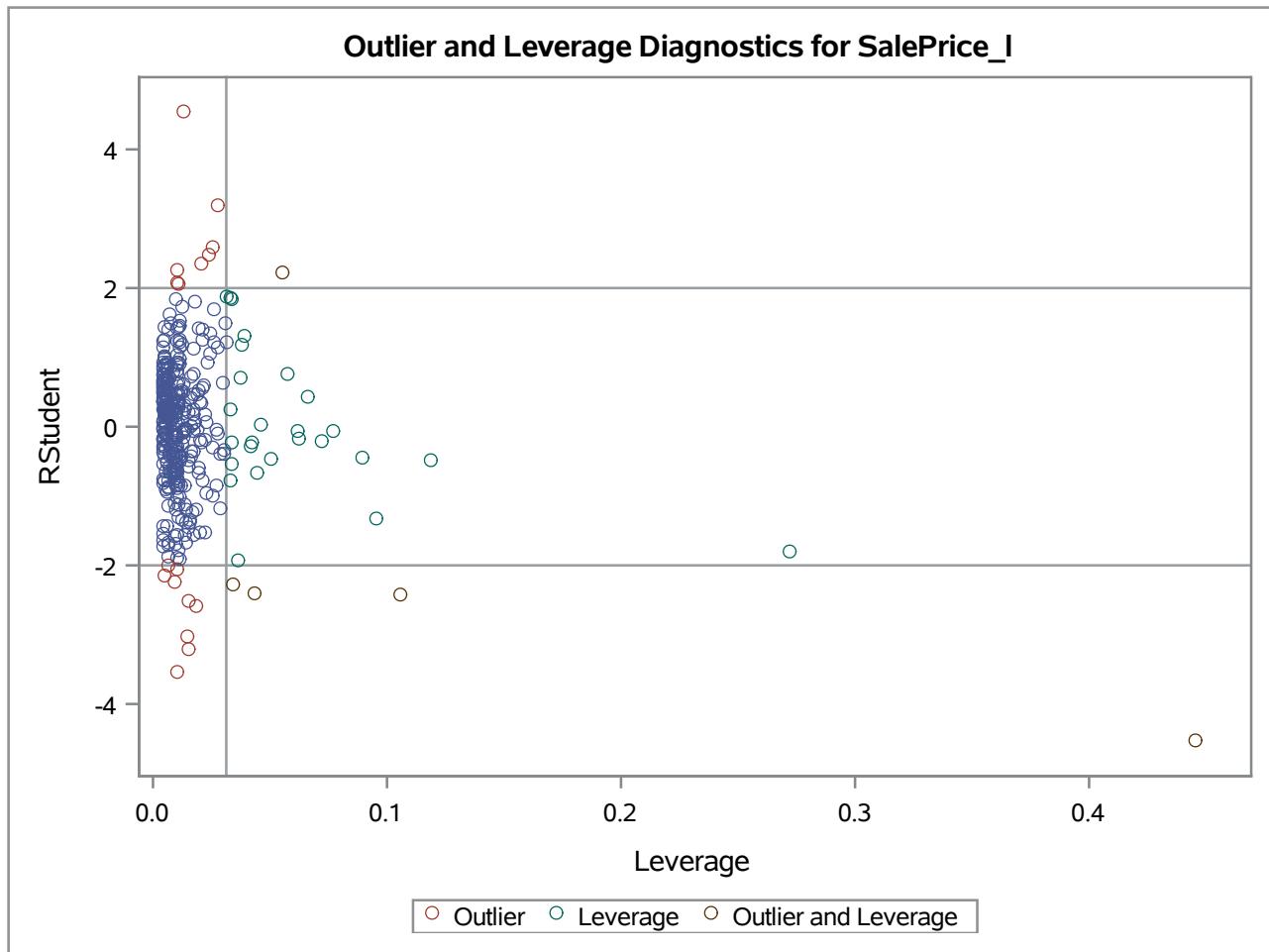


**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

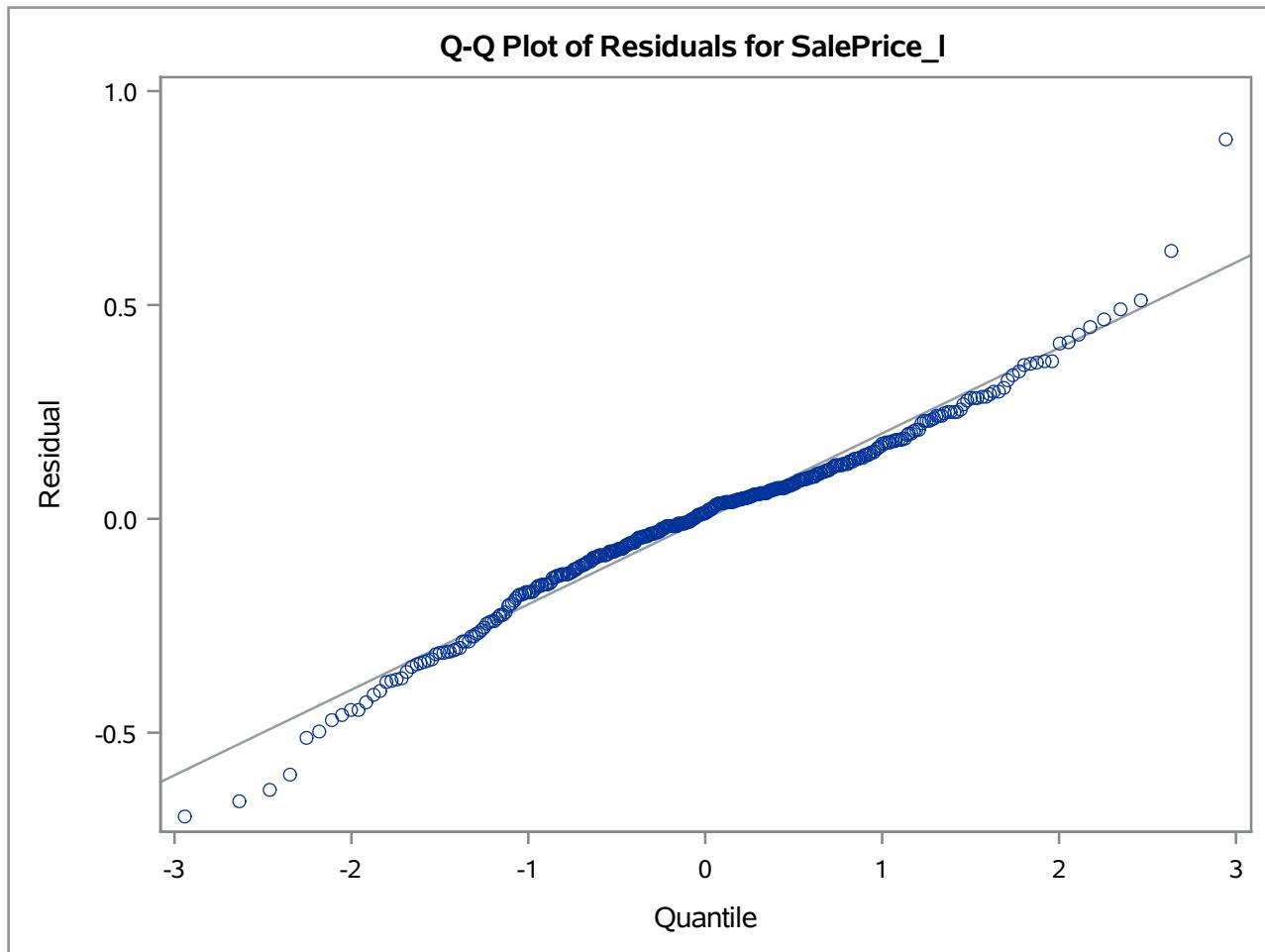
**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Linear MLR with Dummy and Interactions**

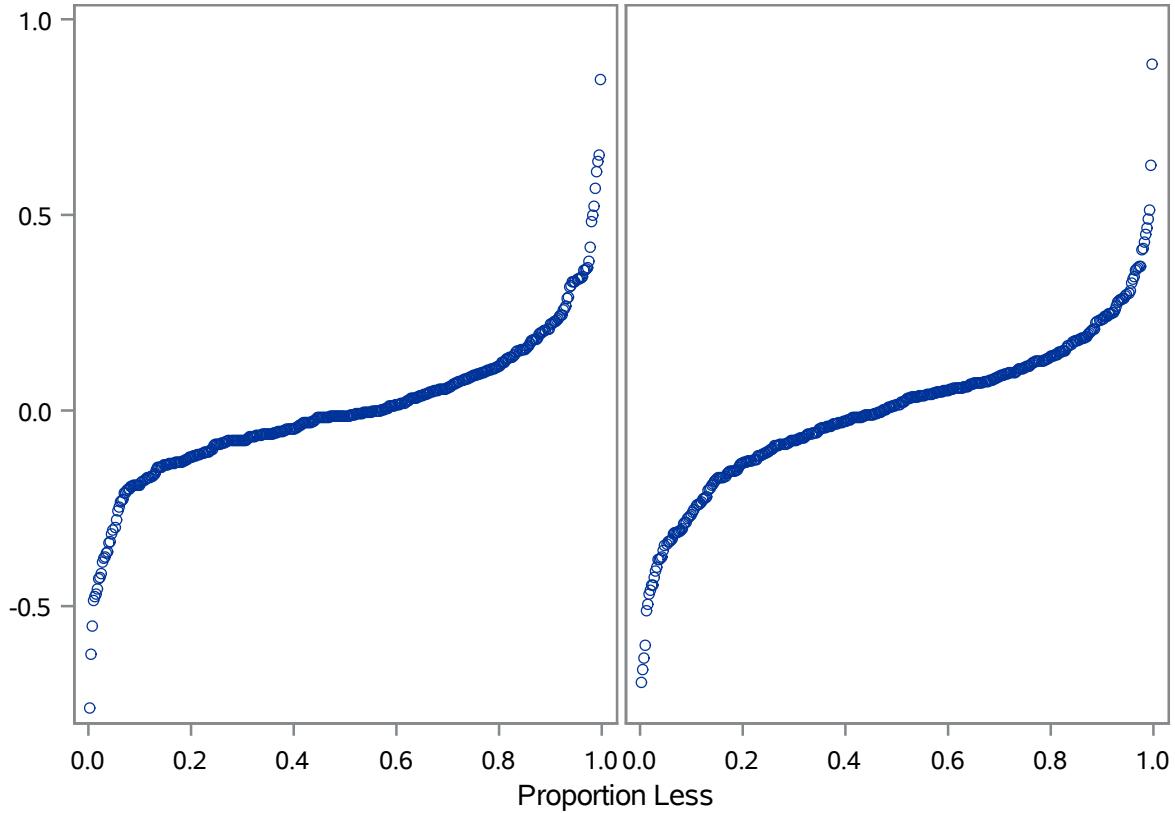
The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice\_I



**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Residual-Fit Spread Plot for SalePrice\_I**

Fit-Mean

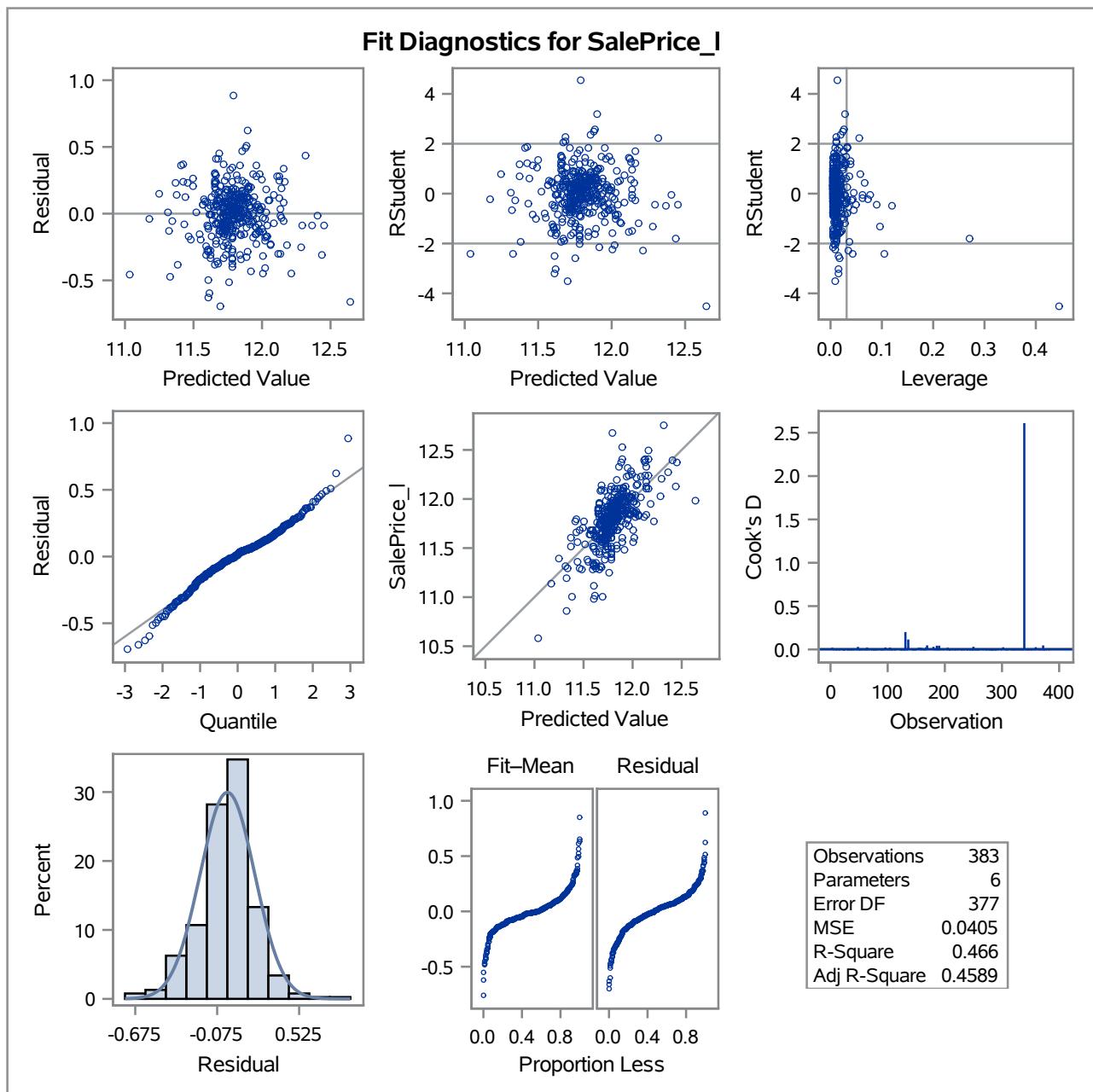
Residual

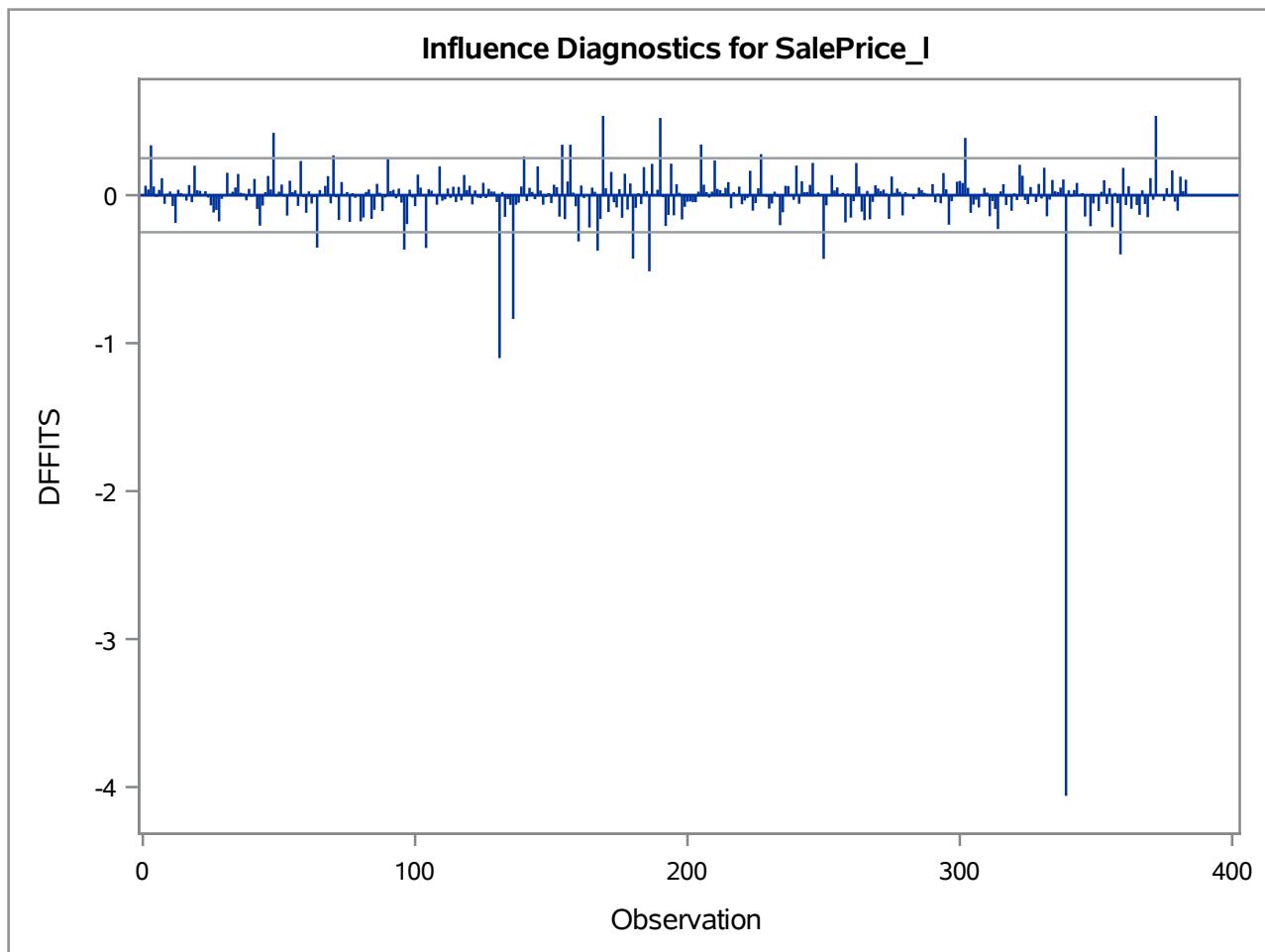


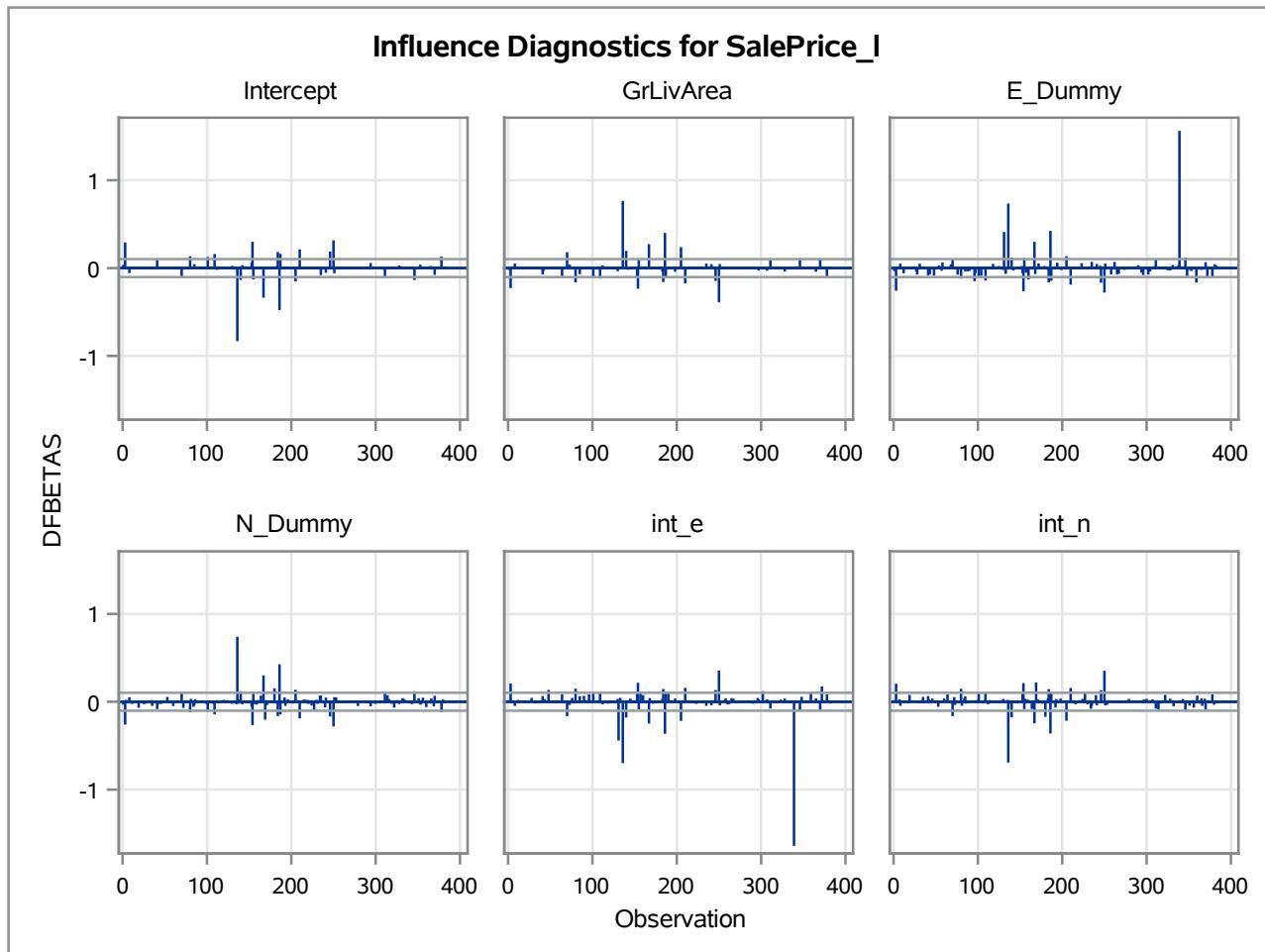
**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Log-Linear MLR with Dummy and Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**



**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

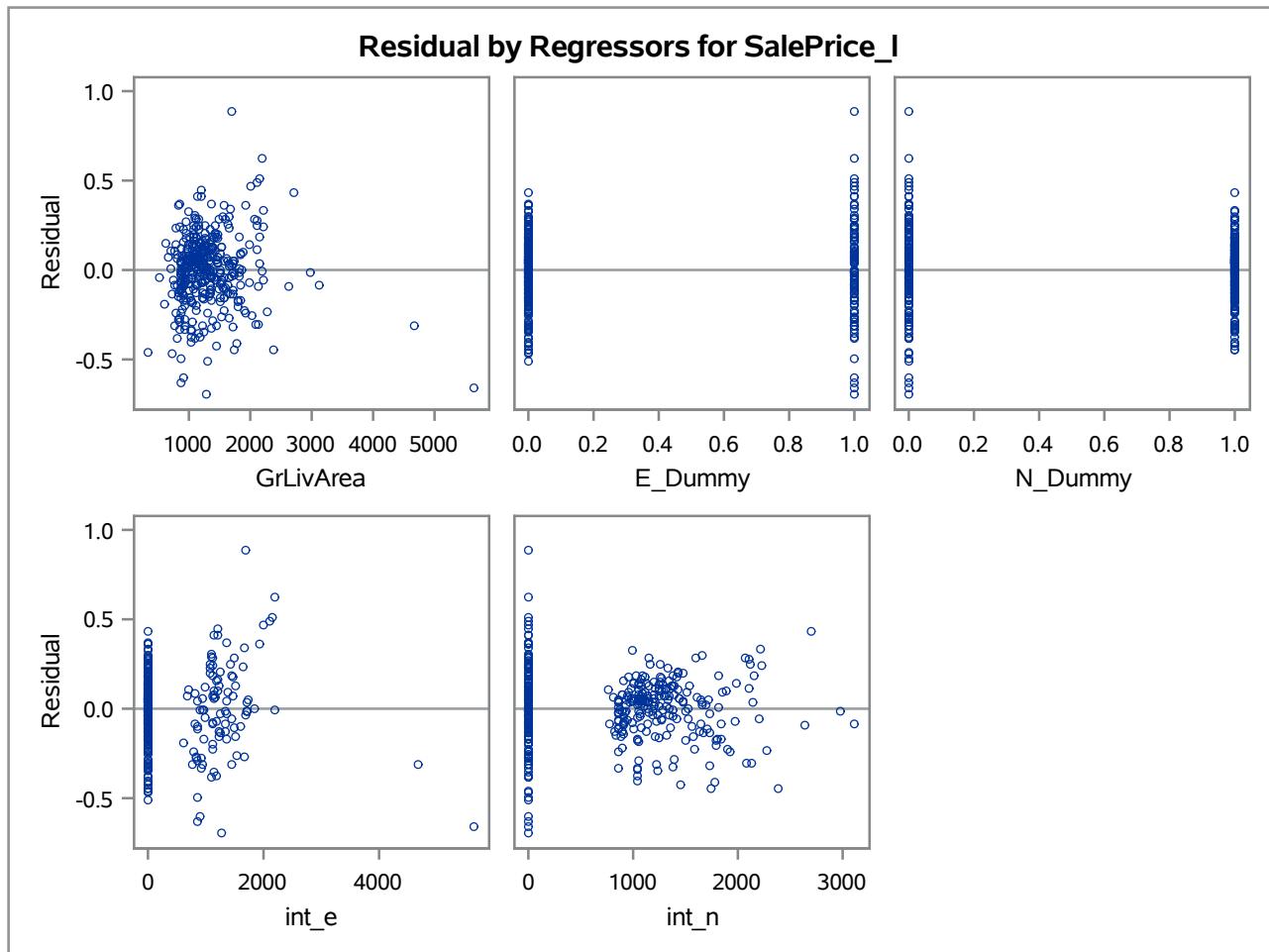
**Log-Linear MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Log-Linear MLR with Dummy and Interactions

**The REG Procedure**

Model: MODEL1

Dependent Variable: SalePrice\_I



## Linear-Log MLR with Dummy and Interactions

### The REG Procedure

Model: MODEL1

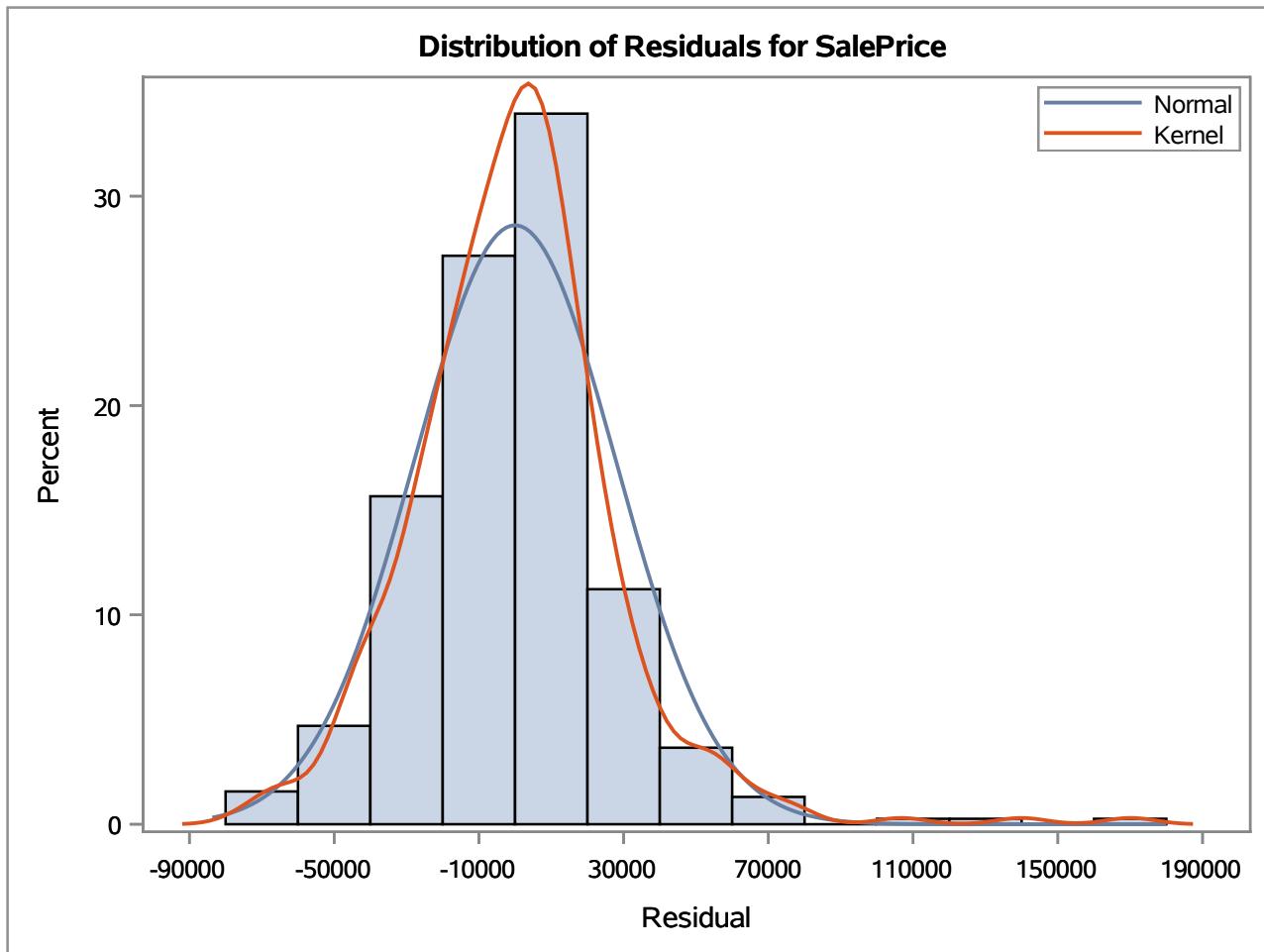
Dependent Variable: SalePrice

Number of Observations Read	383
Number of Observations Used	383

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
<b>Model</b>	5	2.590608E11	51812155999	65.75	<.0001
<b>Error</b>	377	2.970913E11	788040713		
<b>Corrected Total</b>	382	5.561521E11			

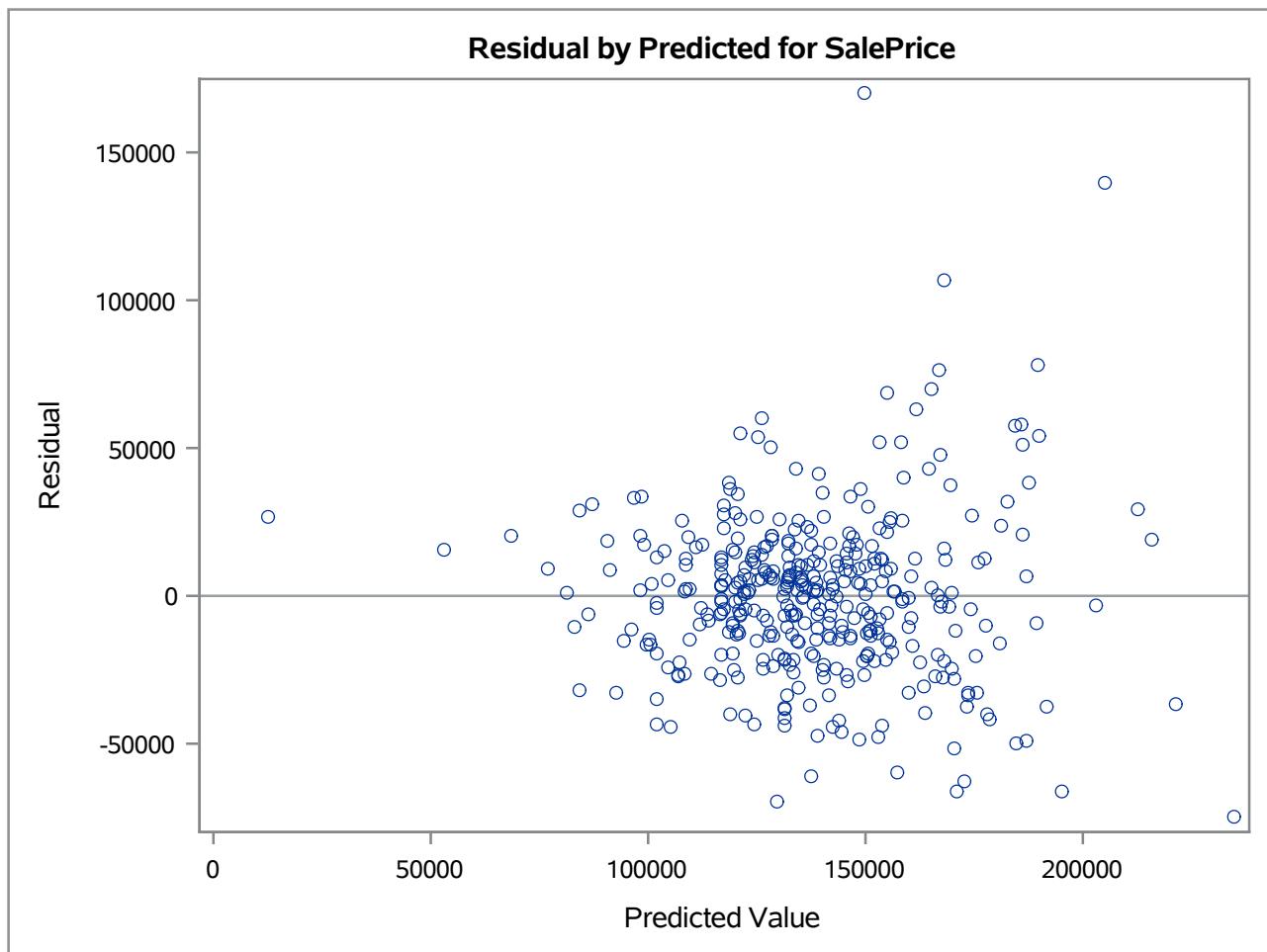
Root MSE	28072	R-Square	0.4658
Dependent Mean	138063	Adj R-Sq	0.4587
Coeff Var	20.33287		

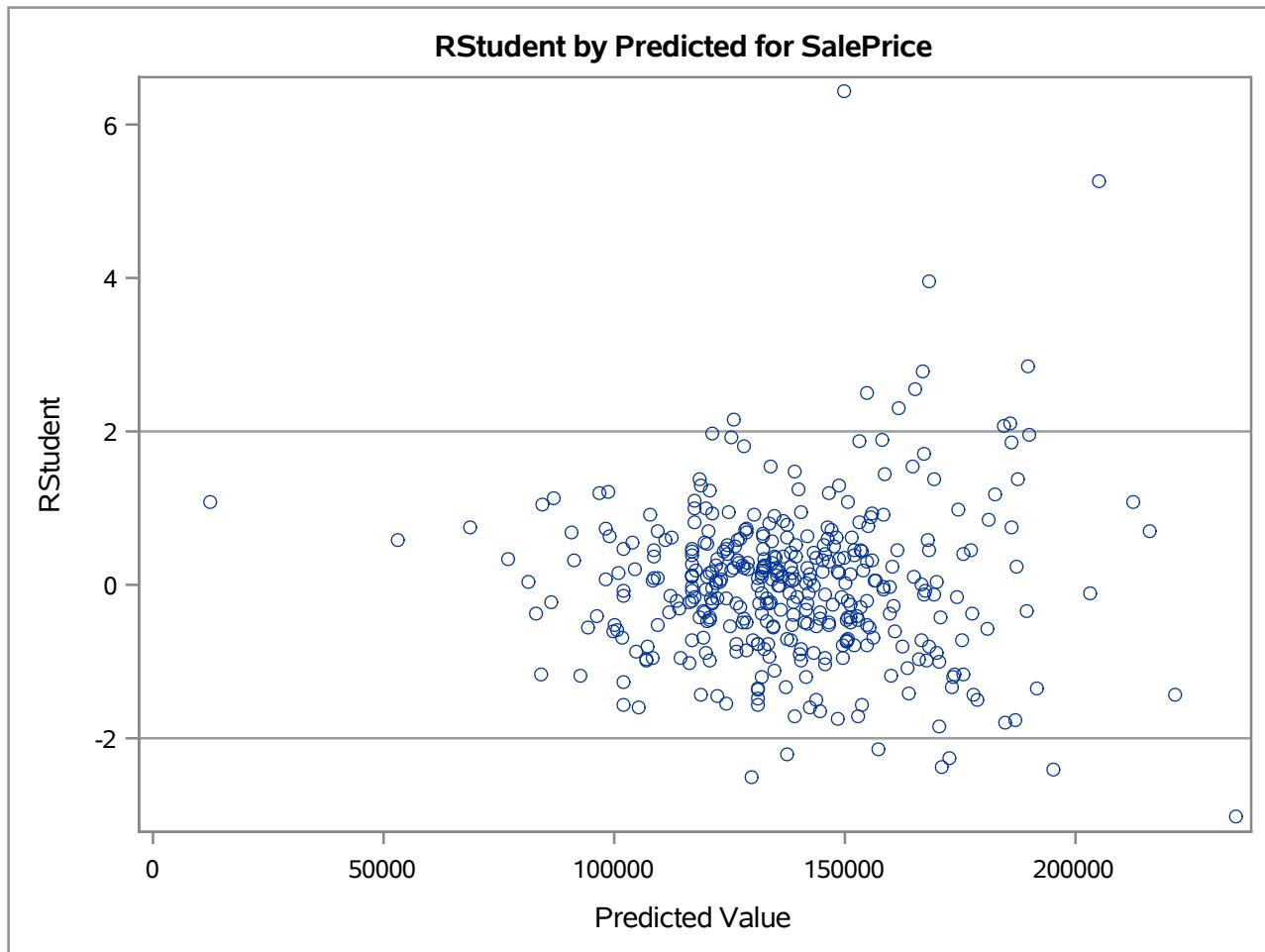
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	1	-520838	73669	-7.07	<.0001
<b>GrLlvArea_I</b>	1	91771	10458	8.78	<.0001
<b>E_Dummy</b>	1	144770	94300	1.54	0.1256
<b>N_Dummy</b>	1	115364	87582	1.32	0.1886
<b>int_e_I</b>	1	-21054	13317	-1.58	0.1147
<b>int_n_I</b>	1	-14507	12384	-1.17	0.2421

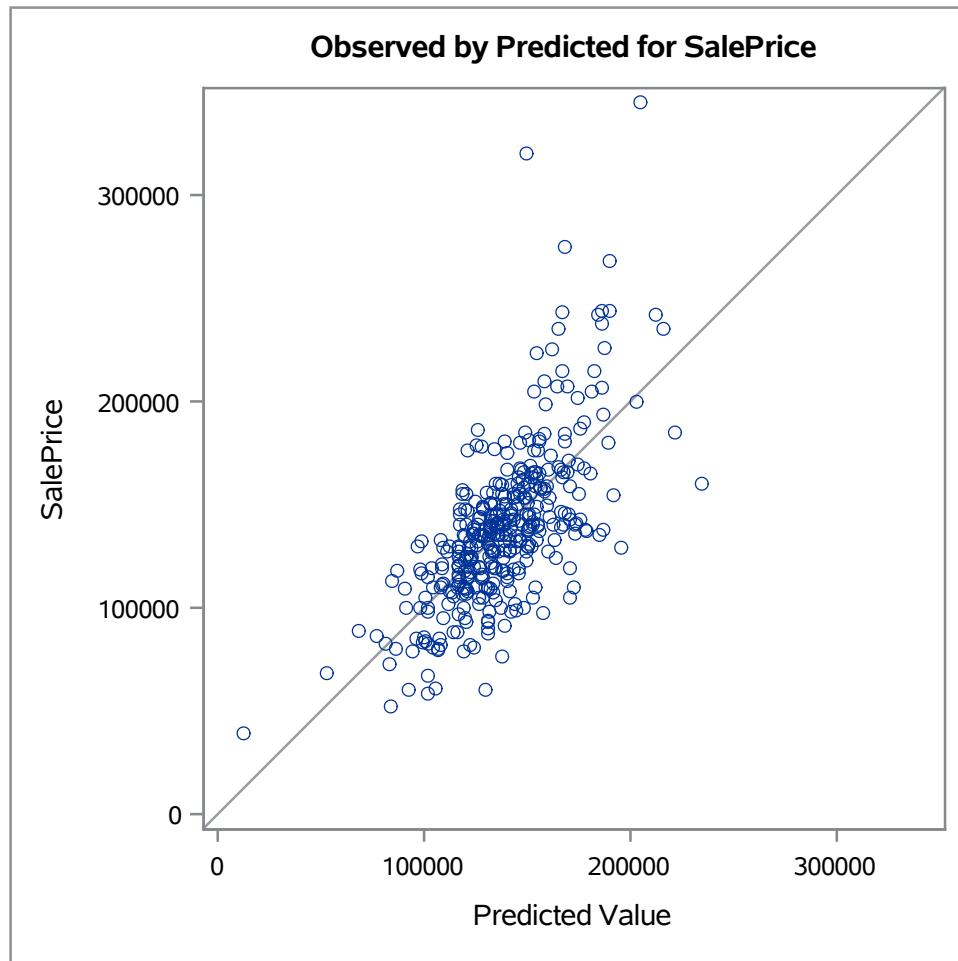
**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

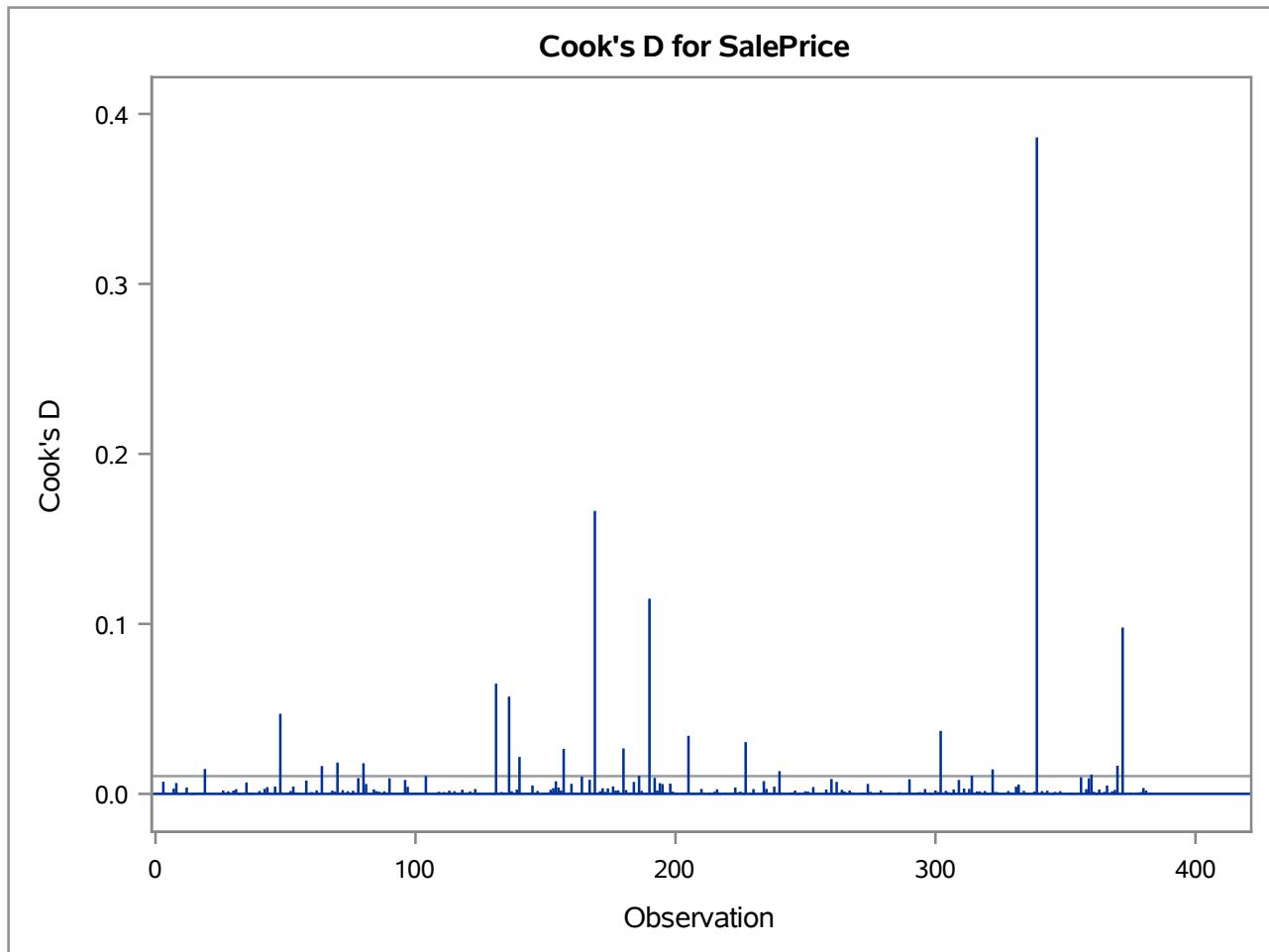
**Linear-Log MLR with Dummy and Interactions**

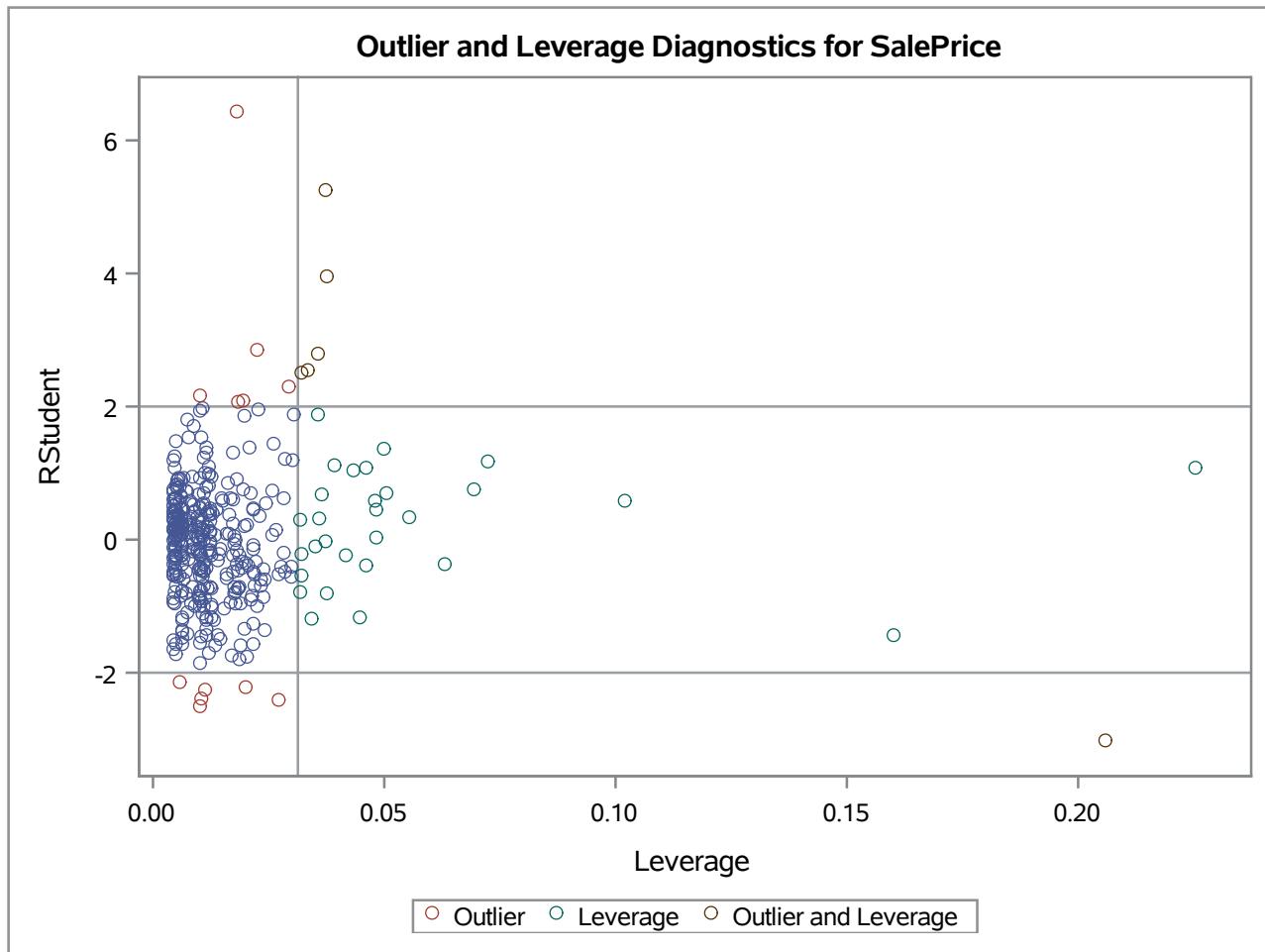
The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

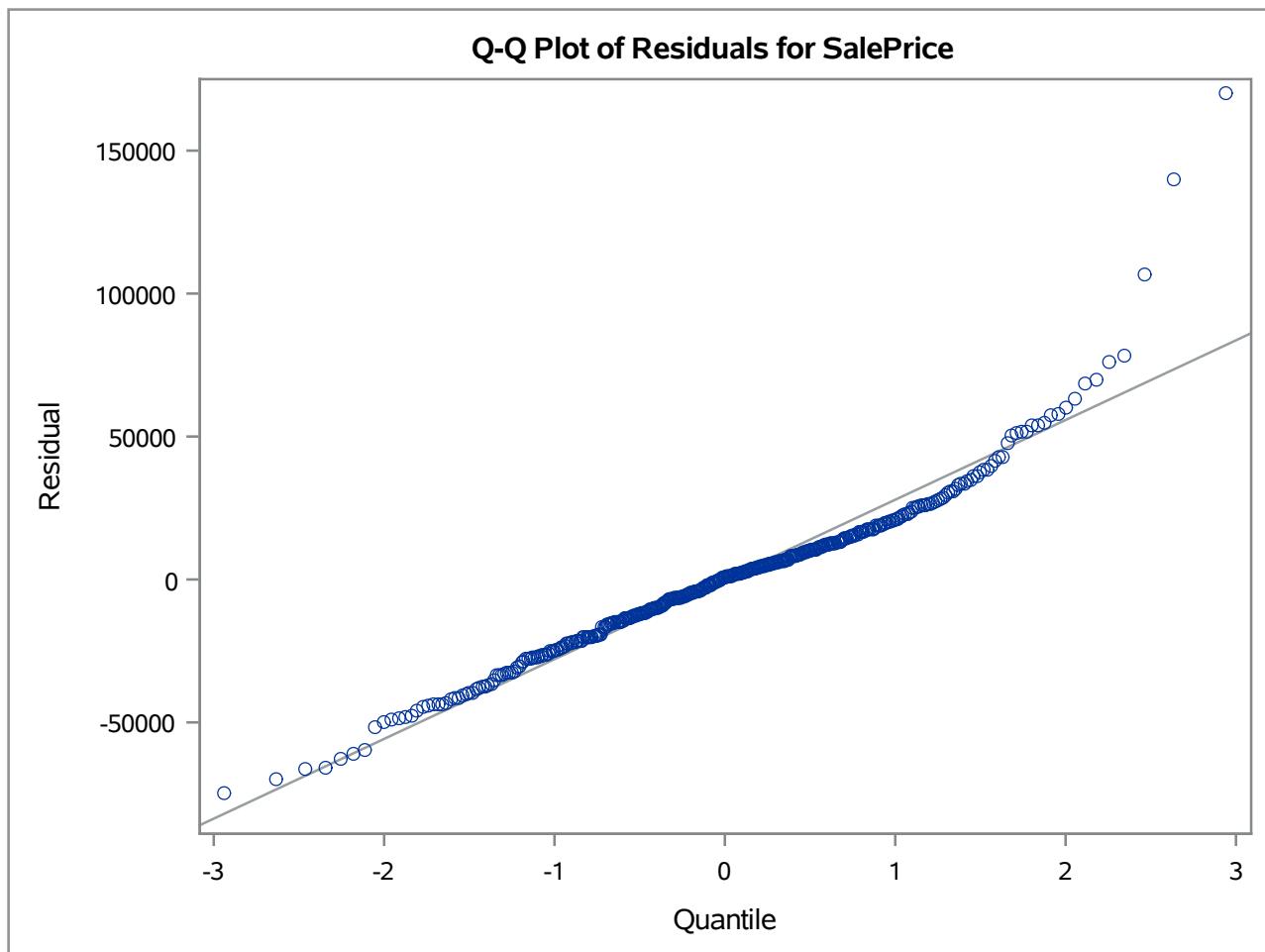
**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

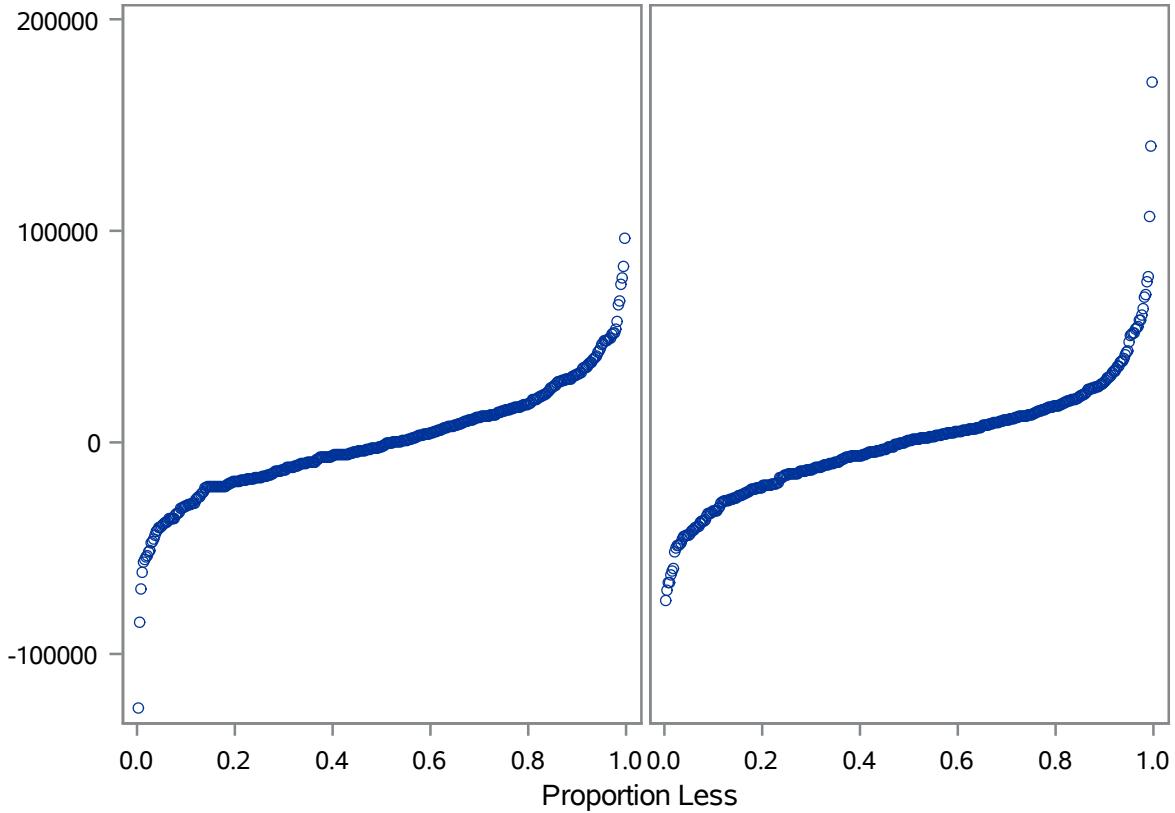
**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

**Linear-Log MLR with Dummy and Interactions**

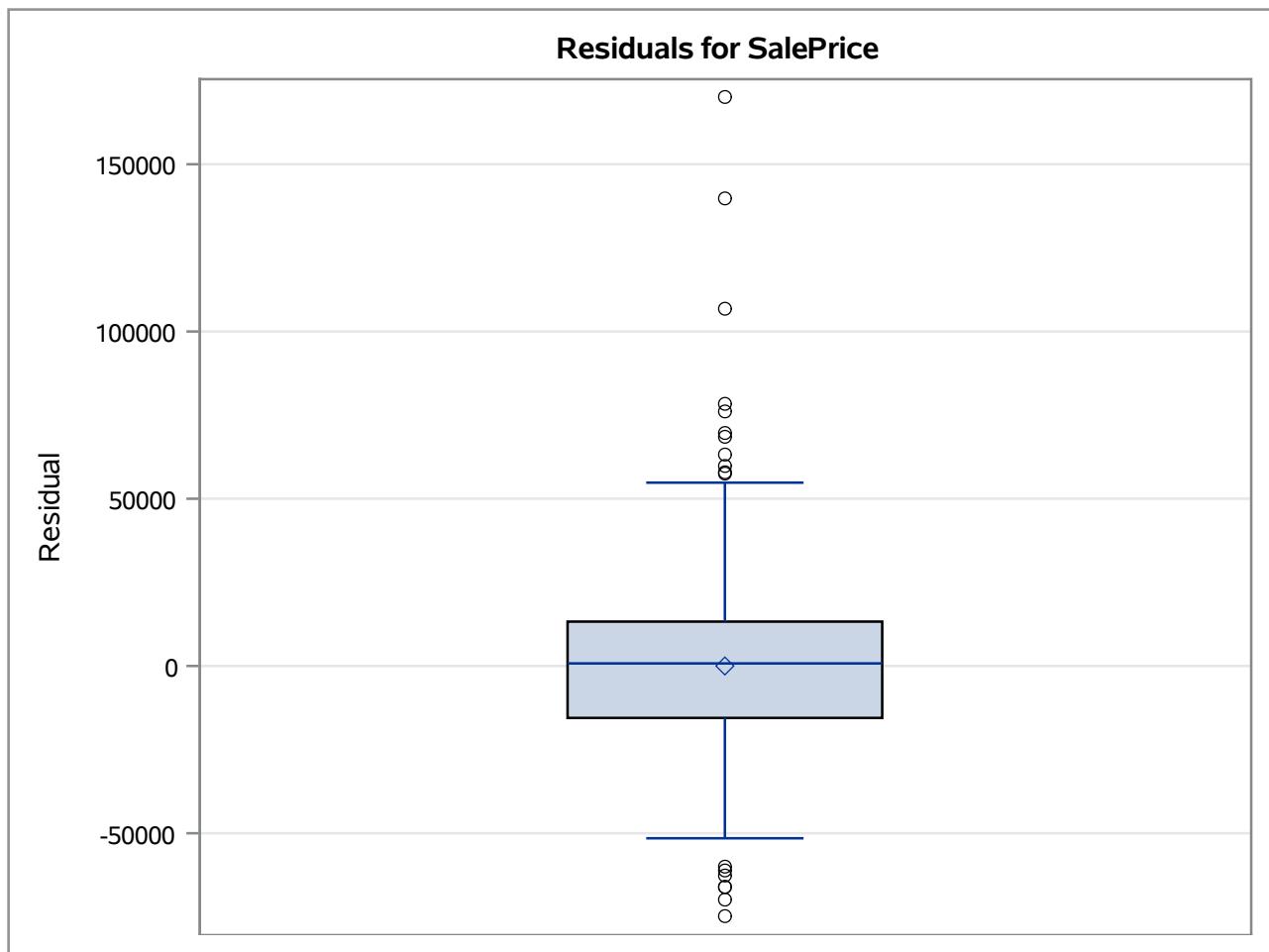
The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice



**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice****Residual-Fit Spread Plot for SalePrice****Fit-Mean****Residual**

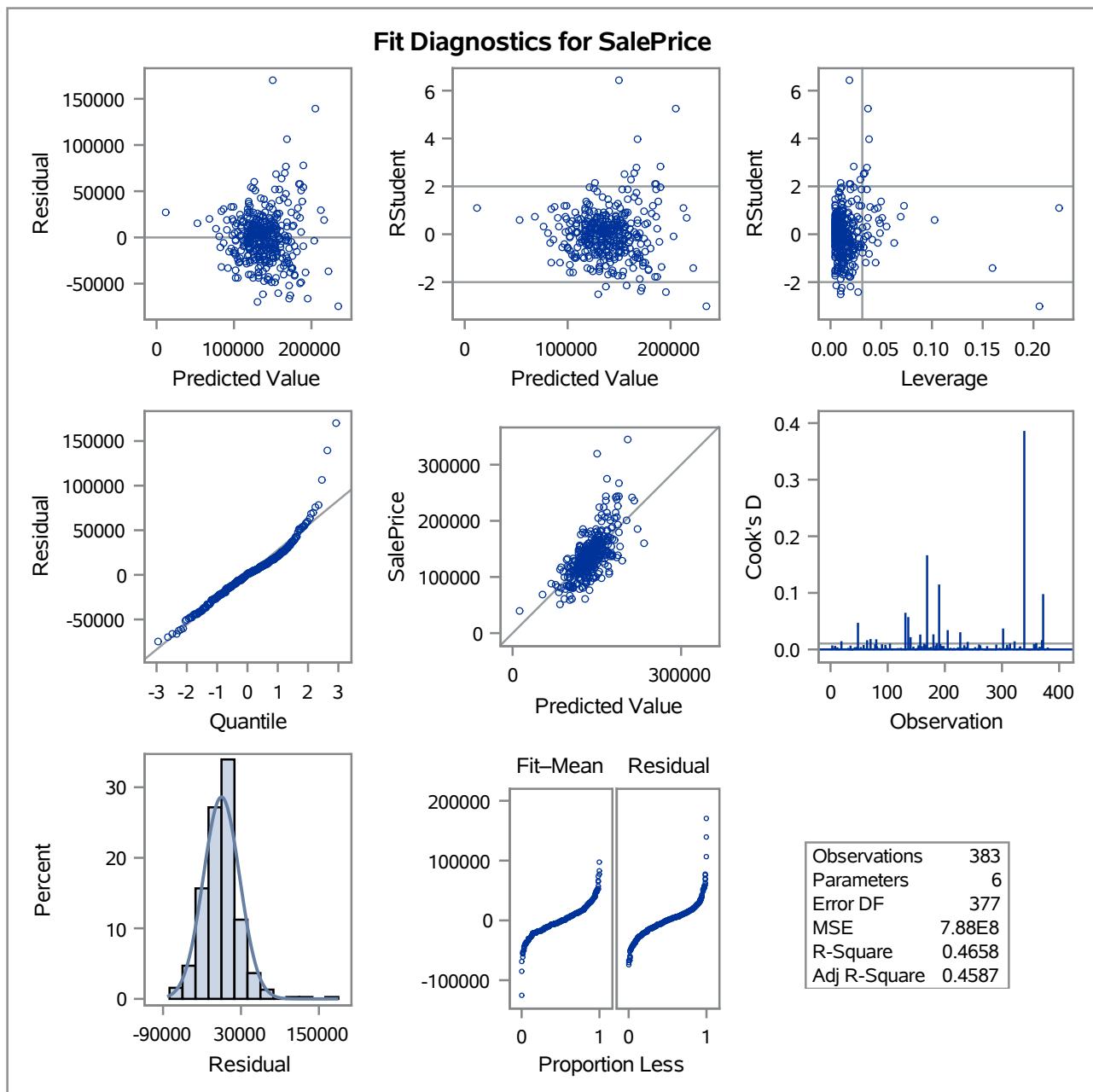
**Linear-Log MLR with Dummy and Interactions**

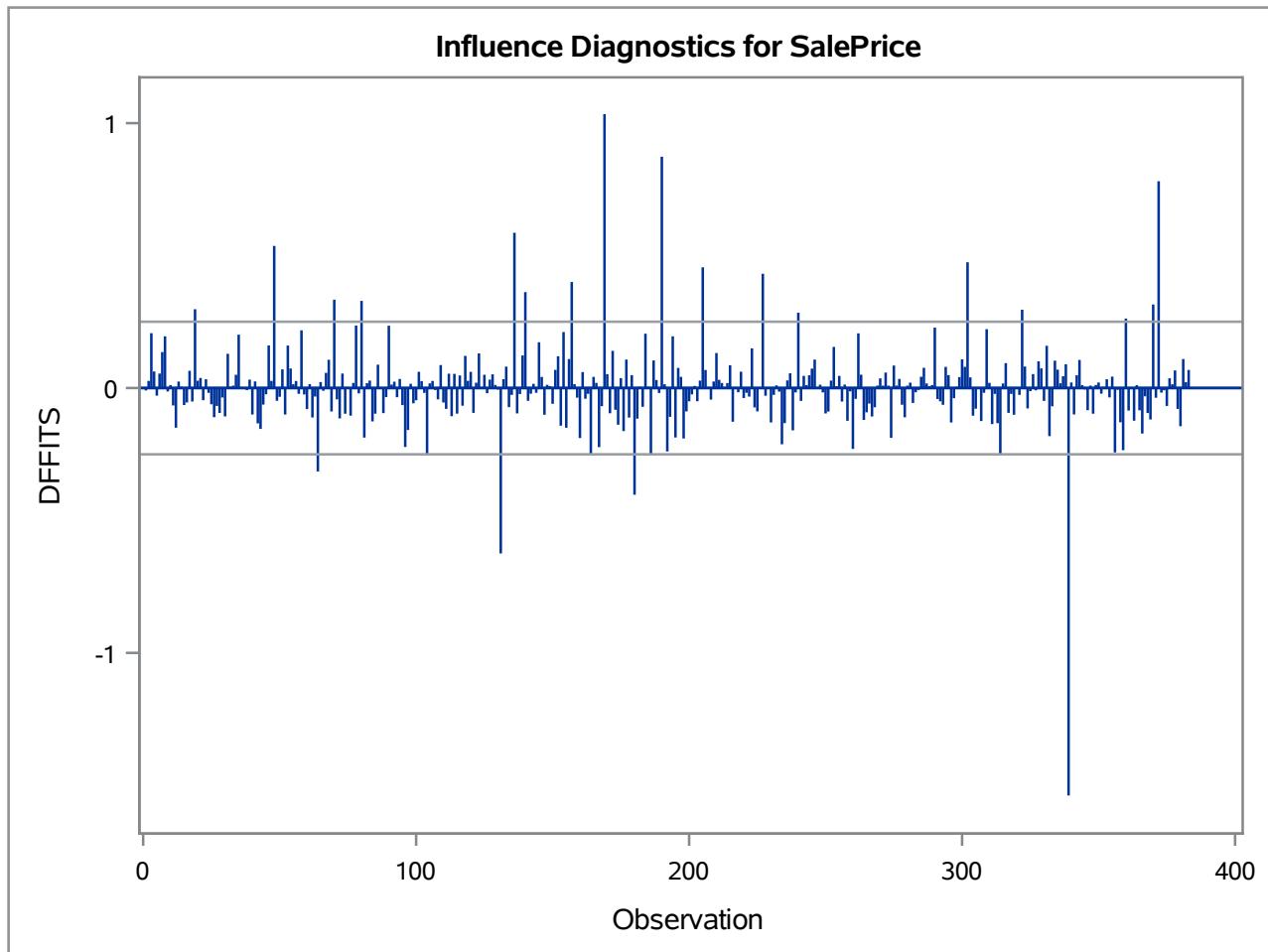
The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice

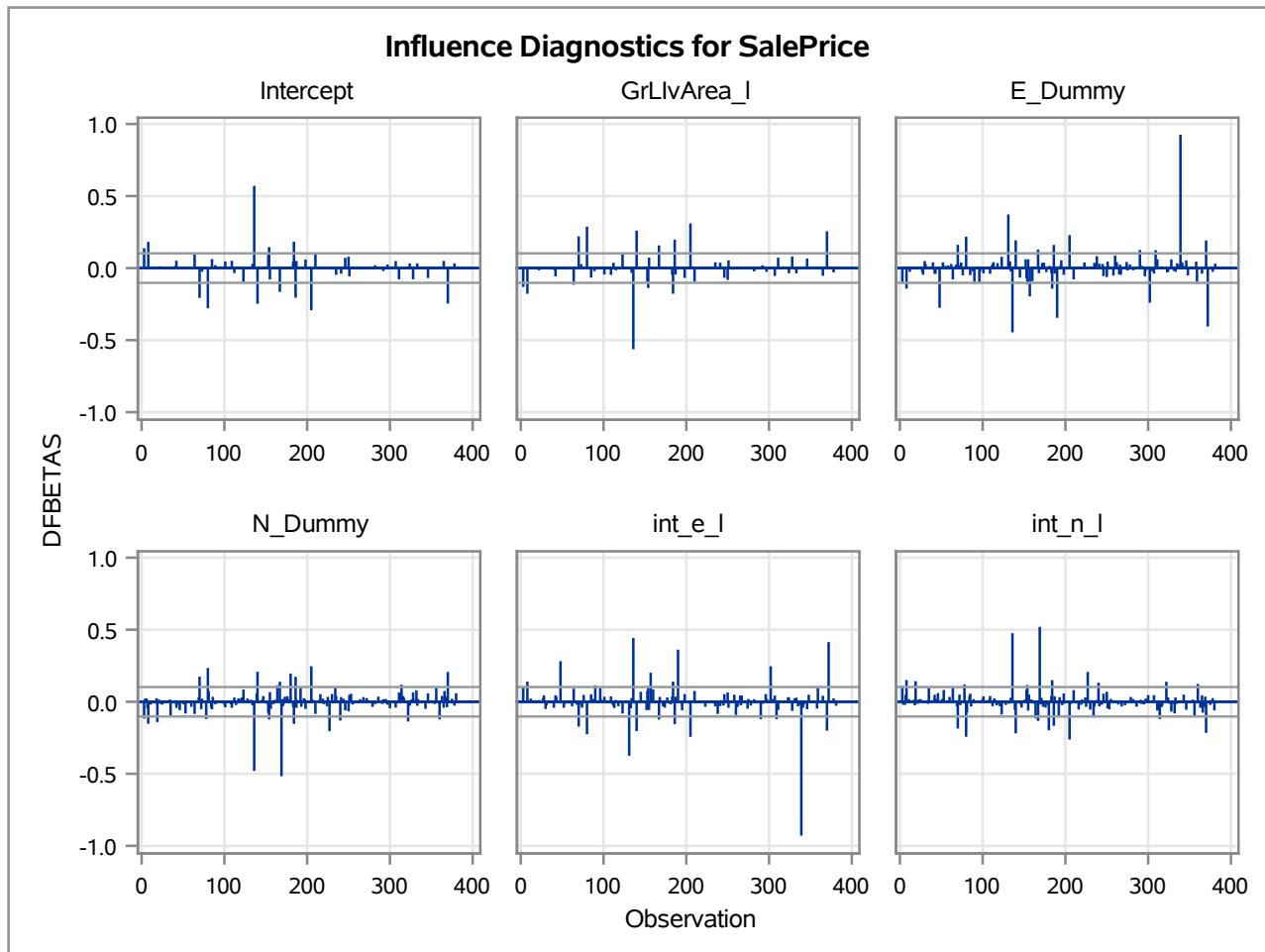


## Linear-Log MLR with Dummy and Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice**



**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

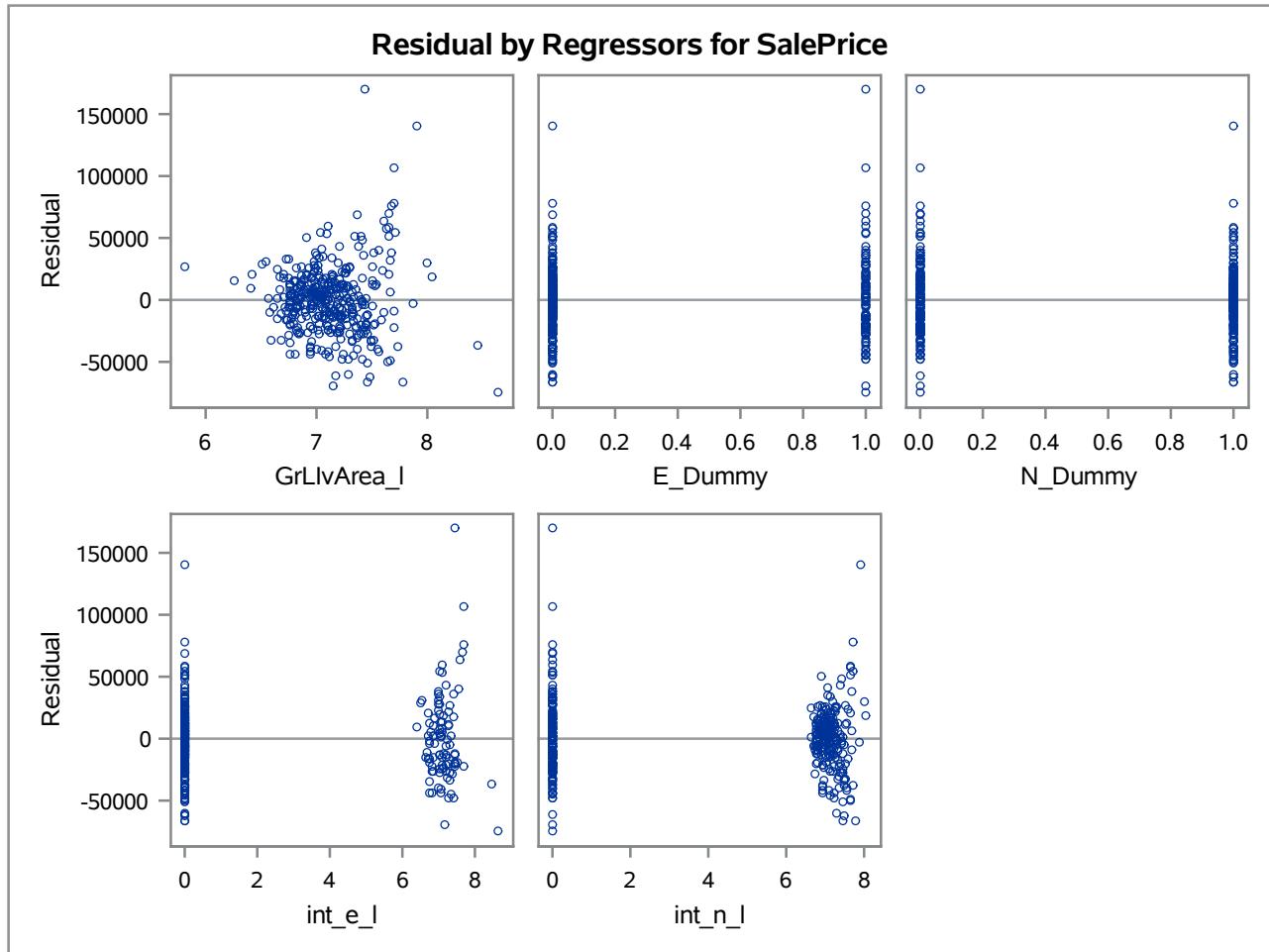
**Linear-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice**

## Linear-Log MLR with Dummy and Interactions

**The REG Procedure**

**Model: MODEL1**

**Dependent Variable: SalePrice**



## Log-Log MLR with Dummy and Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**

Number of Observations Read	383
Number of Observations Used	383

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
<b>Model</b>	5	14.62858	2.92572	79.14	<.0001
<b>Error</b>	377	13.93775	0.03697		
<b>Corrected Total</b>	382	28.56633			

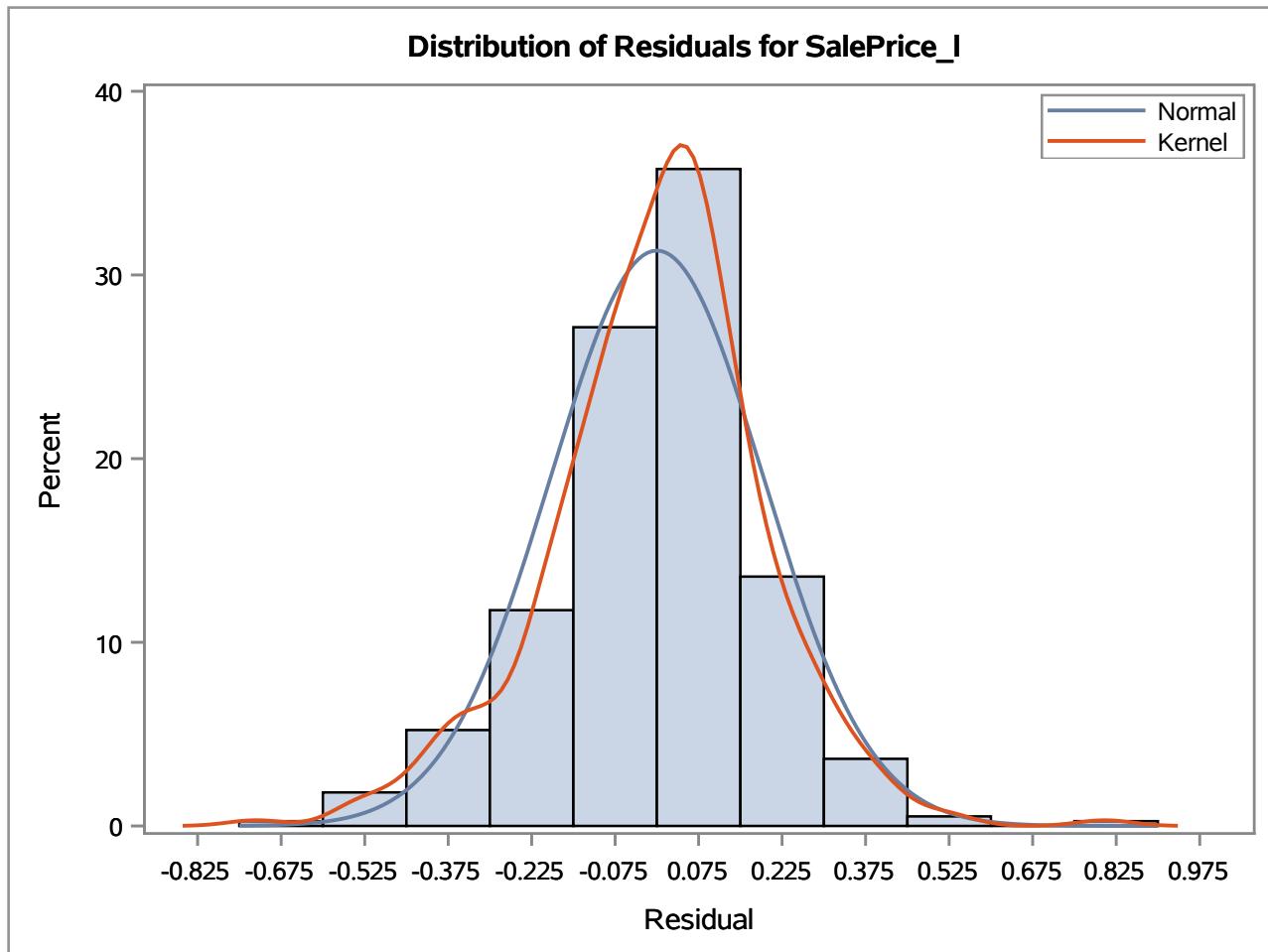
Root MSE	0.19228	R-Square	0.5121
Dependent Mean	11.79887	Adj R-Sq	0.5056
Coeff Var	1.62962		

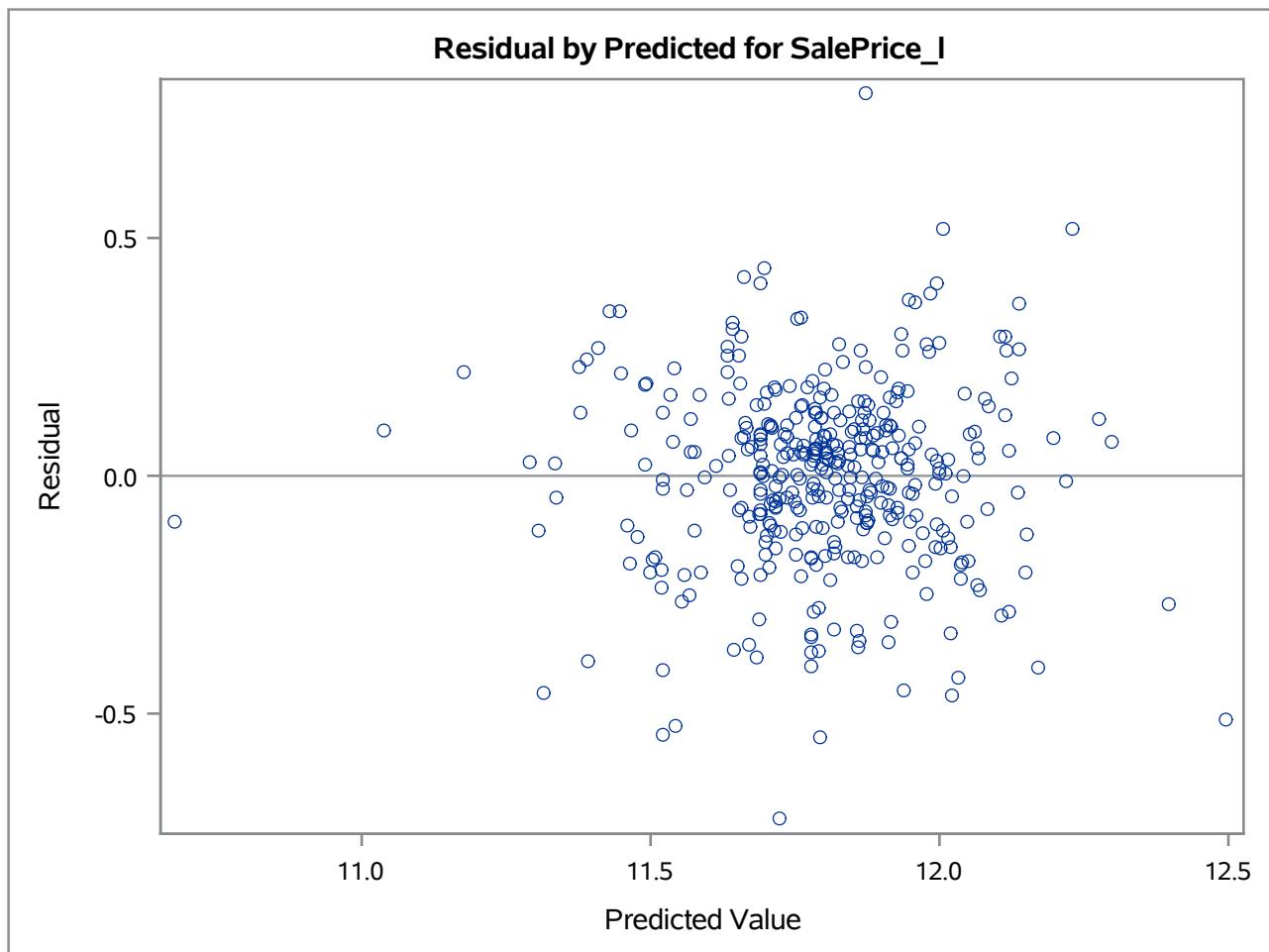
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	1	5.91292	0.50459	11.72	<.0001
<b>GrLlvArea_I</b>	1	0.81965	0.07163	11.44	<.0001
<b>E_Dummy</b>	1	2.09359	0.64589	3.24	0.0013
<b>N_Dummy</b>	1	2.57981	0.59988	4.30	<.0001
<b>int_e_I</b>	1	-0.29998	0.09122	-3.29	0.0011
<b>int_n_I</b>	1	-0.34662	0.08482	-4.09	<.0001

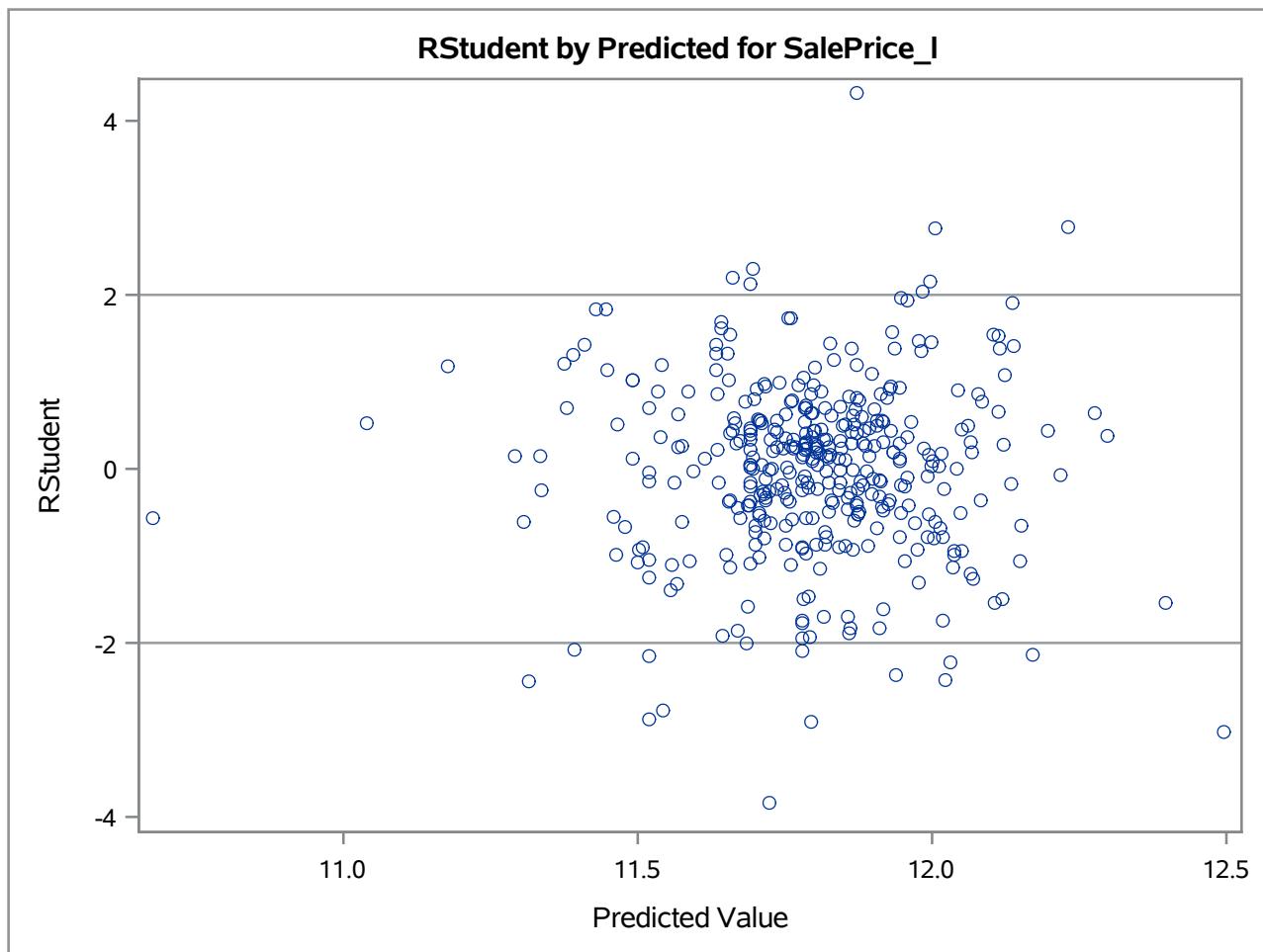
**Log-Log MLR with Dummy and Interactions****The REG Procedure**

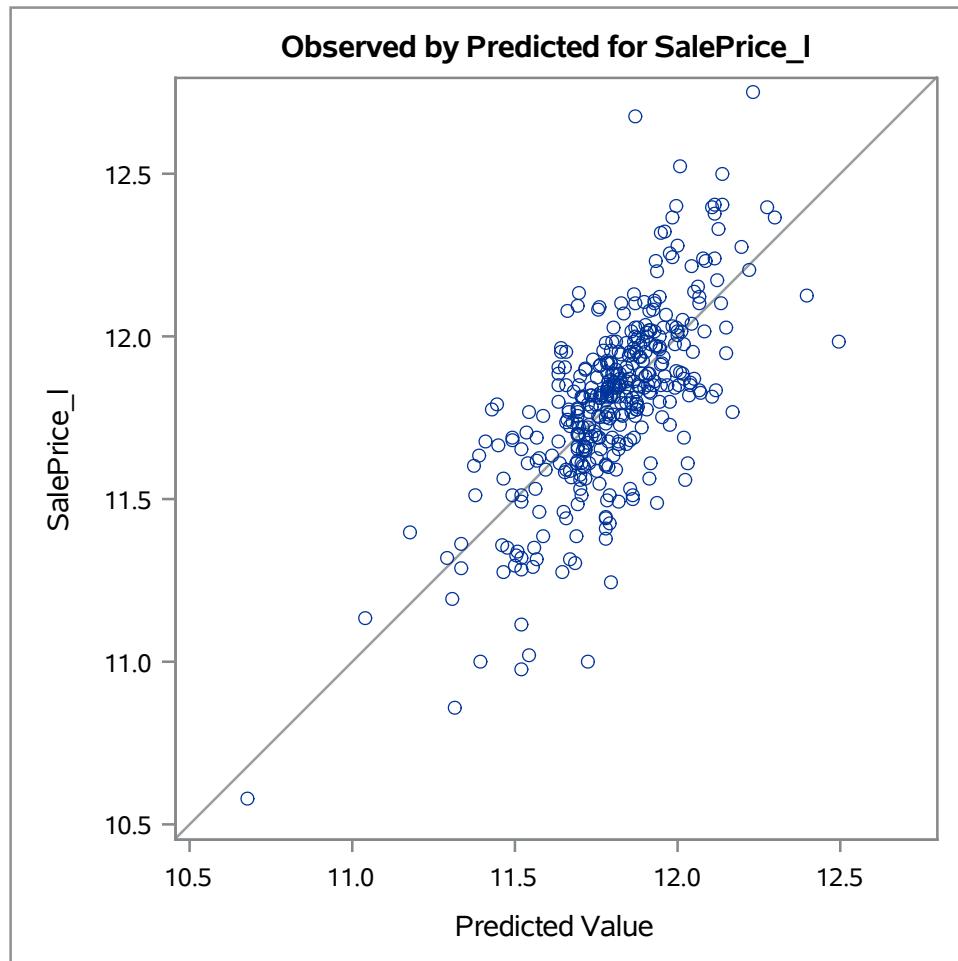
Model: MODEL1

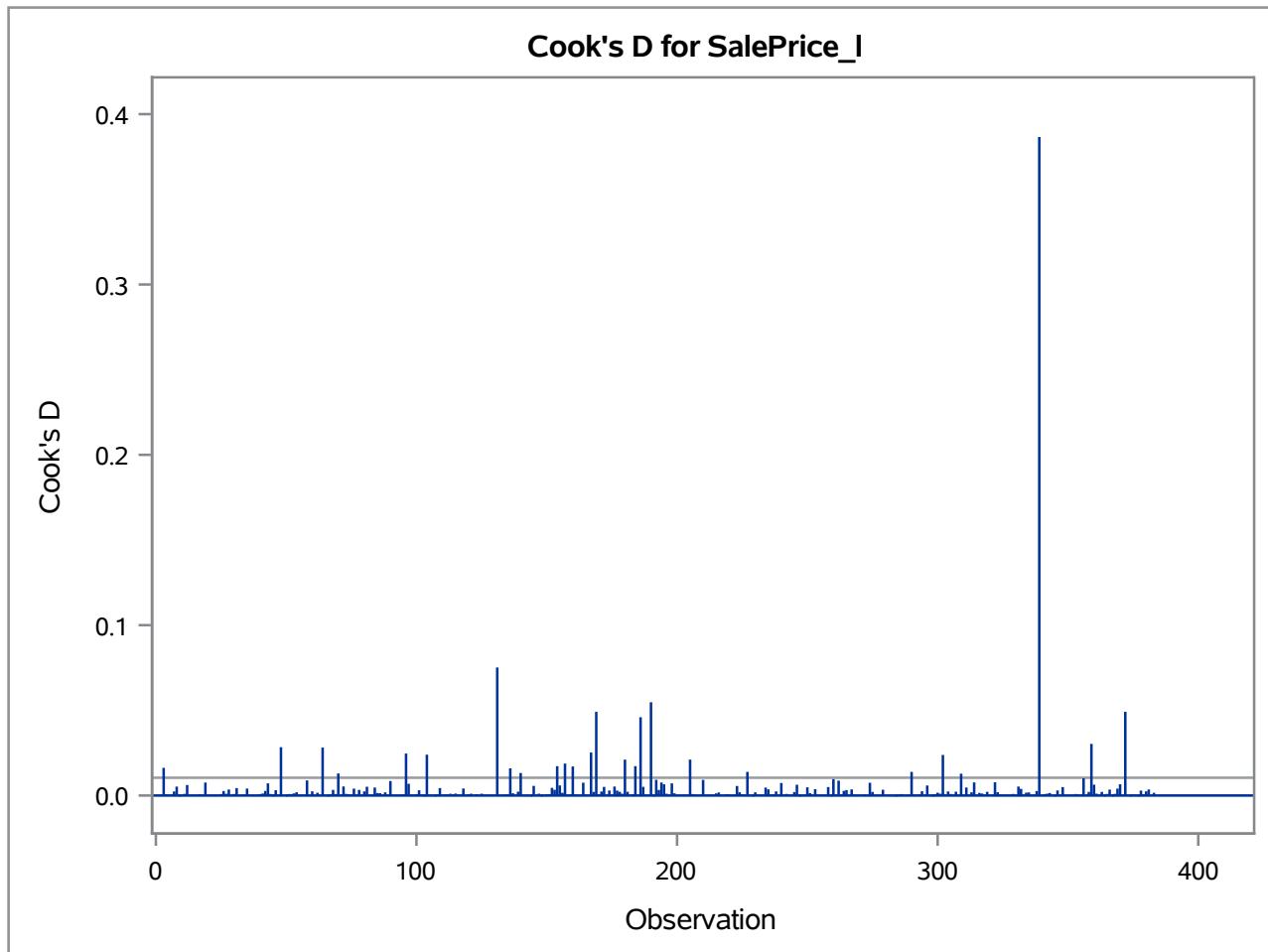
Dependent Variable: SalePrice\_I

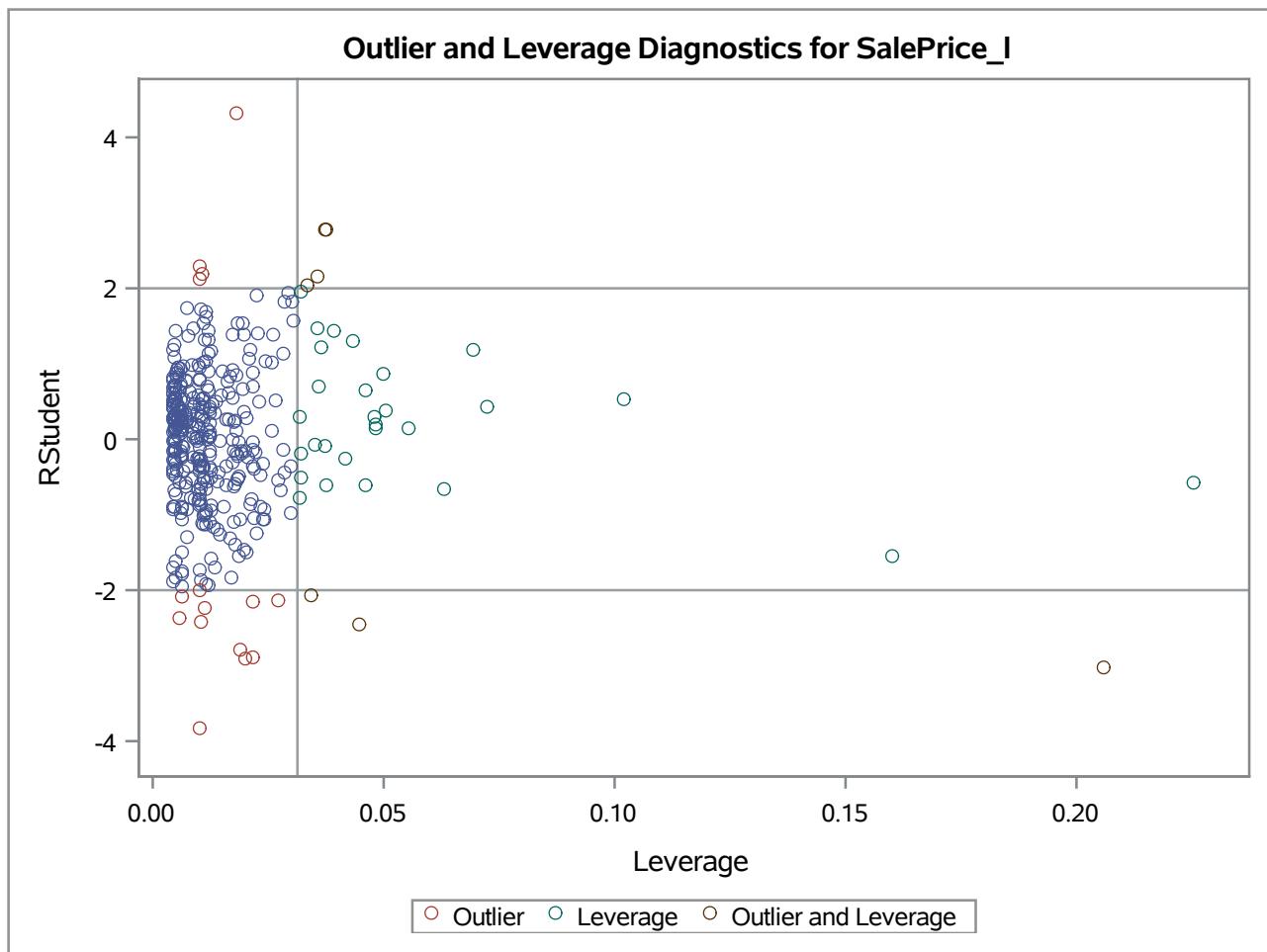


**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

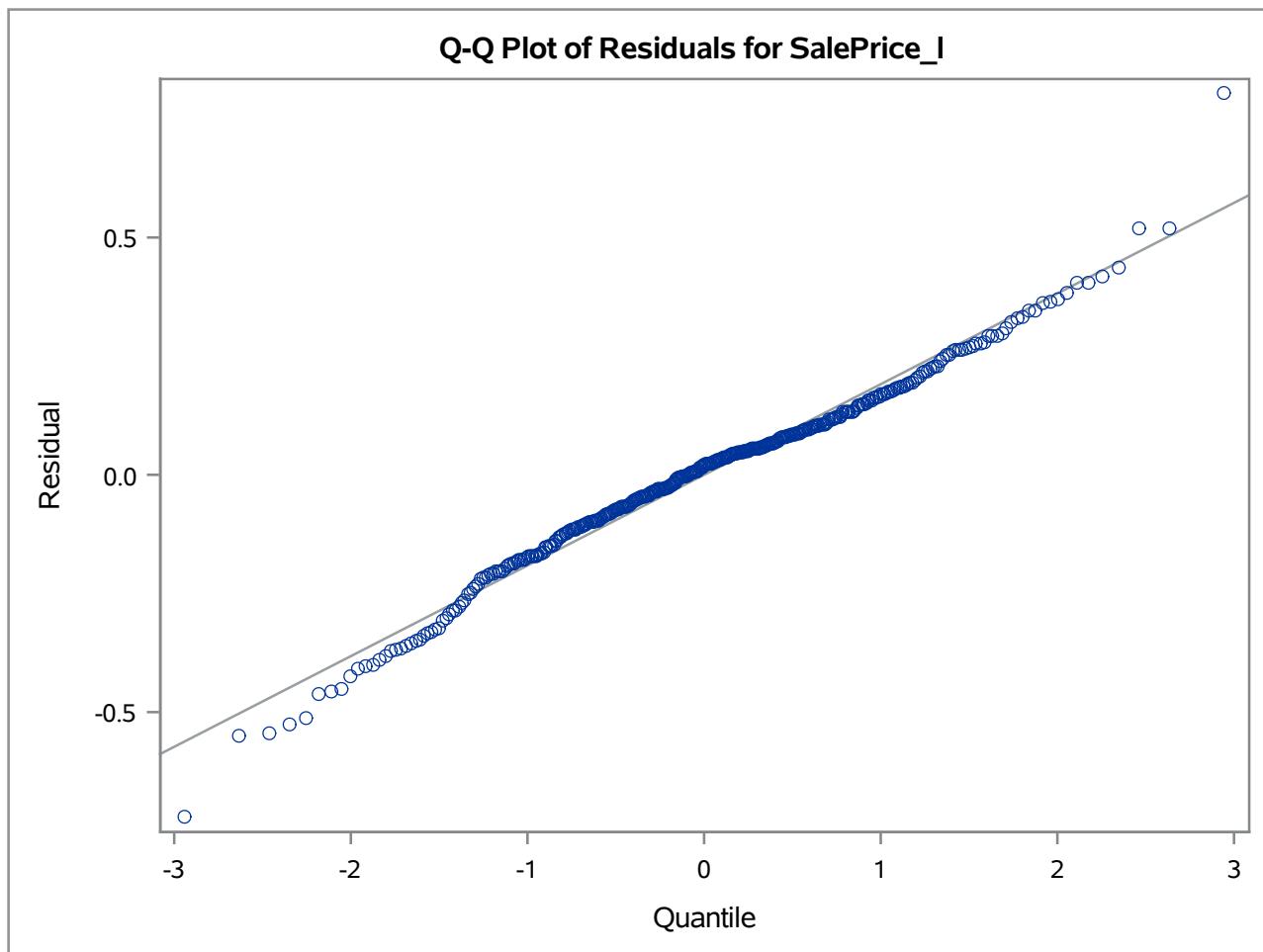
**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Log MLR with Dummy and Interactions**

The REG Procedure

Model: MODEL1

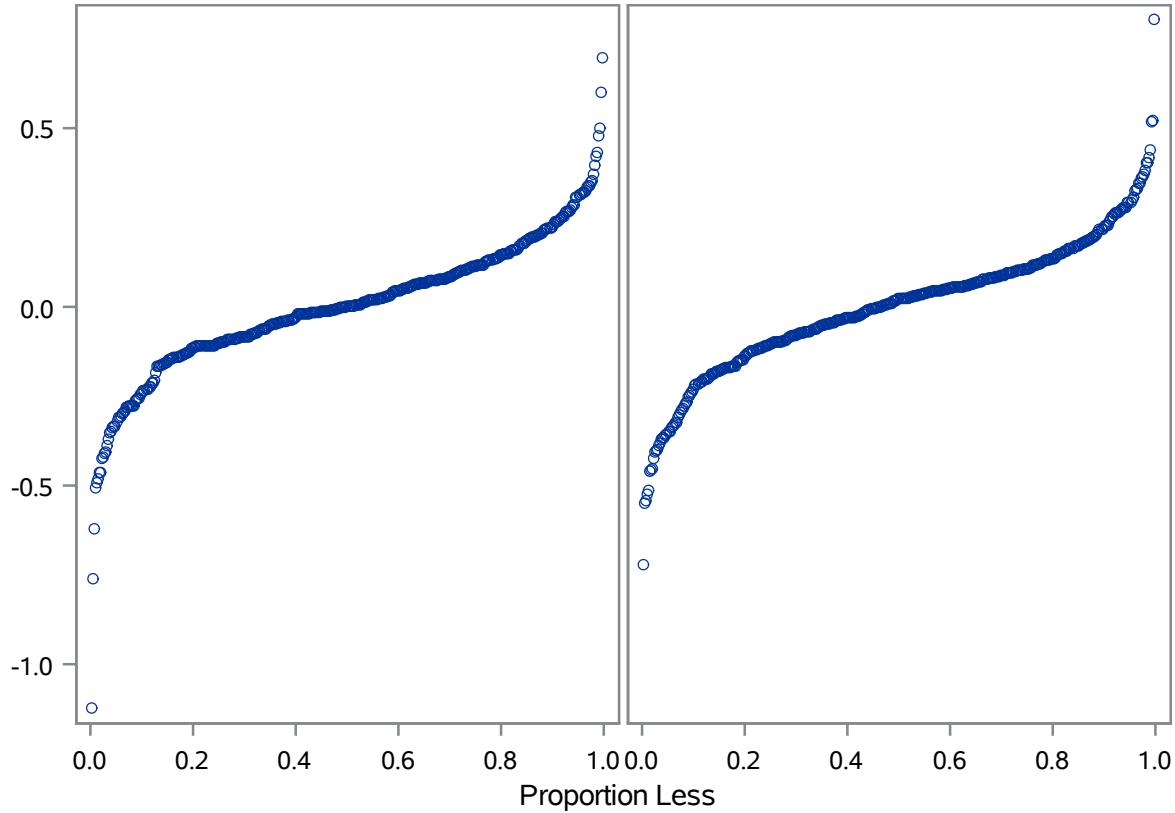
Dependent Variable: SalePrice\_I



**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Residual-Fit Spread Plot for SalePrice\_I**

Fit-Mean

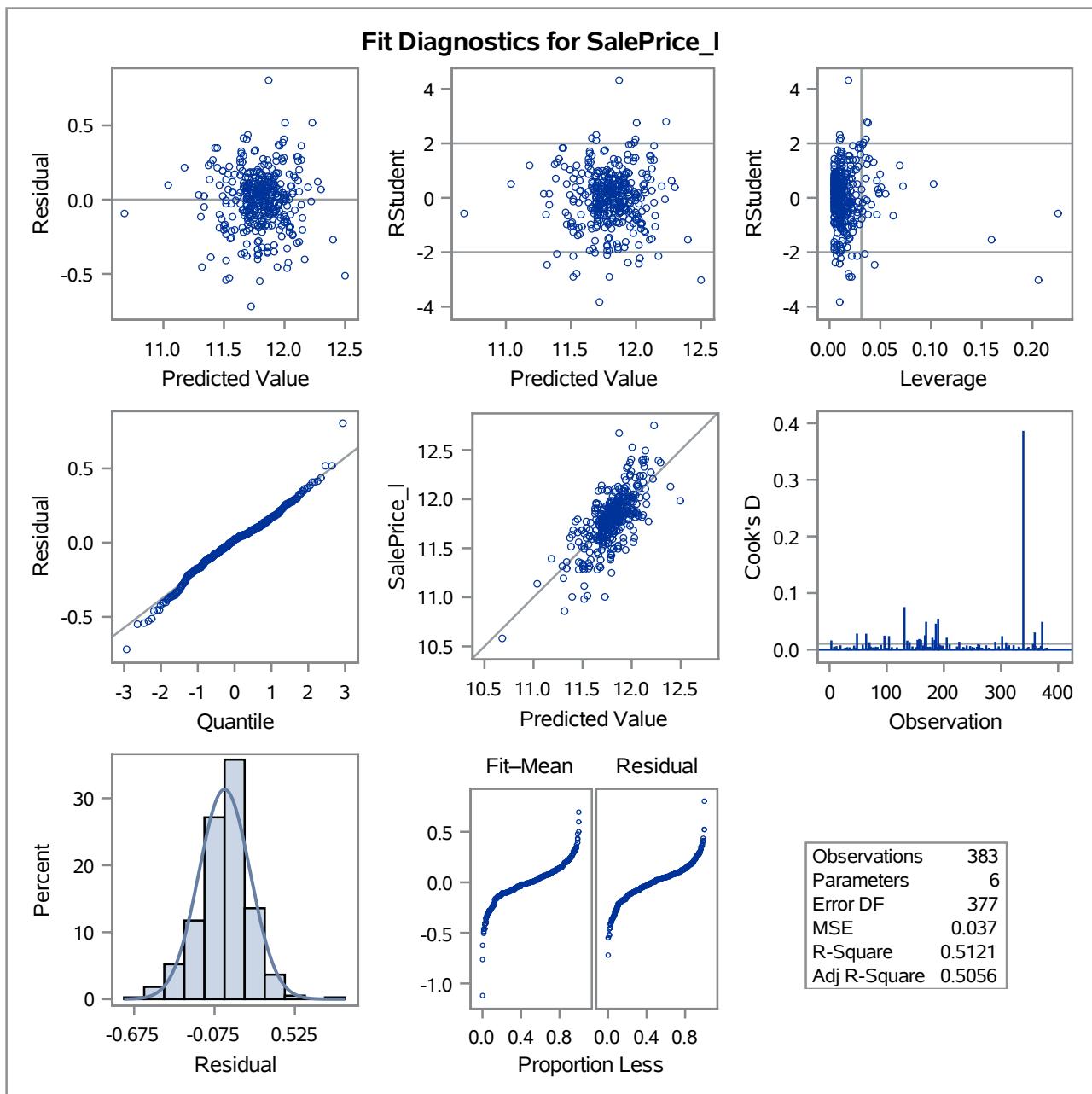
Residual

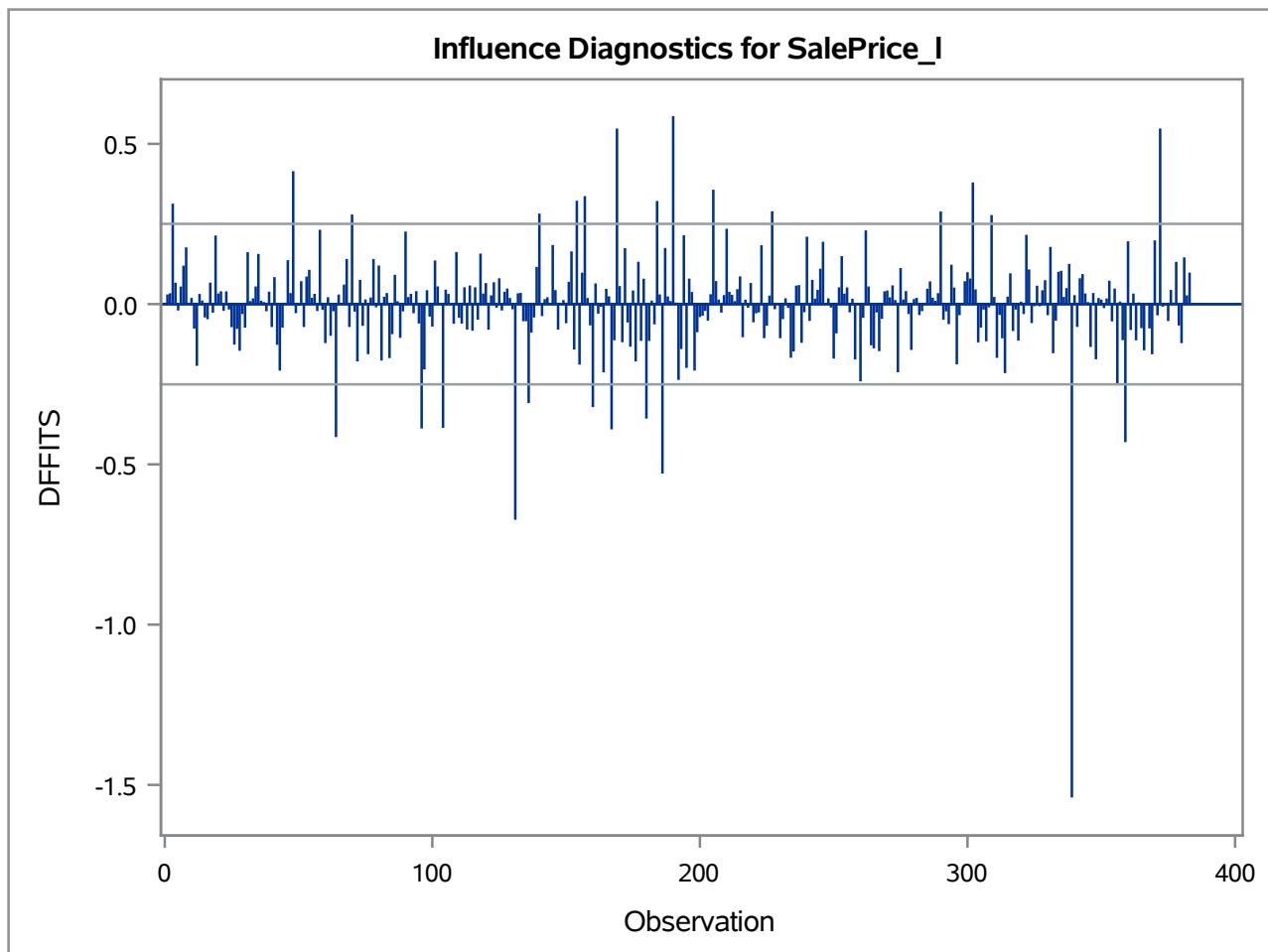


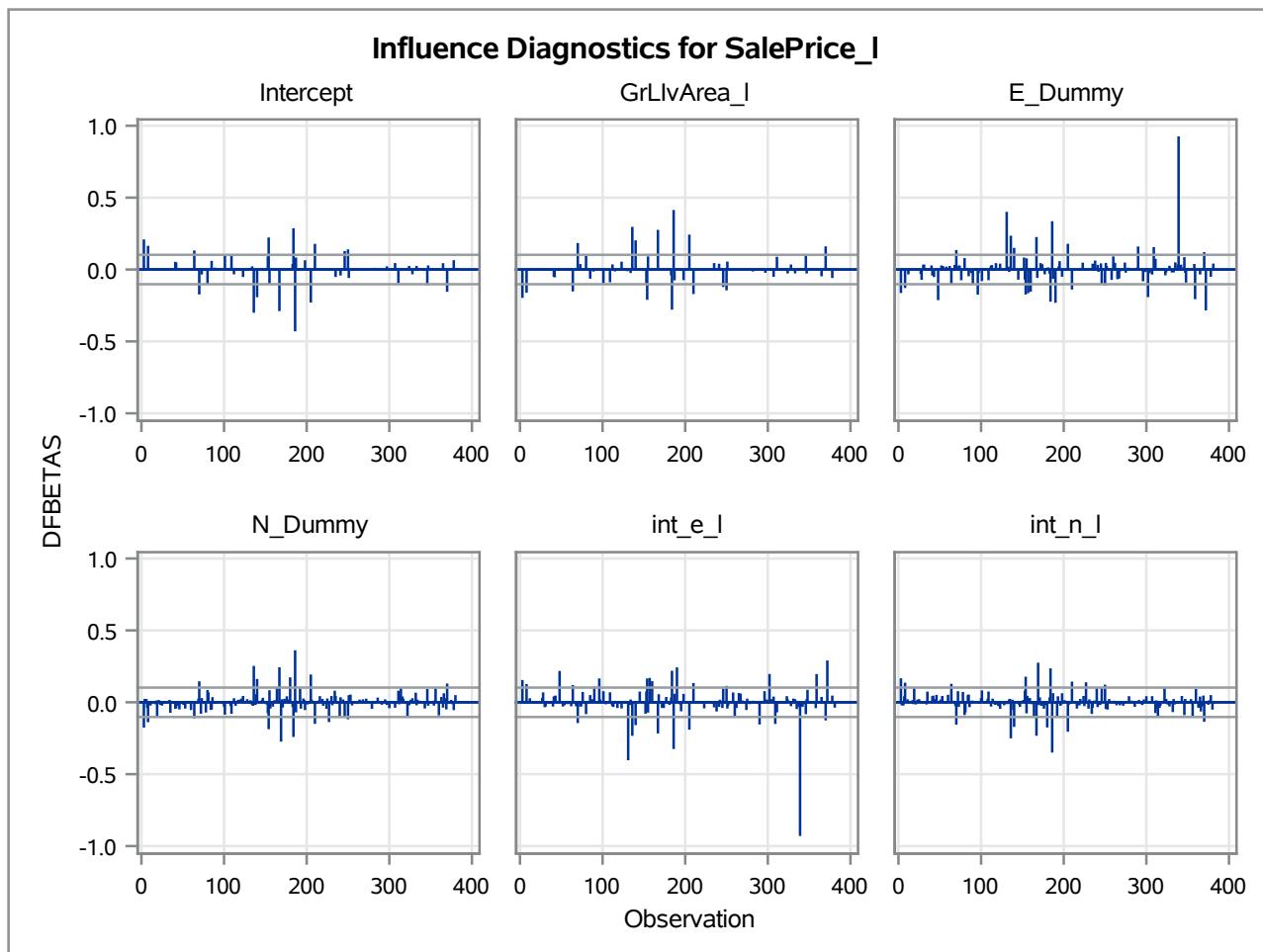
**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Log-Log MLR with Dummy and Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**



**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

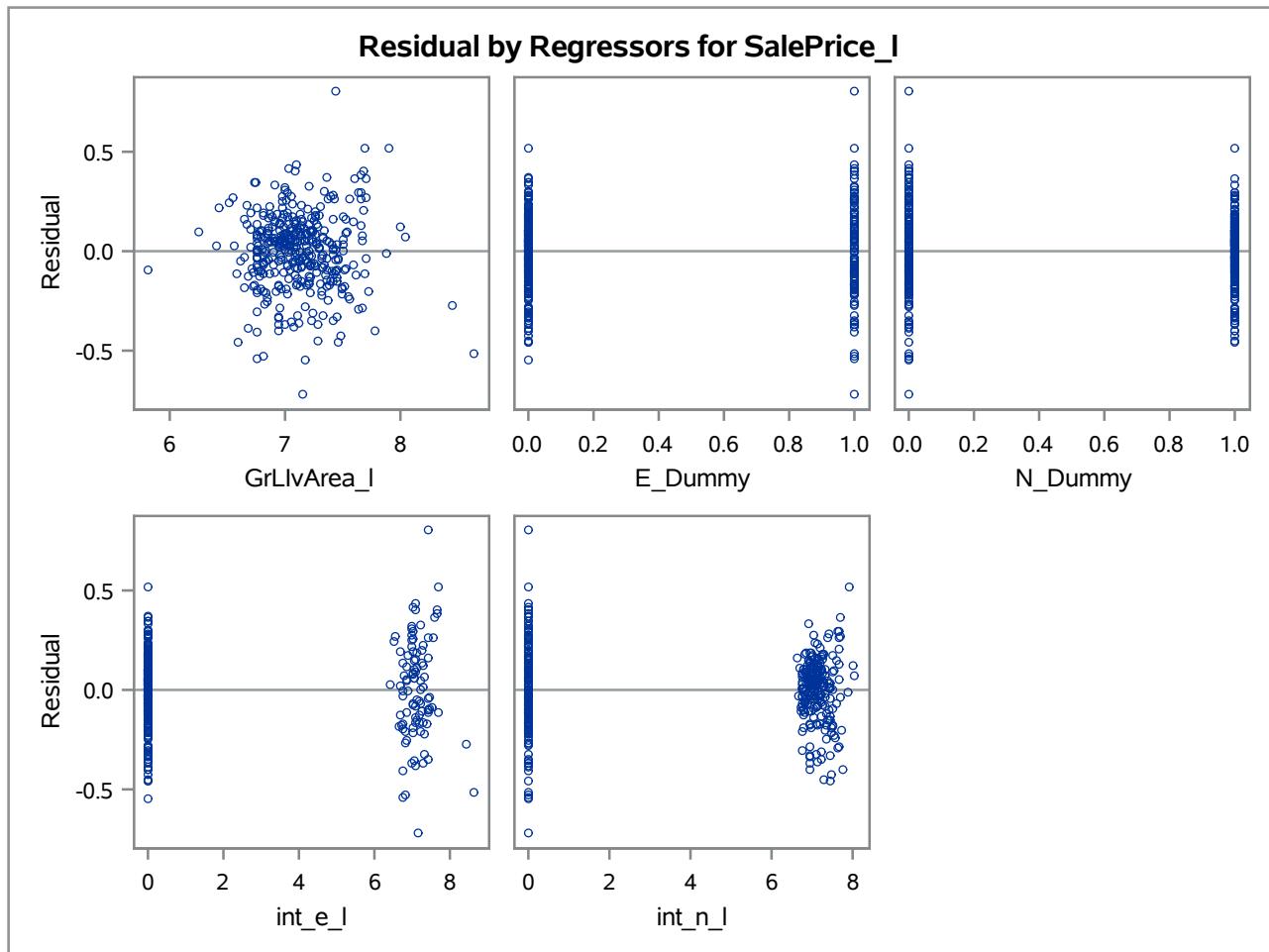
**Log-Log MLR with Dummy and Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Log-Log MLR with Dummy and Interactions

**The REG Procedure**

Model: MODEL1

Dependent Variable: SalePrice\_I



**The MEANS Procedure**

Variable	N	Mean	Std Dev	Minimum	Maximum
GrLlvArea_I	383	7.1193132	0.3120173	5.8111410	8.6379939
E_Dummy	383	0.2610966	0.4398070	0	1.0000000
N_Dummy	383	0.5874674	0.4929340	0	1.0000000

## Log-Log MLR with Dummy and Centered Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**

Number of Observations Read	383
Number of Observations Used	383

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
<b>Model</b>	5	14.62858	2.92572	79.14	<.0001
<b>Error</b>	377	13.93775	0.03697		
<b>Corrected Total</b>	382	28.56633			

Root MSE	0.19228	R-Square	0.5121
Dependent Mean	11.79887	Adj R-Sq	0.5056
Coeff Var	1.62962		

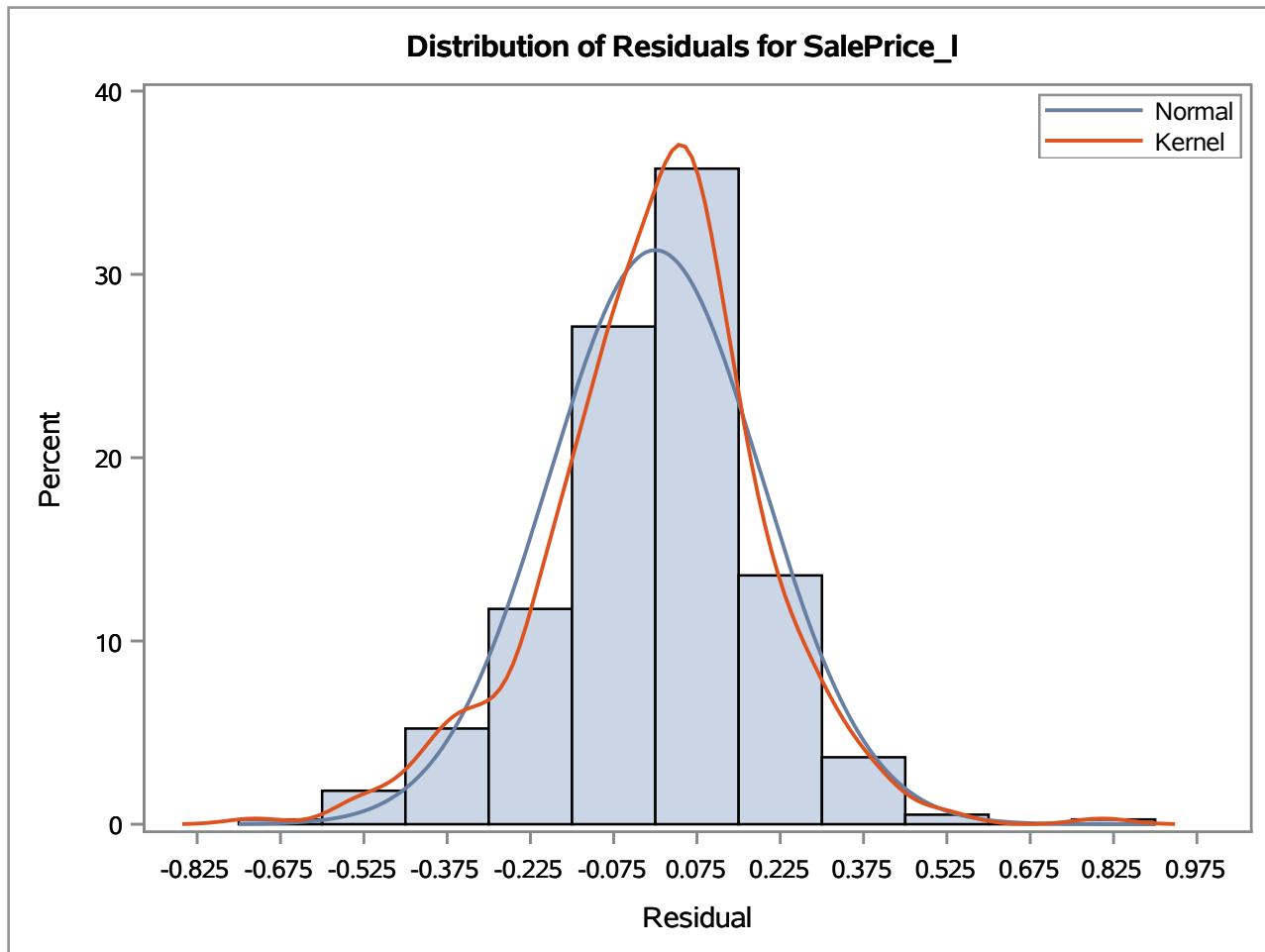
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Intercept</b>	1	7.92024	0.22985	34.46	<.0001
<b>GrLlvArea_I</b>	1	0.53769	0.03236	16.61	<.0001
<b>E_Dummy</b>	1	-0.04207	0.03230	-1.30	0.1936
<b>N_Dummy</b>	1	0.11208	0.02895	3.87	0.0001
<b>centE</b>	1	-0.29998	0.09122	-3.29	0.0011
<b>centN</b>	1	-0.34662	0.08482	-4.09	<.0001

**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

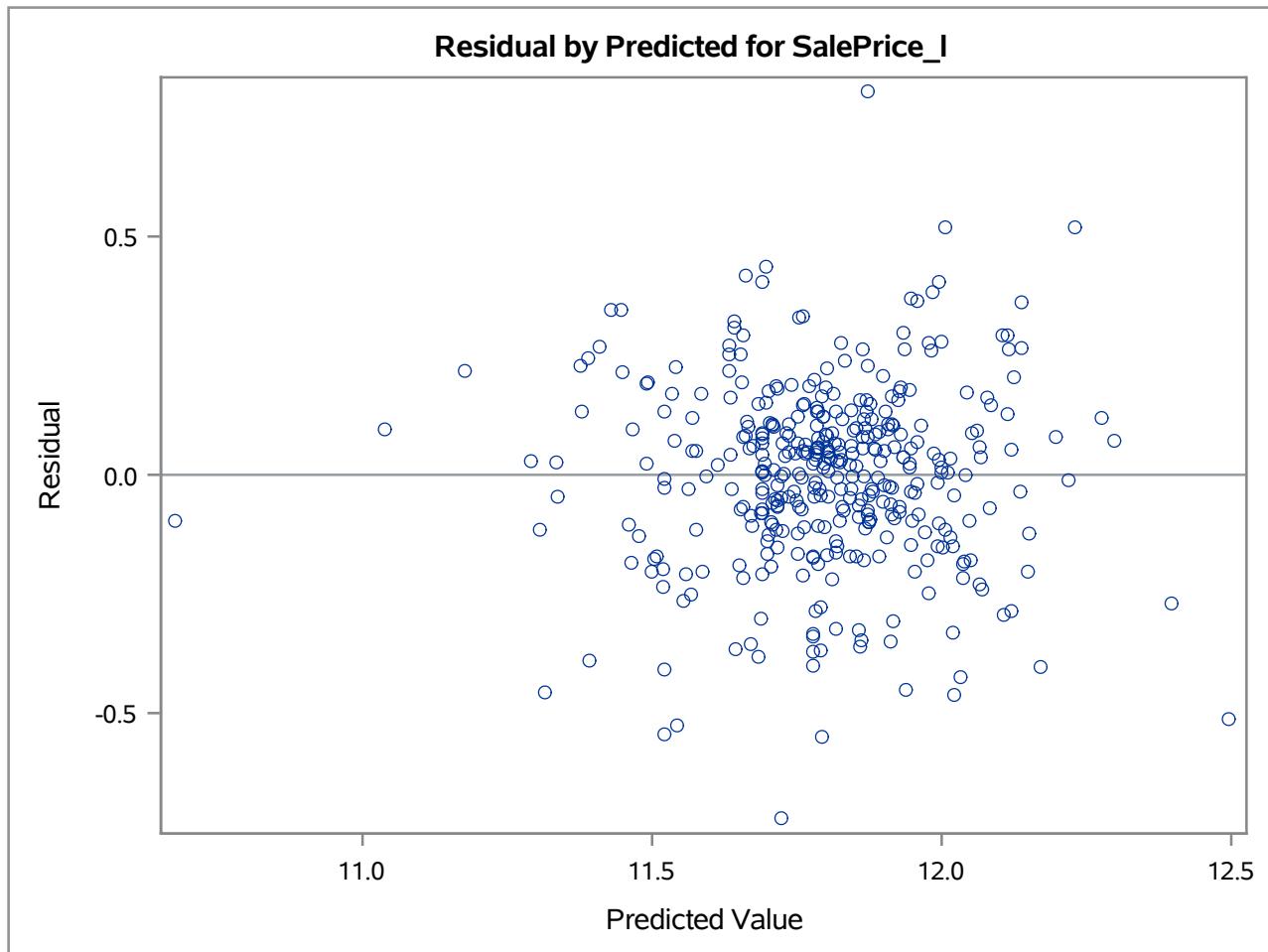
Model: MODEL1

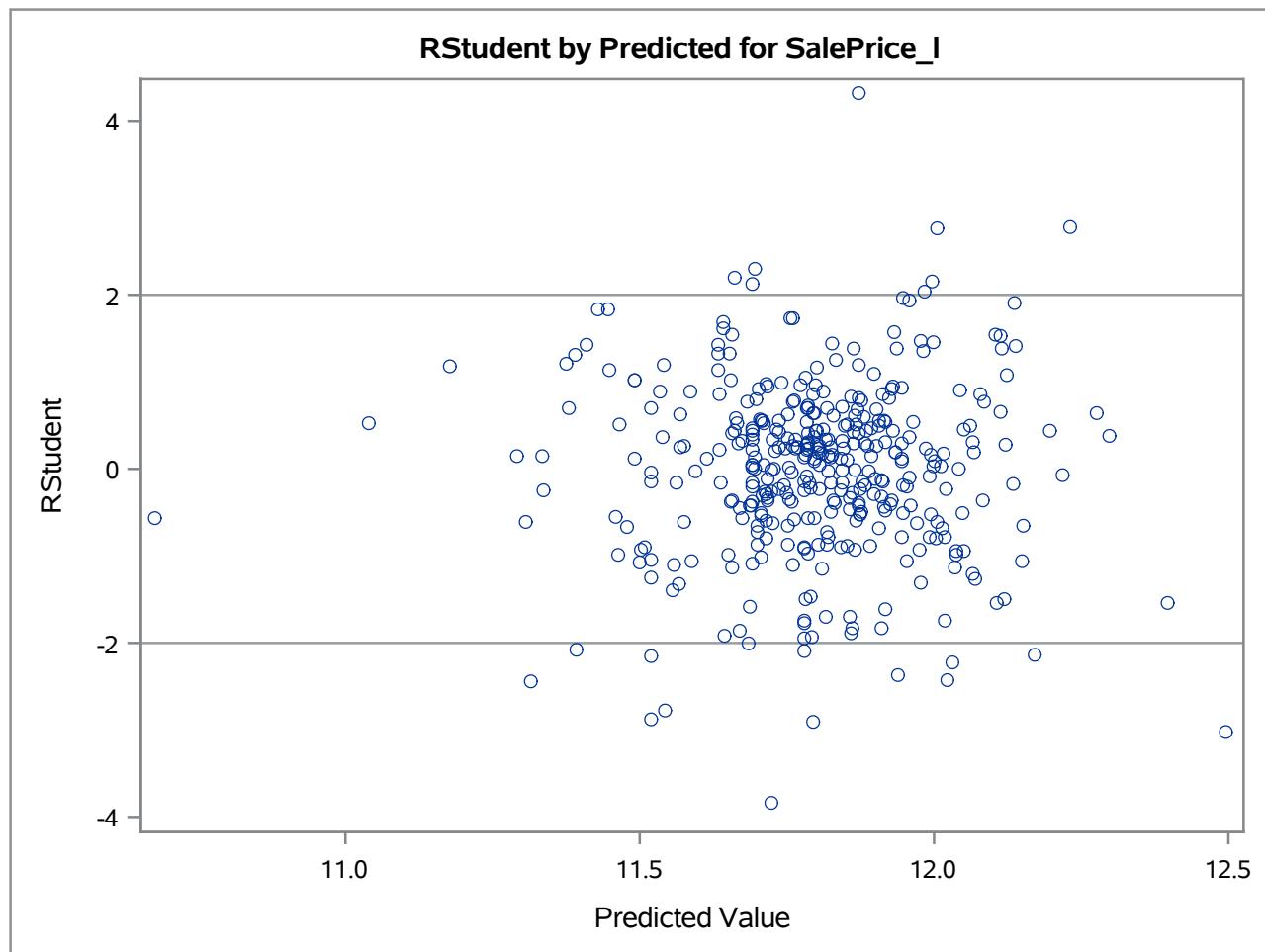
Dependent Variable: SalePrice\_I



**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice\_I



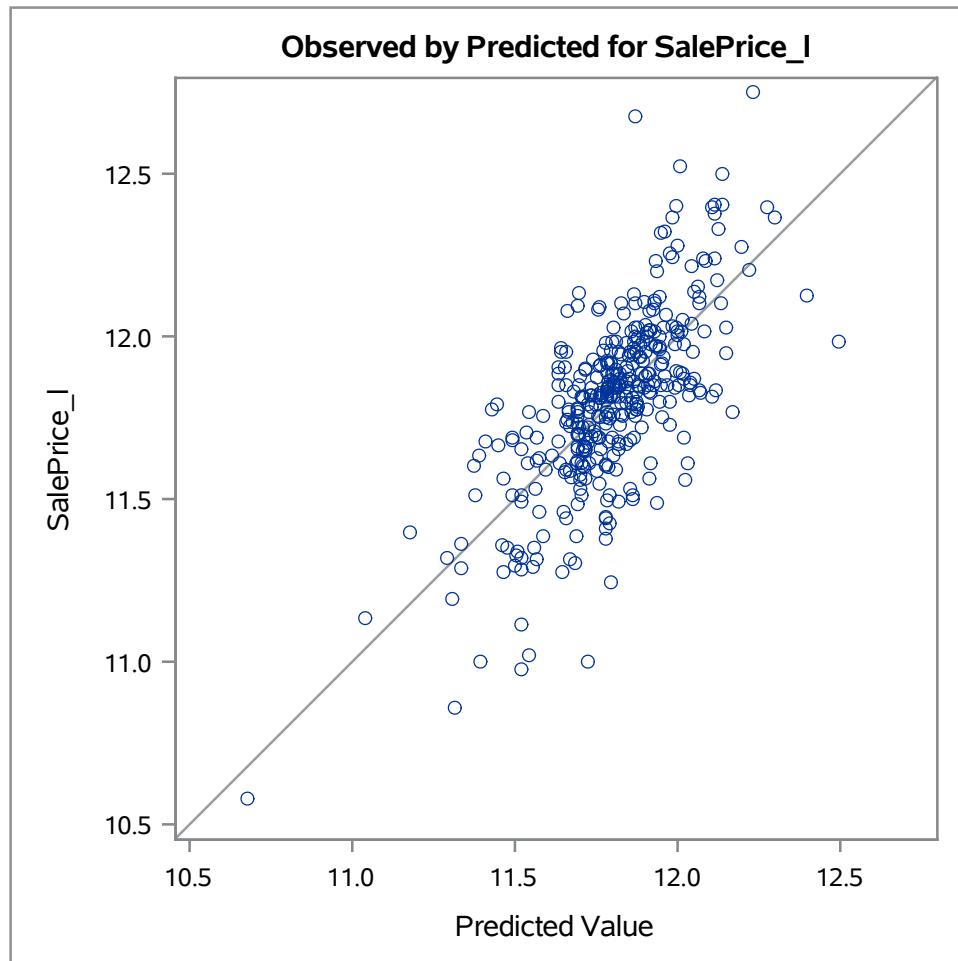
**Log-Log MLR with Dummy and Centered Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

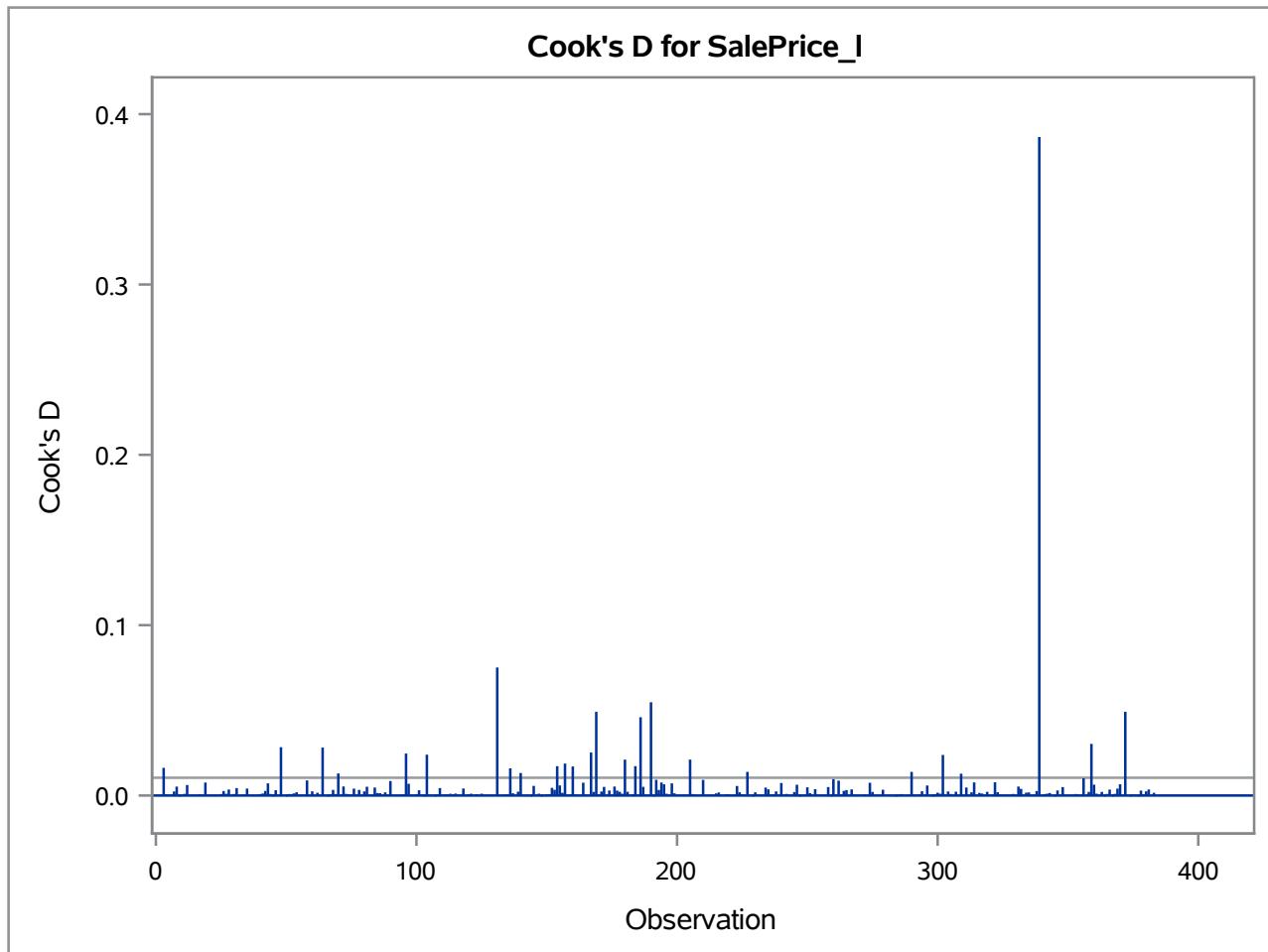
**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

Model: MODEL1

Dependent Variable: SalePrice\_I



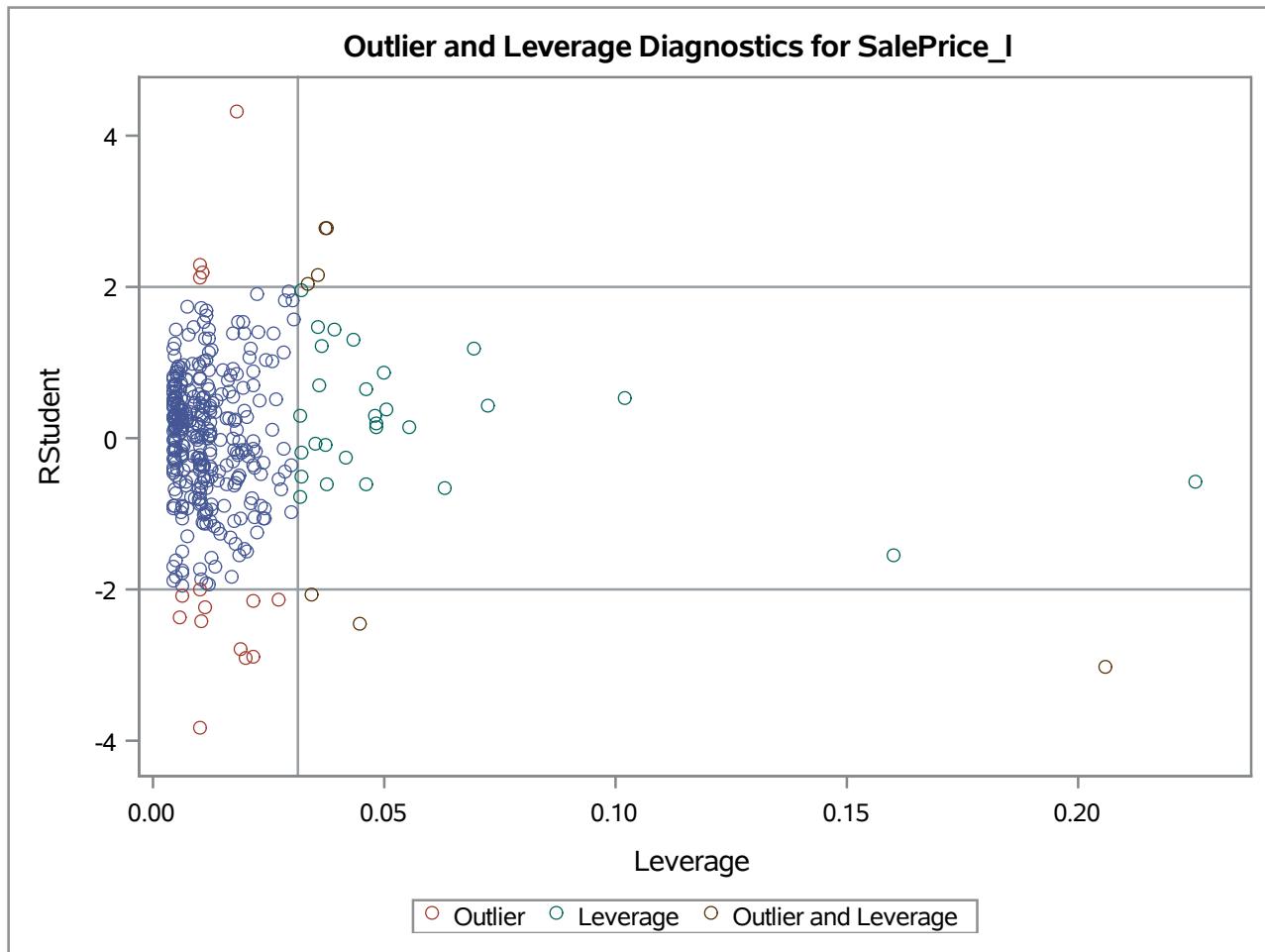
**Log-Log MLR with Dummy and Centered Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

Model: MODEL1

Dependent Variable: SalePrice\_I

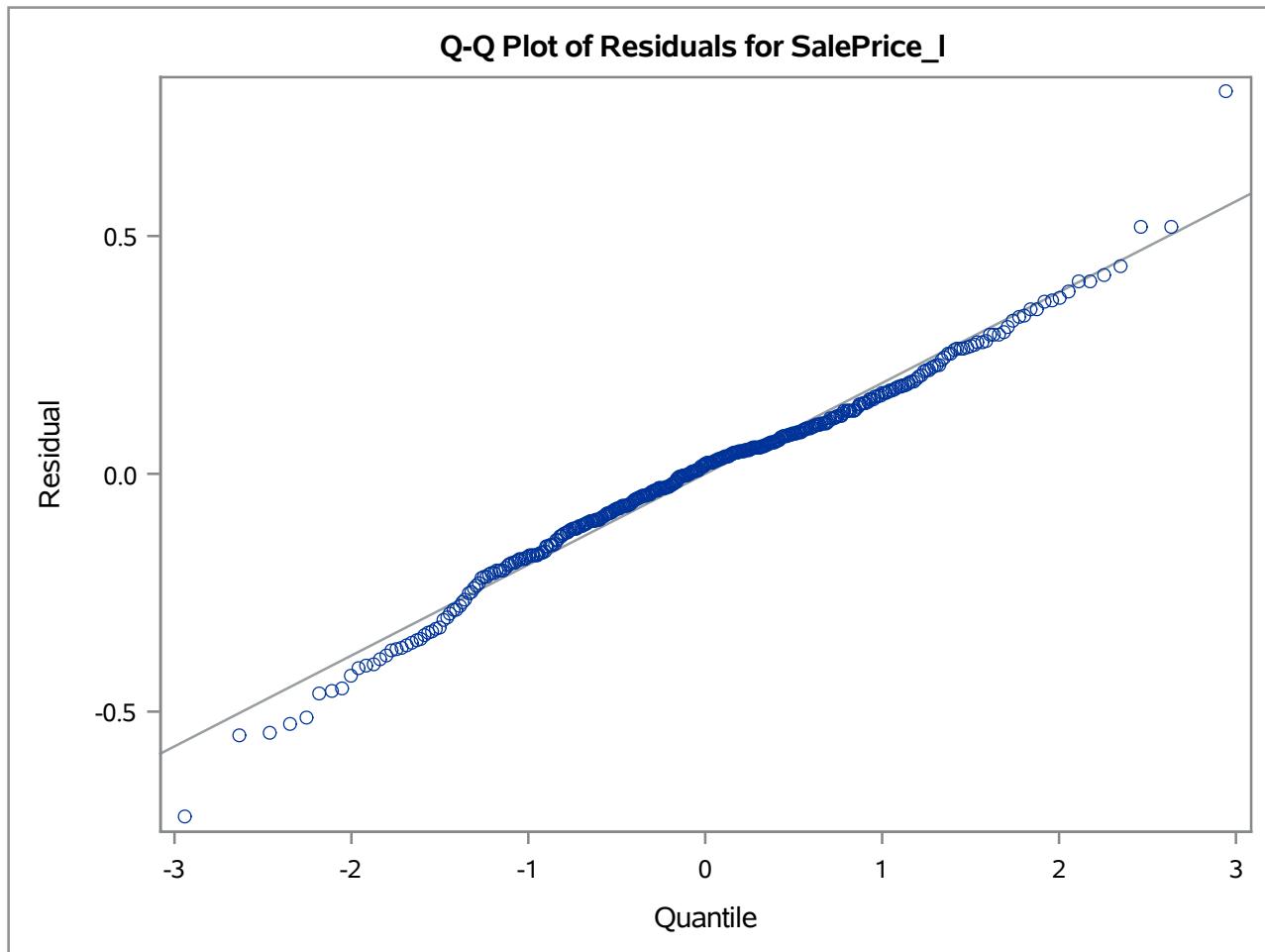


**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

Model: MODEL1

Dependent Variable: SalePrice\_I



**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

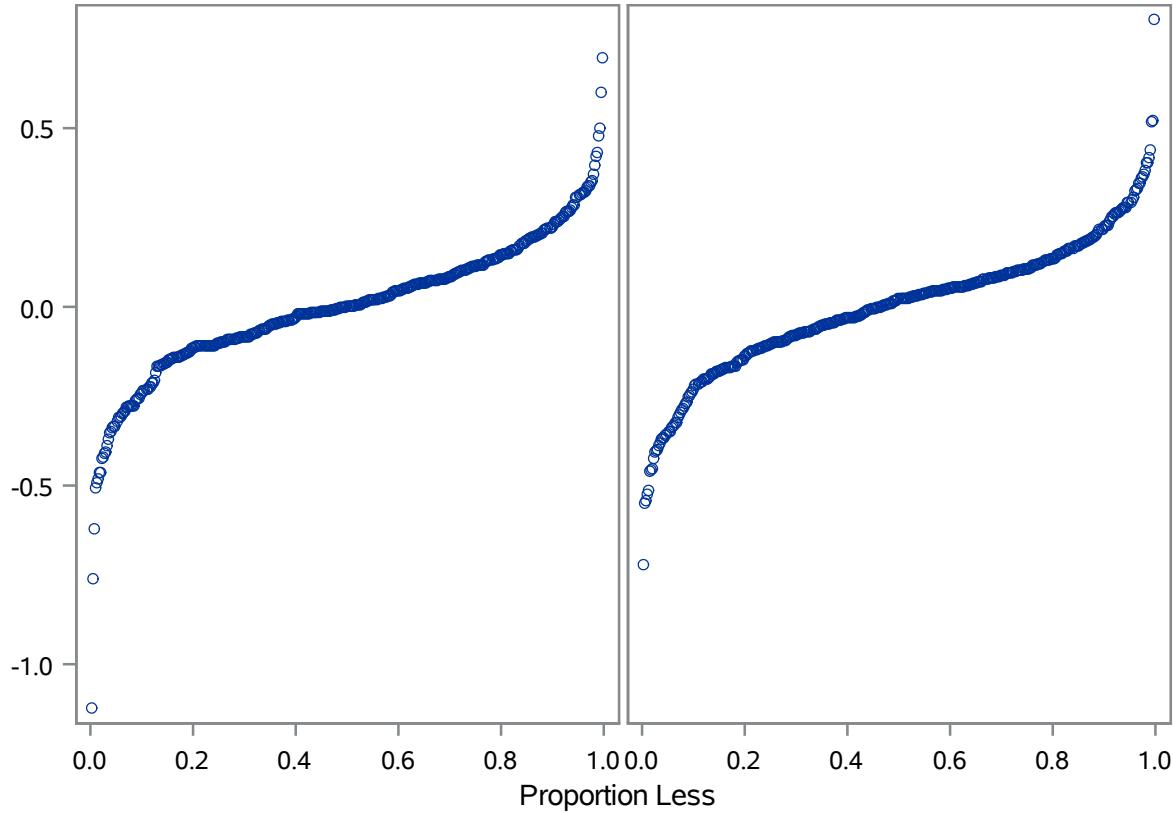
Model: MODEL1

Dependent Variable: SalePrice\_I

**Residual-Fit Spread Plot for SalePrice\_I**

Fit-Mean

Residual

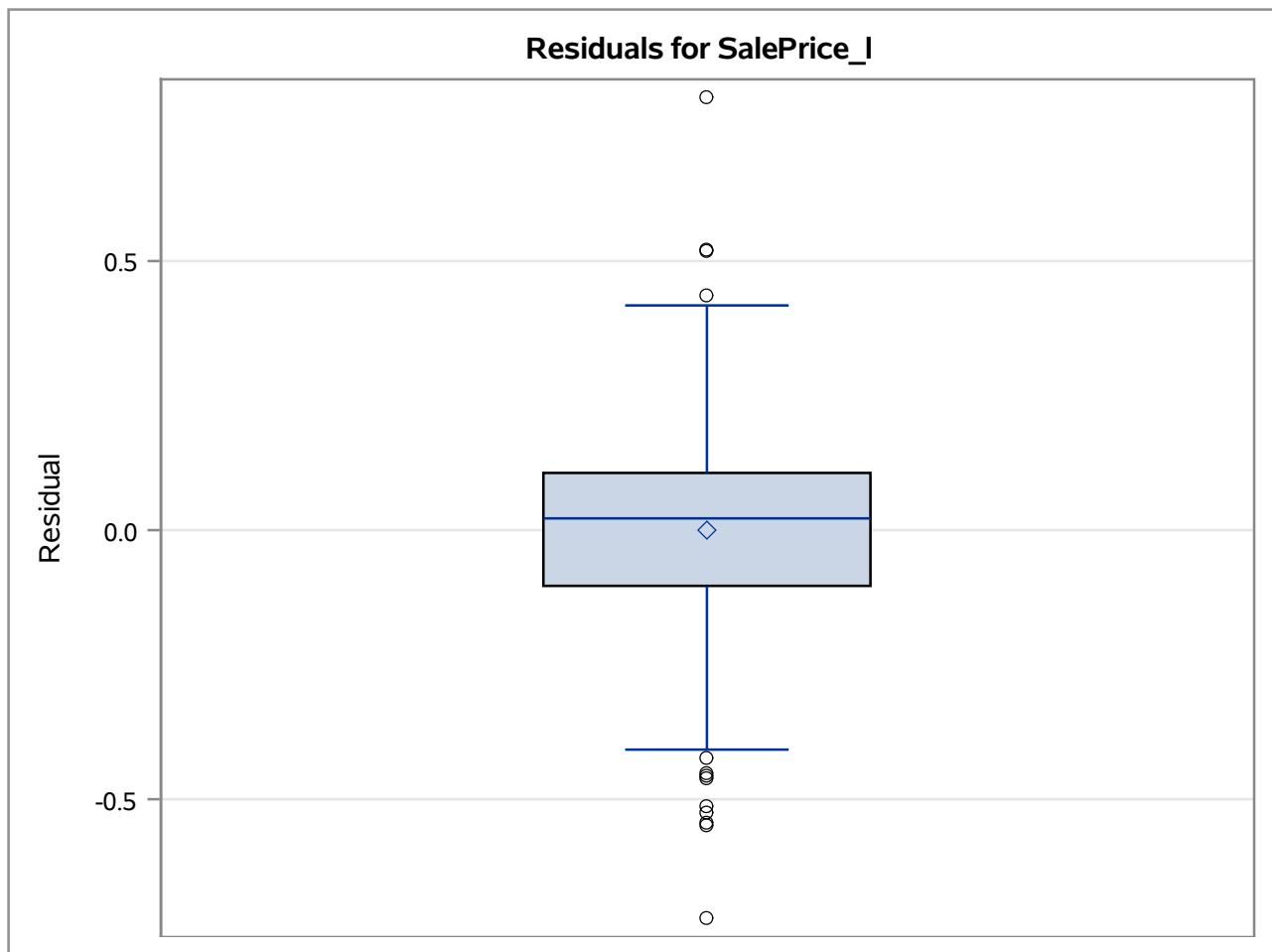


**Log-Log MLR with Dummy and Centered Interactions**

The REG Procedure

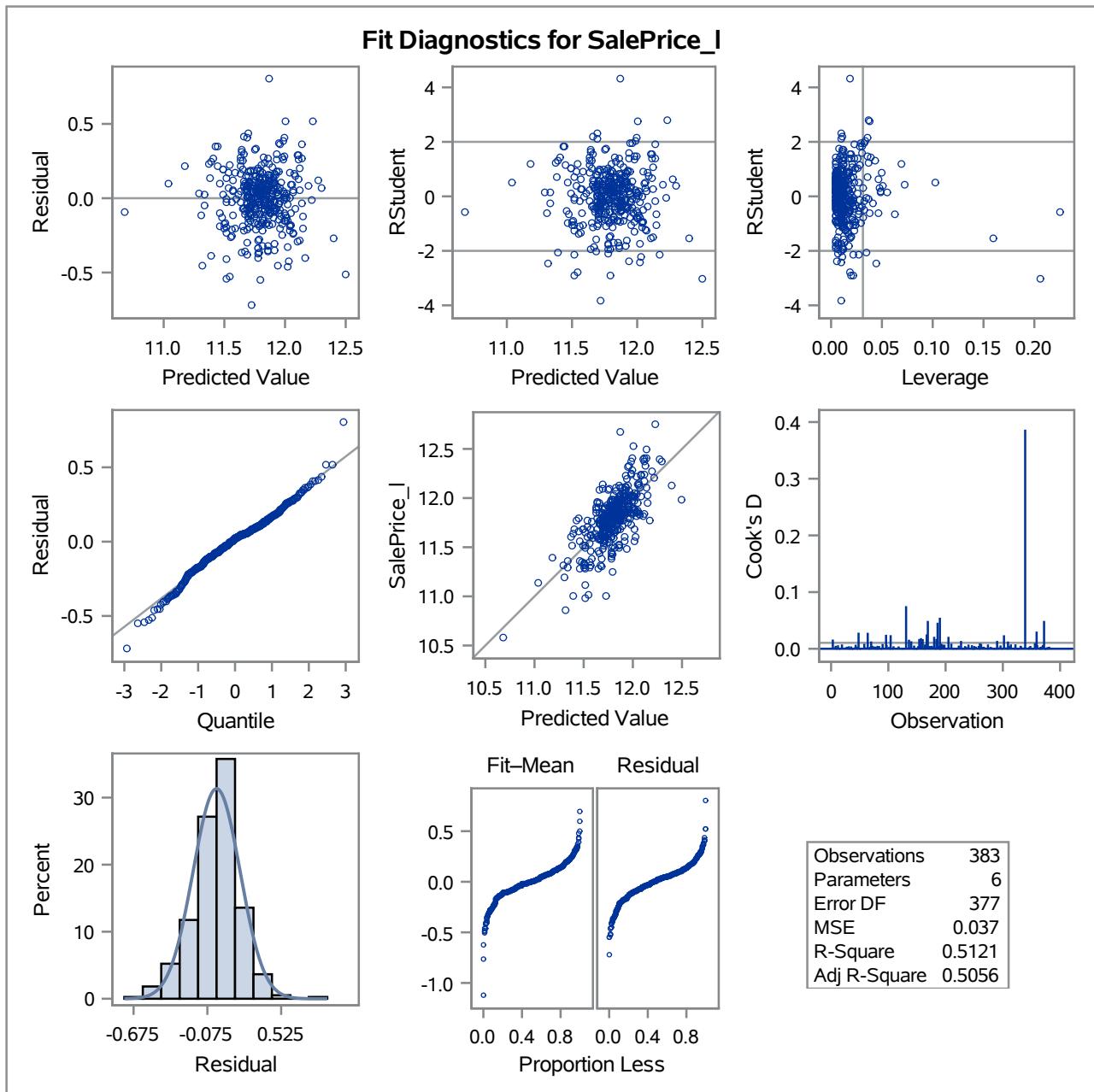
Model: MODEL1

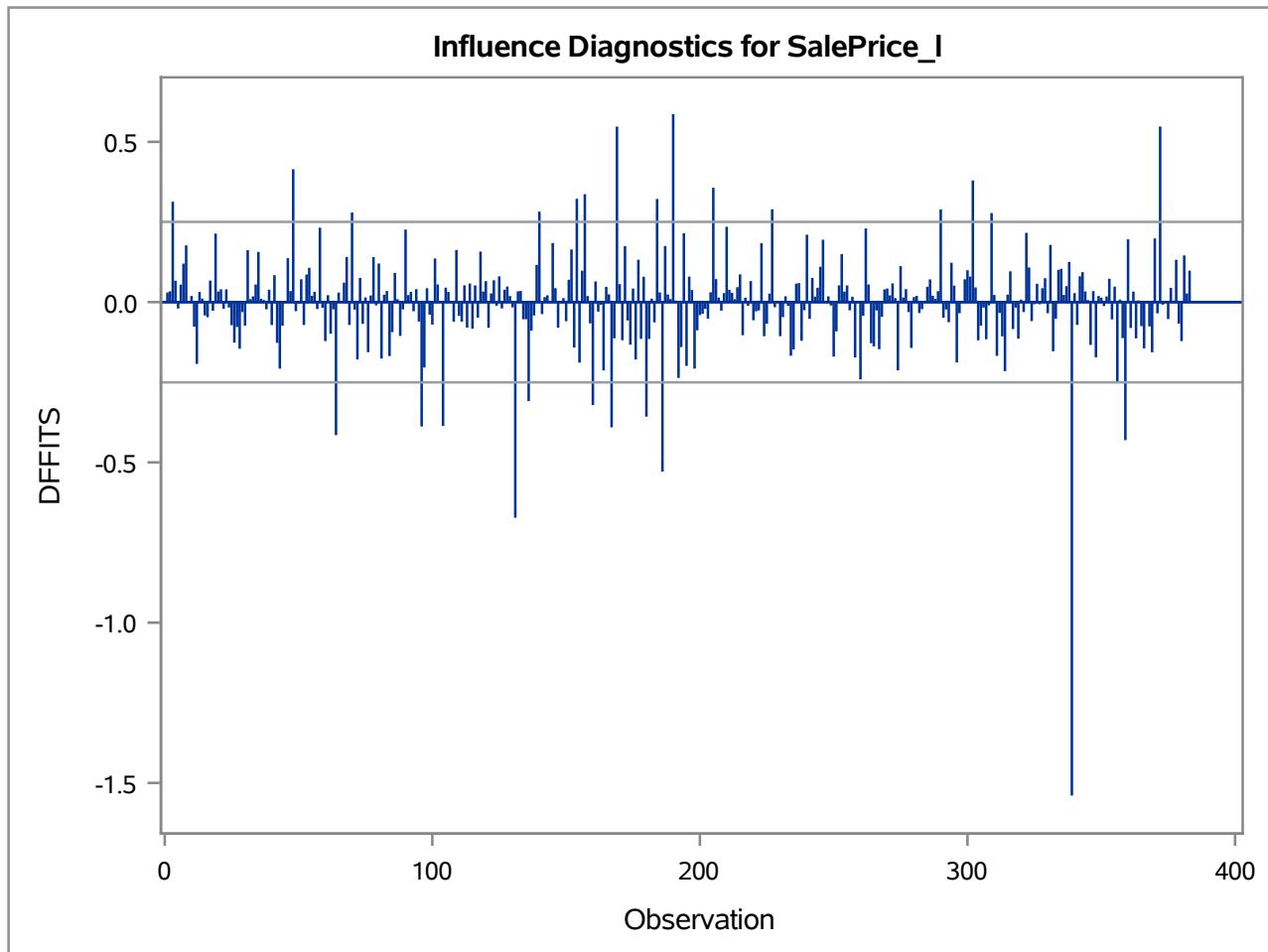
Dependent Variable: SalePrice\_I

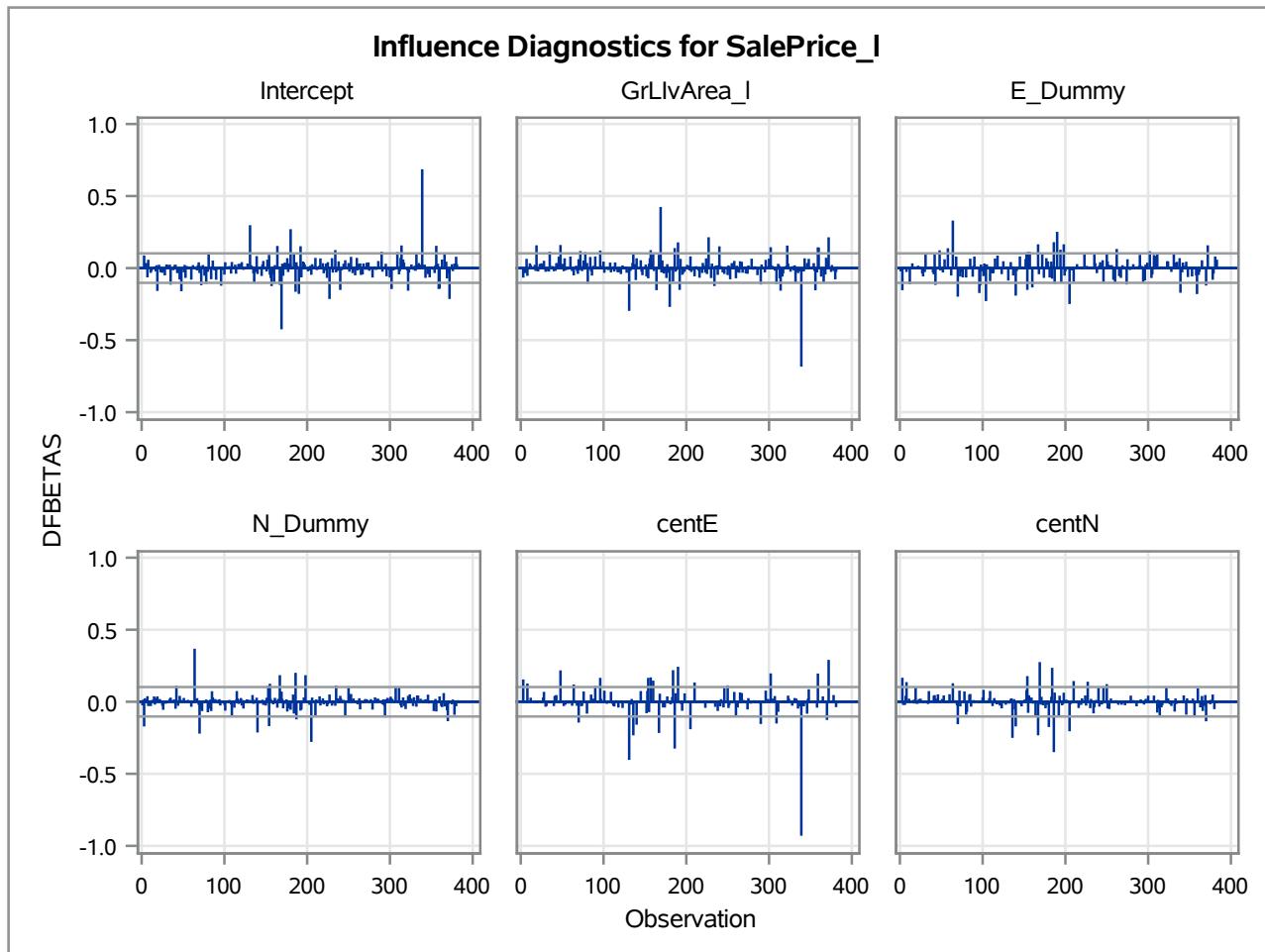


# Log-Log MLR with Dummy and Centered Interactions

**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**



**Log-Log MLR with Dummy and Centered Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

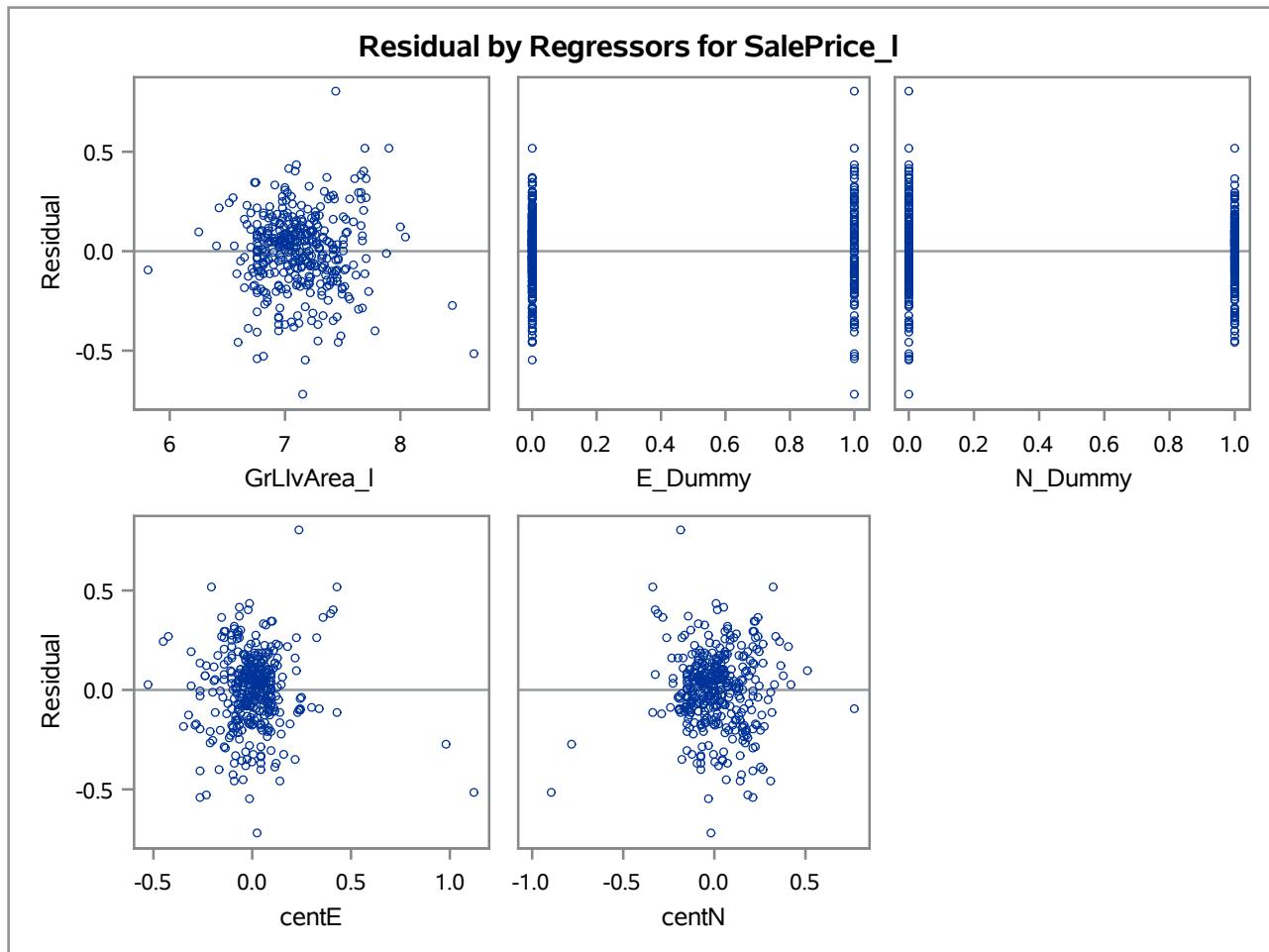
**Log-Log MLR with Dummy and Centered Interactions****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Log-Log MLR with Dummy and Centered Interactions

**The REG Procedure**

**Model: MODEL1**

**Dependent Variable: SalePrice\_I**



### The CONTENTS Procedure

<b>Data Set Name</b>	WORK.TRAIN	<b>Observations</b>	2919
<b>Member Type</b>	DATA	<b>Variables</b>	81
<b>Engine</b>	V9	<b>Indexes</b>	0
<b>Created</b>	04/14/2019 11:43:12	<b>Observation Length</b>	472
<b>Last Modified</b>	04/14/2019 11:43:34	<b>Deleted Observations</b>	0
<b>Protection</b>		<b>Compressed</b>	NO
<b>Data Set Type</b>		<b>Sorted</b>	NO
<b>Label</b>			
<b>Data Representation</b>	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
<b>Encoding</b>	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
<b>Data Set Page Size</b>	131072
<b>Number of Data Set Pages</b>	11
<b>First Data Page</b>	1
<b>Max Obs per Page</b>	277
<b>Obs in First Data Page</b>	250
<b>Number of Data Set Repairs</b>	0
<b>Filename</b>	/saswork/SAS_workFA250000C0A6_odaws01-prod-us/SAS_work7E120000C0A6_odaws01-prod-us/train.sas7bdat
<b>Release Created</b>	9.0401M5
<b>Host Created</b>	Linux
<b>Inode Number</b>	627212
<b>Access Permission</b>	rw-r--r--
<b>Owner Name</b>	eric.balke
<b>File Size</b>	2MB
<b>File Size (bytes)</b>	1572864

Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
44	1stFlrSF	Num	8	BEST12.	BEST32.
45	2ndFlrSF	Num	8	BEST12.	BEST32.
70	3SsnPorch	Num	8	BEST12.	BEST32.
7	Alley	Char	2	\$2.	\$2.
52	BedroomAbvGr	Num	8	BEST12.	BEST32.
16	BldgType	Char	6	\$6.	\$6.
32	BsmtCond	Char	2	\$2.	\$2.
33	BsmtExposure	Char	2	\$2.	\$2.
35	BsmtFinSF1	Num	8	BEST12.	BEST32.

### The CONTENTS Procedure

Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
37	BsmtFinSF2	Num	8	BEST12.	BEST32.
34	BsmtFinType1	Char	3	\$3.	\$3.
36	BsmtFinType2	Char	3	\$3.	\$3.
48	BsmtFullBath	Num	8	BEST12.	BEST32.
49	BsmtHalfBath	Num	8	BEST12.	BEST32.
31	BsmtQual	Char	2	\$2.	\$2.
38	BsmtUnfSF	Num	8	BEST12.	BEST32.
42	CentralAir	Char	1	\$1.	\$1.
14	Condition1	Char	6	\$6.	\$6.
15	Condition2	Char	6	\$6.	\$6.
43	Electrical	Char	5	\$5.	\$5.
69	EnclosedPorch	Num	8	BEST12.	BEST32.
29	ExterCond	Char	2	\$2.	\$2.
28	ExterQual	Char	2	\$2.	\$2.
24	Exterior1st	Char	7	\$7.	\$7.
25	Exterior2nd	Char	7	\$7.	\$7.
74	Fence	Char	5	\$5.	\$5.
58	FireplaceQu	Char	2	\$2.	\$2.
57	Fireplaces	Num	8	BEST12.	BEST32.
30	Foundation	Char	6	\$6.	\$6.
50	FullBath	Num	8	BEST12.	BEST32.
56	Functional	Char	4	\$4.	\$4.
63	GarageArea	Num	8	BEST12.	BEST32.
62	GarageCars	Num	8	BEST12.	BEST32.
65	GarageCond	Char	2	\$2.	\$2.
61	GarageFinish	Char	3	\$3.	\$3.
64	GarageQual	Char	2	\$2.	\$2.
59	GarageType	Char	7	\$7.	\$7.
60	GarageYrBlt	Num	8	BEST12.	BEST32.
47	GrLivArea	Num	8	BEST12.	BEST32.
51	HalfBath	Num	8	BEST12.	BEST32.
40	Heating	Char	4	\$4.	\$4.
41	HeatingQC	Char	2	\$2.	\$2.
17	HouseStyle	Char	6	\$6.	\$6.
1	Id	Num	8	BEST12.	BEST32.
53	KitchenAbvGr	Num	8	BEST12.	BEST32.

### The CONTENTS Procedure

Alphabetic List of Variables and Attributes					
#	Variable	Type	Len	Format	Informat
54	KitchenQual	Char	2	\$2.	\$2.
9	LandContour	Char	3	\$3.	\$3.
12	LandSlope	Char	3	\$3.	\$3.
5	LotArea	Num	8	BEST12.	BEST32.
11	LotConfig	Char	7	\$7.	\$7.
4	LotFrontage	Num	8	BEST12.	BEST32.
8	LotShape	Char	3	\$3.	\$3.
46	LowQualFinSF	Num	8	BEST12.	BEST32.
2	MSSubClass	Char	3	\$3.	\$3.
3	MSZoning	Char	2	\$2.	\$2.
27	MasVnrArea	Num	8	BEST12.	BEST32.
26	MasVnrType	Char	7	\$7.	\$7.
75	MiscFeature	Char	4	\$4.	\$4.
76	MiscVal	Num	8	BEST12.	BEST32.
77	MoSold	Num	8	BEST12.	BEST32.
13	Neighborhood	Char	7	\$7.	\$7.
68	OpenPorchSF	Num	8	BEST12.	BEST32.
19	OverallCond	Num	8	BEST12.	BEST32.
18	OverallQual	Num	8	BEST12.	BEST32.
66	PavedDrive	Char	1	\$1.	\$1.
72	PoolArea	Num	8	BEST12.	BEST32.
73	PoolQC	Char	2	\$2.	\$2.
23	RoofMatl	Char	7	\$7.	\$7.
22	RoofStyle	Char	5	\$5.	\$5.
80	SaleCondition	Char	7	\$7.	\$7.
81	SalePrice	Num	8	BEST12.	BEST32.
79	SaleType	Char	3	\$3.	\$3.
71	ScreenPorch	Num	8	BEST12.	BEST32.
6	Street	Char	4	\$4.	\$4.
55	TotRmsAbvGrd	Num	8	BEST12.	BEST32.
39	TotalBsmtSF	Num	8	BEST12.	BEST32.
10	Utilities	Char	6	\$6.	\$6.
67	WoodDeckSF	Num	8	BEST12.	BEST32.
20	YearBuilt	Num	8	BEST12.	BEST32.
21	YearRemodAdd	Num	8	BEST12.	BEST32.
78	YrSold	Num	8	BEST12.	BEST32.

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
1	1	60	RL	65	8450	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
2	2	20	RL	80	9600	Pave	NA	Reg	Lvl	AllPub	FR2	Gtl
3	3	60	RL	68	11250	Pave	NA	IR1	Lvl	AllPub	Inside	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
1	CollgCr	Norm	Norm	1Fam	2Story	7	5	2003	2003	Gable
2	Veenker	Feedr	Norm	1Fam	1Story	6	8	1976	1976	Gable
3	CollgCr	Norm	Norm	1Fam	2Story	7	5	2001	2002	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
1	CompShg	VinylSd	VinylSd	BrkFace	196	Gd	TA	PCconc	Gd	TA
2	CompShg	MetalSd	MetalSd	None	0	TA	TA	CBlock	Gd	TA
3	CompShg	VinylSd	VinylSd	BrkFace	162	Gd	TA	PCconc	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
1	No	GLQ	706	Unf	0	150	856	GasA	Ex
2	Gd	ALQ	978	Unf	0	284	1262	GasA	Ex
3	Mn	GLQ	486	Unf	0	434	920	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
1	Y	SBrkr	856	854	0	1710	1	0	2	1
2	Y	SBrkr	1262	0	0	1262	0	1	2	0
3	Y	SBrkr	920	866	0	1786	1	0	2	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
1	3	1	Gd	8	Typ	0	NA	Attchd	2003
2	3	1	TA	6	Typ	1	TA	Attchd	1976
3	3	1	Gd	6	Typ	1	TA	Attchd	2001

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
1	RFn	2	548	TA	TA	Y	0	61	0
2	RFn	2	460	TA	TA	Y	298	0	0
3	RFn	2	608	TA	TA	Y	0	42	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
1	0	0	0	NA	NA	NA	0	2	2008	WD	Normal	208500
2	0	0	0	NA	NA	NA	0	5	2007	WD	Normal	181500
3	0	0	0	NA	NA	NA	0	9	2008	WD	Normal	223500

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
4	4	70	RL	60	9550	Pave	NA	IR1	Lvl	AllPub	Corner	Gtl
5	5	60	RL	84	14260	Pave	NA	IR1	Lvl	AllPub	FR2	Gtl
6	6	50	RL	85	14115	Pave	NA	IR1	Lvl	AllPub	Inside	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
4	Crawfor	Norm	Norm	1Fam	2Story	7	5	1915	1970	Gable
5	NoRidge	Norm	Norm	1Fam	2Story	8	5	2000	2000	Gable
6	Mitchel	Norm	Norm	1Fam	1.5Fin	5	5	1993	1995	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
4	CompShg	Wd Sdng	Wd Shng	None	0	TA	TA	BrkTil	TA	Gd
5	CompShg	VinylSd	VinylSd	BrkFace	350	Gd	TA	PCconc	Gd	TA
6	CompShg	VinylSd	VinylSd	None	0	TA	TA	Wood	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
4	No	ALQ	216	Unf	0	540	756	GasA	Gd
5	Av	GLQ	655	Unf	0	490	1145	GasA	Ex
6	No	GLQ	732	Unf	0	64	796	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
4	Y	SBrkr	961	756	0	1717	1	0	1	0
5	Y	SBrkr	1145	1053	0	2198	1	0	2	1
6	Y	SBrkr	796	566	0	1362	1	0	1	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
4	3	1	Gd	7	Typ	1	Gd	Detchd	1998
5	4	1	Gd	9	Typ	1	TA	Attchd	2000
6	1	1	TA	5	Typ	0	NA	Attchd	1993

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
4	Unf	3	642	TA	TA	Y	0	35	272
5	RFn	3	836	TA	TA	Y	192	84	0
6	Unf	2	480	TA	TA	Y	40	30	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
4	0	0	0	NA	NA	NA	0	2	2006	WD	Abnorml	140000
5	0	0	0	NA	NA	NA	0	12	2008	WD	Normal	250000
6	320	0	0	NA	MnPrv	Shed	700	10	2009	WD	Normal	143000

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
7	7	20	RL	75	10084	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
8	8	60	RL	.	10382	Pave	NA	IR1	Lvl	AllPub	Corner	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
7	Somerst	Norm	Norm	1Fam	1Story	8	5	2004	2005	Gable
8	NWAmes	PosN	Norm	1Fam	2Story	7	6	1973	1973	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
7	CompShg	VinylSd	VinylSd	Stone	186	Gd	TA	PConc	Ex	TA
8	CompShg	HdBoard	HdBoard	Stone	240	TA	TA	CBlock	Gd	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
7	Av	GLQ	1369	Unf	0	317	1686	GasA	Ex
8	Mn	ALQ	859	BLQ	32	216	1107	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
7	Y	SBrkr	1694	0	0	1694	1	0	2	0
8	Y	SBrkr	1107	983	0	2090	1	0	2	1

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
7	3	1	Gd	7	Typ	1	Gd	Attchd	2004
8	3	1	TA	7	Typ	2	TA	Attchd	1973

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
7	RFn	2	636	TA	TA	Y	255	57	0
8	RFn	2	484	TA	TA	Y	235	204	228

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
7	0	0	0	NA	NA	NA	0	8	2007	WD	Normal	307000
8	0	0	0	NA	NA	Shed	350	11	2009	WD	Normal	200000

Obs	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope
9	9	50	RM	51	6120	Pave	NA	Reg	Lvl	AllPub	Inside	Gtl
10	10	190	RL	50	7420	Pave	NA	Reg	Lvl	AllPub	Corner	Gtl

Obs	Neighborhood	Condition1	Condition2	BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle
9	OldTown	Artery	Norm	1Fam	1.5Fin	7	5	1931	1950	Gable
10	BrkSide	Artery	Artery	2fmCon	1.5Unf	5	6	1939	1950	Gable

Obs	RoofMatl	Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	BsmtQual	BsmtCond
9	CompShg	BrkFace	Wd Shng	None	0	TA	TA	BrkTil	TA	TA
10	CompShg	MetalSd	MetalSd	None	0	TA	TA	BrkTil	TA	TA

Obs	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC
9	No	Unf	0	Unf	0	952	952	GasA	Gd
10	No	GLQ	851	Unf	0	140	991	GasA	Ex

Obs	CentralAir	Electrical	1stFlrSF	2ndFlrSF	LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath
9	Y	FuseF	1022	752	0	1774	0	0	2	0
10	Y	SBrkr	1077	0	0	1077	1	0	1	0

Obs	BedroomAbvGr	KitchenAbvGr	KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt
9	2	2	TA	8	Min1	2	TA	Detchd	1931
10	2	2	TA	5	Typ	2	TA	Attchd	1939

Obs	GarageFinish	GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
9	Unf	2	468	Fa	TA	Y	90	0	205
10	RFn	1	205	Gd	TA	Y	0	4	0

Obs	3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
9	0	0	0	NA	NA	NA	0	4	2008	WD	Abnorml	129900
10	0	0	0	NA	NA	NA	0	1	2008	WD	Normal	118000

## Stepwise Multiple Linear Regression - All vars No Ints

### The GLMSELECT Procedure

<b>Data Set</b>	WORK.TRAIN_6
<b>Dependent Variable</b>	SalePrice_I
<b>Selection Method</b>	Stepwise
<b>Select Criterion</b>	Significance Level
<b>Stop Criterion</b>	Significance Level
<b>Choose Criterion</b>	Cross Validation
<b>Entry Significance Level (SLE)</b>	0.15
<b>Stay Significance Level (SLS)</b>	0.15
<b>Cross Validation Method</b>	Split
<b>Cross Validation Fold</b>	5
<b>Effect Hierarchy Enforced</b>	Single

<b>Number of Observations Read</b>	2919
<b>Number of Observations Used</b>	1121

<b>Class Level Information</b>		
<b>Class</b>	<b>Levels</b>	<b>Values</b>
<b>MSZoning</b>	6	C FV NA RH RL RM
<b>MSSubClass</b>	15	120 160 180 190 20 30 40 45 50 60 70 75 80 85 90
<b>Street</b>	2	Grvl Pave
<b>Alley</b>	3	Gr NA Pa
<b>LotShape</b>	4	IR1 IR2 IR3 Reg
<b>LandContour</b>	4	Bnk HLS Low Lvl
<b>Utilities</b>	2	AllPub NA
<b>LotConfig</b>	5	Corner CulDSac FR2 FR3 Inside
<b>LandSlope</b>	3	Gtl Mod Sev
<b>Neighborhood</b>	25	Blmngtn Blueste BrDale BrkSide ClearCr CollgCr Crawfor Edwards Gilbert IDOTRR MeadowV Mitchel NAmes NPkVll NWAmes NoRidge NridgHt OldTown SWISU Sawyer SawyerW Somerst StoneBr Timber Veenker
<b>Condition1</b>	9	Artery Feedr Norm PosA PosN RRAe RRAn RRNe RRNn
<b>Condition2</b>	6	Artery Feedr Norm PosA PosN RRNn
<b>BldgType</b>	5	1Fam 2fmCon Duplex Twnhs TwnhsE
<b>HouseStyle</b>	8	1.5Fin 1.5Unf 1Story 2.5Fin 2.5Unf 2Story SFoyer SLvl
<b>RoofStyle</b>	6	Flat Gable Gambr Hip Mansa Shed
<b>RoofMatl</b>	7	ClyTile CompShg Membran Roll Tar&Grv WdShake WdShngl
<b>Exterior1st</b>	14	AsbShng BrkComm BrkFace CBlock CemntBd HdBoard ImStucc MetalSd Plywood Stone Stucco VinylSd Wd Sdng WdShing
<b>Exterior2nd</b>	16	AsbShng AsphShn Brk Cmn BrkFace CBlock CmentBd HdBoard ImStucc MetalSd Other Plywood Stone Stucco VinylSd Wd Sdng Wd Shng
<b>MasVnrType</b>	5	BrkCmn BrkFace NA None Stone

## Stepwise Multiple Linear Regression - All vars No Ints

### The GLMSELECT Procedure

Class Level Information		
Class	Levels	Values
ExterQual	4	Ex Fa Gd TA
ExterCond	5	Ex Fa Gd Po TA
Foundation	6	BrkTil CBlock PConc Slab Stone Wood
BsmtQual	5	Ex Fa Gd NA TA
BsmtCond	5	Fa Gd NA Po TA
BsmtExposure	5	Av Gd Mn NA No
BsmtFinType1	7	ALQ BLQ GLQ LwQ NA Rec Unf
BsmtFinType2	7	ALQ BLQ GLQ LwQ NA Rec Unf
Heating	5	GasA GasW Grav OthW Wall
HeatingQC	5	Ex Fa Gd Po TA
CentralAir	2	N Y
Electrical	6	FuseA FuseF FuseP Mix NA SBrkr
KitchenQual	5	Ex Fa Gd NA TA
Functional	7	Maj1 Maj2 Min1 Min2 Mod NA Typ
FireplaceQu	6	Ex Fa Gd NA Po TA
GarageType	6	2Types Attchd Basment BuiltIn CarPort Detchd
GarageFinish	3	Fin RFn Unf
GarageQual	5	Ex Fa Gd Po TA
GarageCond	5	Ex Fa Gd Po TA
PavedDrive	3	N P Y
PoolQC	4	Ex Fa Gd NA
Fence	5	GdPrv GdWo MnPrv MnWw NA
MiscFeature	5	Gar2 NA Othr Shed TenC
SaleType	7	COD CWD Con NA New Oth WD
SaleCondition	6	Abnorml AdjLand Alloca Family Normal Partial

Dimensions	
Number of Effects	80
Number of Parameters	266

## Stepwise Multiple Linear Regression - All vars No Ints

## The GLMSELECT Procedure

Stepwise Selection Summary									
Step	Effect Entered	Effect Removed	Number Effects In	NumberParms In	Model R-Square	PRESS	CV PRESS	F Value	Pr > F
0	Intercept		1	1	0.0000	176.6399	176.6801	0.00	1.0000
1	OverallQual		2	2	0.6851	55.7616	56.0301	2434.03	<.0001
2	GrLivArea		3	3	0.7441	45.8728	45.8803	258.08	<.0001
3	Neighborhood		4	27	0.8210	33.5783	33.7194	19.59	<.0001
4	MSSubClass		5	41	0.8441	30.6269	30.9587	11.42	<.0001
5	RoofMatl		6	47	0.8597	27.3552	30.7784	19.81	<.0001
6	BsmtFinSF1		7	48	0.8740	24.7691	30.7281	121.87	<.0001
7	OverallCond		8	49	0.8855	22.6001	28.8408	107.68	<.0001
8	YearBuilt		9	50	0.8948	20.8879	27.4341*	95.39	<.0001
9	Condition2		10	55	0.9029	22.5860	31.5430	17.69	<.0001
10	MSZoning		11	59	0.9086	21.9033	31.2462	16.50	<.0001
11	GarageCars		12	60	0.9142	20.5943	29.1220	69.52	<.0001
12	TotalBsmtSF		13	61	0.9172	20.3498	30.3615	38.11	<.0001
13	SaleCondition		14	66	0.9206	20.0938	30.5817	9.07	<.0001
14	LotArea		15	67	0.9228	20.2023	30.9247	29.57	<.0001
15	CentralAir		16	68	0.9246	19.6813	30.3264	25.27	<.0001
16	KitchenQual		17	71	0.9265	19.3993	29.9067	9.06	<.0001
17	ScreenPorch		18	72	0.9274	19.1038	29.4917	13.77	0.0002
18	LandSlope		19	74	0.9284	19.0804	29.6562	7.34	0.0007
19	HeatingQC		20	78	0.9297	18.8865	29.4449	4.89	0.0007
20	Functional		21	83	0.9311	18.9548	29.7035	4.15	0.0010
21	Condition1		22	91	0.9328	18.6809	29.3445	3.27	0.0011
22	Fireplaces		23	92	0.9336	18.4396	29.0891	11.61	0.0007
23	GarageArea		24	93	0.9342	18.1827	29.1811	10.43	0.0013
24	Foundation		25	98	0.9354	18.1653	29.3770	3.65	0.0028
25	YearRemodAdd		26	99	0.9359	18.0530	29.4529	8.03	0.0047
26	Exterior1st		27	112	0.9378	18.6047	29.8061	2.32	0.0049
27	LotFrontage		28	113	0.9383	18.5229	30.3843	9.48	0.0021
28	WoodDeckSF		29	114	0.9389	18.3867	30.2082	8.45	0.0037
29	BsmtFullBath		30	115	0.9393	18.3062	29.7453	6.60	0.0104
30	LotConfig		31	119	0.9400	18.1862	29.6153	3.09	0.0154
31	Heating		32	123	0.9407	17.9042*	29.1452	3.19	0.0129
32	BsmtExposure		33	127	0.9415	18.1088	29.0478	3.34	0.0099

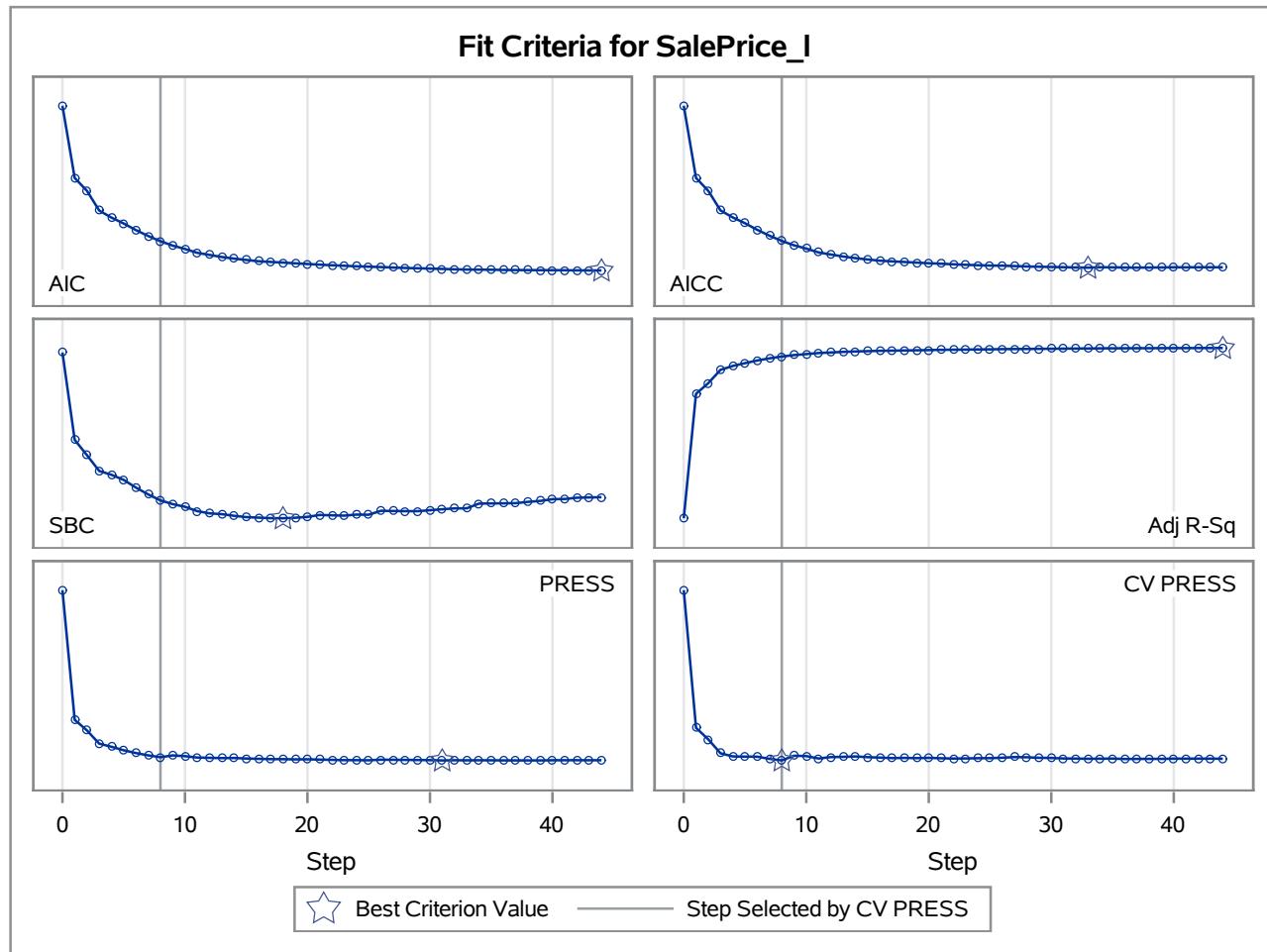
## Stepwise Multiple Linear Regression - All vars No Ints

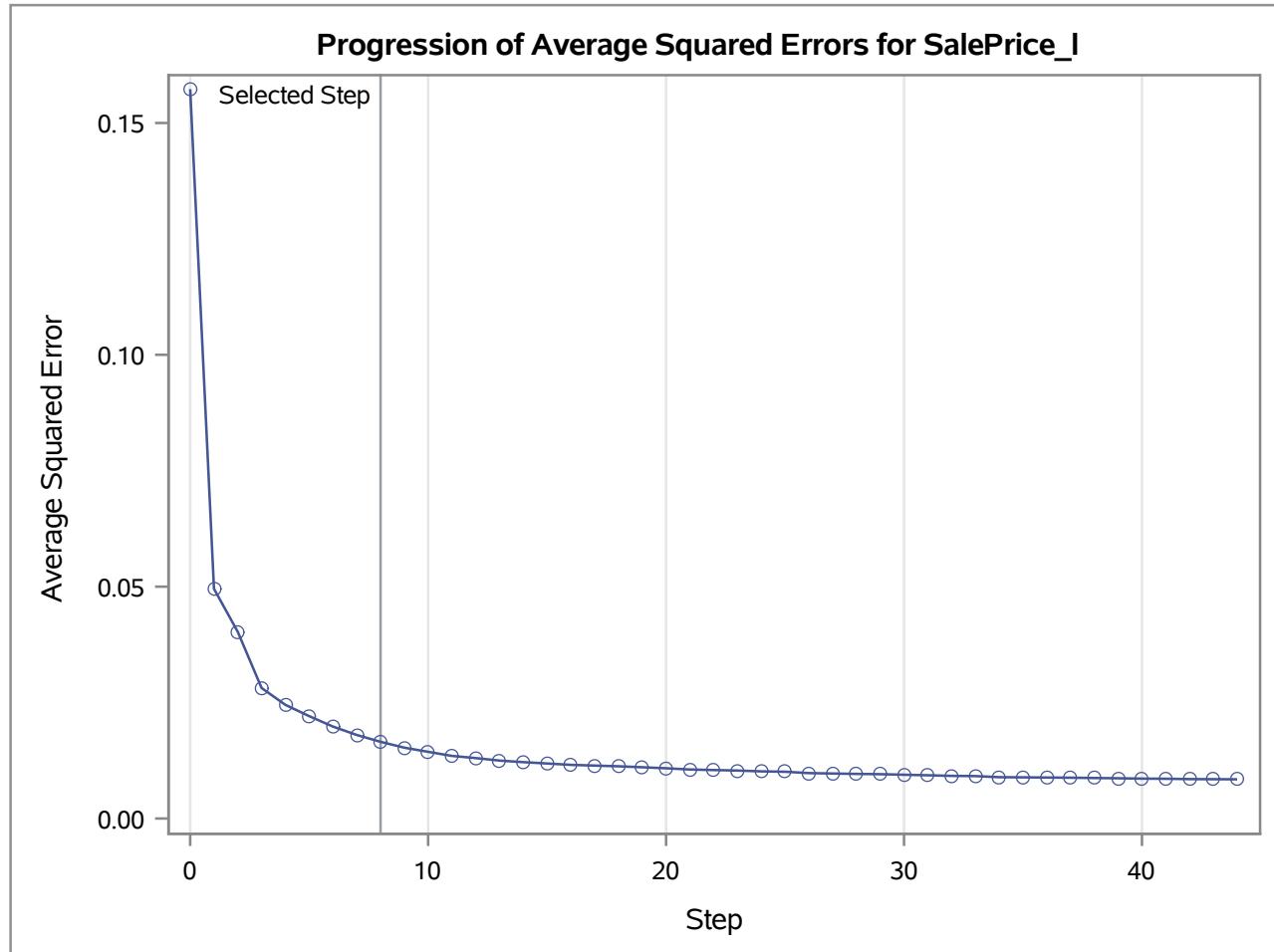
### The GLMSELECT Procedure

Stepwise Selection Summary									
Step	Effect Entered	Effect Removed	Number Effects In	NumberParms In	Model R-Square	PRESS	CV PRESS	F Value	Pr > F
33	3SsnPorch		34	128	0.9419	18.0104	28.8871	5.48	0.0194
34	Exterior2nd		35	142	0.9433	18.0806	28.9666	1.83	0.0304
35	HalfBath		36	143	0.9436	18.0371	29.0635	3.82	0.0511
36	FullBath		37	144	0.9438	17.9651	28.7194	4.89	0.0272
37	EnclosedPorch		38	145	0.9440	17.9313	28.7890	3.61	0.0578
38	GarageQual		39	149	0.9445	17.9274	28.7921	1.97	0.0974
39	ExterCond		40	152	0.9448	17.9366	28.8088	2.04	0.1065
40	SaleType		41	157	0.9453	18.0778	29.0091	1.74	0.1233
41	Street		42	158	0.9455	18.1062	28.9886	3.25	0.0719
42	GarageCond		43	162	0.9460	18.1335	29.0194	2.05	0.0851
43	KitchenAbvGr		44	163	0.9461	18.0827	28.9760	2.65	0.1038
44	LowQualFinSF		45	164	0.9463	18.1028	28.9305	2.69	0.1013
* Optimal Value of Criterion									

Selection stopped because the candidate for entry has SLE > 0.15 and the candidate for removal has SLS < 0.15.

Stop Details					
Candidate For	Effect	Candidate Significance		Compare Significance	
Entry	MasVnrType	0.1576	>	0.1500	(SLE)
Removal	LowQualFinSF	0.1013	<	0.1500	(SLS)

**Stepwise Multiple Linear Regression - All vars No Ints****The GLMSELECT Procedure**

**Stepwise Multiple Linear Regression - All vars No Ints****The GLMSELECT Procedure**

## Stepwise Multiple Linear Regression - All vars No Ints

### The GLMSELECT Procedure Selected Model

**The selected model, based on Cross Validation, is the model at Step 8.**

<b>Effects:</b>	Intercept MSSubClass Neighborhood YearBuilt RoofMatl BsmtFinSF1 GrLivArea OverallQual OverallCond
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Analysis of Variance				
Source	DF	Sum of Squares	Mean Square	F Value
<b>Model</b>	49	157.78369	3.22008	186.00
<b>Error</b>	1071	18.54123	0.01731	
<b>Corrected Total</b>	1120	176.32491		

<b>Root MSE</b>	0.13158
<b>Dependent Mean</b>	12.04841
<b>R-Square</b>	0.8948
<b>Adj R-Sq</b>	0.8900
<b>AIC</b>	-3375.31932
<b>AICC</b>	-3370.35767
<b>PRESS</b>	20.88793
<b>SBC</b>	-4247.22050
<b>CV PRESS</b>	27.43410

Cross Validation Details			
<b>Index</b>	Observations		<b>CV PRESS</b>
	<b>Fitted</b>	<b>Left Out</b>	
1	896	225	3.7723
2	897	224	4.3653
3	897	224	9.9853
4	897	224	5.5895
5	897	224	3.7216
Total			27.4341

# Stepwise Multiple Linear Regression - All vars No Ints

## The GLMSELECT Procedure Selected Model

Parameter Estimates									
Parameter	DF	Estimate	Standard Error	t Value	Cross Validation Estimates				
					1	2	3	4	5
<b>Intercept</b>	1	3.513189	0.754349	4.66	4.629913	5.1649363	4.6296509	5.4580818	4.1314128
<b>MSSubClass 120</b>	1	0.074087	0.032306	2.29	0.016193	0.0586511	0.0731611	0.0478545	0.0248552
<b>MSSubClass 160</b>	1	-0.113863	0.036215	-3.14	-0.081690	-0.0497445	-0.0521058	-0.0379192	-0.0742544
<b>MSSubClass 180</b>	1	0.054269	0.065740	0.83	0.057823	0.1102072	0.0390266	0.0299961	-0.0206061
<b>MSSubClass 190</b>	1	0.073153	0.041158	1.78	0.053751	0.1177482	0.0675676	0.0502959	0.0593166
<b>MSSubClass 20</b>	1	0.153025	0.025337	6.04	0.043310	0.0948330	0.0636307	0.0655814	0.0657937
<b>MSSubClass 30</b>	1	0.114329	0.035493	3.22	0.010353	0.0392144	0.0492133	0.0232070	0.0390019
<b>MSSubClass 40</b>	1	0.016264	0.080814	0.20	0.047314	0.0747026	0.0151115	0.1168126	0.0503767
<b>MSSubClass 45</b>	1	0.094534	0.053487	1.77	0.042255	0.0463818	0.0034990	0.0599783	0.0400313
<b>MSSubClass 50</b>	1	0.106204	0.029665	3.58	0.073227	0.0806006	0.0647846	0.0586957	0.0709276
<b>MSSubClass 60</b>	1	0.079009	0.026651	2.96	0.034983	0.0433487	0.0496052	0.0388824	0.0289591
<b>MSSubClass 70</b>	1	0.111352	0.036060	3.09	0.107652	0.0795247	0.0714604	0.0838096	0.0757665
<b>MSSubClass 75</b>	1	0.085824	0.049907	1.72	0.027770	0.0178127	0.0084158	0.0277369	0.0407030
<b>MSSubClass 80</b>	1	0.119520	0.032651	3.66	0.055761	0.0802455	0.0685796	0.0754169	0.0740319
<b>MSSubClass 85</b>	1	0.138646	0.043372	3.20	0.033347	0.0918463	0.0483584	0.0637487	0.0597960
<b>Neighborhood Blmgtn</b>	1	-0.105570	0.063127	-1.67	-0.080283	-0.1234804	-0.1237891	-0.0744673	-0.1215041
<b>Neighborhood Blueste</b>	1	-0.100552	0.109326	-0.92	0.019882	-0.0258954	-0.0373418	-0.0515032	-0.0333614
<b>Neighborhood BrDale</b>	1	-0.207062	0.067005	-3.09	-0.000120	-0.0816920	-0.0232166	-0.0659973	-0.0961452
<b>Neighborhood BrkSide</b>	1	-0.129424	0.058123	-2.23	-0.022558	-0.0505848	0.0350705	-0.0120051	-0.0114357
<b>Neighborhood ClearCr</b>	1	-0.085518	0.065095	-1.31	-0.036511	-0.0411506	-0.0052821	-0.0506425	-0.0419666
<b>Neighborhood CollgCr</b>	1	-0.129220	0.053206	-2.43	-0.069779	-0.1100922	-0.0726764	-0.0771678	-0.0923722
<b>Neighborhood Crawfor</b>	1	-0.023073	0.056937	-0.41	0.053584	0.0270886	0.0673534	0.0565467	0.0566010
<b>Neighborhood Edwards</b>	1	-0.241524	0.054607	-4.42	-0.142426	-0.1948742	-0.1154069	-0.1173747	-0.1708987
<b>Neighborhood Gilbert</b>	1	-0.116525	0.055871	-2.09	-0.079023	-0.1104066	-0.1046155	-0.0934481	-0.0996751
<b>Neighborhood IDOTRR</b>	1	-0.253275	0.060368	-4.20	0.009551	-0.0515559	0.0239030	-0.0100695	-0.0269634
<b>Neighborhood MeadowV</b>	1	-0.270244	0.070562	-3.83	-0.207660	-0.2942098	-0.1879911	-0.1834634	-0.2146162
<b>Neighborhood Mitchel</b>	1	-0.175959	0.056516	-3.11	-0.089386	-0.1132678	-0.0946596	-0.0975326	-0.1033476
<b>Neighborhood NAmes</b>	1	-0.176548	0.052838	-3.34	-0.078225	-0.1160297	-0.0657432	-0.0899146	-0.1034595
<b>Neighborhood NPkVill</b>	1	-0.071519	0.073534	-0.97	-0.084207	-0.1766261	-0.0420739	-0.1005639	-0.1129721
<b>Neighborhood NWAmes</b>	1	-0.193913	0.054978	-3.53	-0.072285	-0.1042888	-0.0826136	-0.1096591	-0.1026710
<b>Neighborhood NoRidge</b>	1	-0.071070	0.056924	-1.25	0.000552	-0.0584621	-0.0487519	-0.0553123	-0.0256270
<b>Neighborhood NridgHt</b>	1	0.034481	0.053740	0.64	0.039447	-0.0082928	-0.0001489	-0.0040817	0.0158420
<b>Neighborhood OldTown</b>	1	-0.211644	0.056099	-3.77	-0.060585	-0.1060545	-0.0290379	-0.0563548	-0.0650412

# Stepwise Multiple Linear Regression - All vars No Ints

## The GLMSELECT Procedure Selected Model

Parameter Estimates										
Parameter	DF	Estimate	Standard Error	t Value	Cross Validation Estimates					
					1	2	3	4	5	
Neighborhood SWISU	1	-0.190427	0.062657	-3.04	-0.098201	-0.0992261	-0.0373815	-0.0993185	-0.0803258	
Neighborhood Sawyer	1	-0.192285	0.055515	-3.46	-0.076257	-0.1140554	-0.0530695	-0.0870427	-0.1077859	
Neighborhood SawyerW	1	-0.163318	0.054818	-2.98	-0.047855	-0.0887938	-0.0532896	-0.0654470	-0.0796324	
Neighborhood Somerst	1	-0.020503	0.054467	-0.38	-0.019025	-0.0456984	-0.0339798	-0.0605549	-0.0424003	
Neighborhood StoneBr	1	0.073793	0.059089	1.25	0.106185	0.0460621	0.0499742	0.0753199	0.0784401	
Neighborhood Timber	1	-0.054515	0.056976	-0.96	-0.045314	-0.0971691	-0.0918600	-0.0866435	-0.0799708	
YearBuilt	1	0.003738	0.000383	9.77	0.002169	0.0018113	0.0022285	0.0020607	0.0020740	
RoofMatl ClyTile	1	-2.470157	0.155823	-15.85	-2.699155	-2.8186387	0.0000000	-2.8149092	-2.5729815	
RoofMatl CompShg	1	-0.139829	0.056653	-2.47	-0.033910	-0.0638849	-0.0067071	-0.0250265	-0.0447812	
RoofMatl Membran	1	0.122043	0.147389	0.83	0.353399	0.0000000	0.2557289	0.4264147	0.3859513	
RoofMatl Roll	1	-0.117431	0.145181	-0.81	0.130489	0.0000000	0.1563604	0.1216056	0.1410401	
RoofMatl Tar&Grv	1	-0.158581	0.077468	-2.05	-0.012515	-0.0732762	-0.0197899	-0.0474452	-0.0623119	
RoofMatl WdShake	1	-0.243129	0.109476	-2.22	-0.035962	-0.1542906	-0.0918300	-0.1143894	-0.1161566	
BsmtFinSF1	1	0.000114	0.000010332	11.02	0.000073	0.0000829	0.0000924	0.0000658	0.0000757	
GrLivArea	1	0.000347	0.000013713	25.32	0.000224	0.0002457	0.0002715	0.0002543	0.0002211	
OverallQual	1	0.071896	0.005543	12.97	0.043608	0.0421901	0.0377664	0.0383351	0.0493749	
OverallCond	1	0.054947	0.004379	12.55	0.039538	0.0364791	0.0365704	0.0411090	0.0337639	

## Stepwise Multiple Linear Regression - All vars No Ints

### The REG Procedure

Model: MODEL1

Dependent Variable: SalePrice\_I

Number of Observations Read	2919
Number of Observations Used	1459
Number of Observations with Missing Values	1460

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	49	206.88371	4.22212	229.59	<.0001
Error	1409	25.91107	0.01839		
Corrected Total	1458	232.79478			

Root MSE	0.13561	R-Square	0.8887
Dependent Mean	12.02400	Adj R-Sq	0.8848
Coeff Var	1.12782		

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
Intercept	Intercept	1	3.37318	0.66481	5.07	<.0001
MSSubClass 120	MSSubClass 120	1	0.03528	0.02802	1.26	0.2082
MSSubClass 160	MSSubClass 160	1	-0.12925	0.03201	-4.04	<.0001
MSSubClass 180	MSSubClass 180	1	-0.02281	0.05717	-0.40	0.6900
MSSubClass 190	MSSubClass 190	1	0.06811	0.03429	1.99	0.0472
MSSubClass 20	MSSubClass 20	1	0.12412	0.02112	5.88	<.0001
MSSubClass 30	MSSubClass 30	1	0.07691	0.02992	2.57	0.0103
MSSubClass 40	MSSubClass 40	1	0.08266	0.07352	1.12	0.2611
MSSubClass 45	MSSubClass 45	1	0.09101	0.04670	1.95	0.0515
MSSubClass 50	MSSubClass 50	1	0.09331	0.02546	3.66	0.0003
MSSubClass 60	MSSubClass 60	1	0.04973	0.02268	2.19	0.0285
MSSubClass 70	MSSubClass 70	1	0.11017	0.03209	3.43	0.0006
MSSubClass 75	MSSubClass 75	1	0.08958	0.04461	2.01	0.0449
MSSubClass 80	MSSubClass 80	1	0.10284	0.02720	3.78	0.0002
MSSubClass 85	MSSubClass 85	1	0.11815	0.03696	3.20	0.0014
Neighborhood Blmgtn	Neighborhood Blmgtn	1	-0.05444	0.05500	-0.99	0.3225
Neighborhood Blueste	Neighborhood Blueste	1	-0.08040	0.10734	-0.75	0.4540
Neighborhood BrDale	Neighborhood BrDale	1	-0.19626	0.05926	-3.31	0.0009
Neighborhood BrkSide	Neighborhood BrkSide	1	-0.13437	0.04795	-2.80	0.0051

# Stepwise Multiple Linear Regression - All vars No Ints

**The REG Procedure**

**Model: MODEL1**

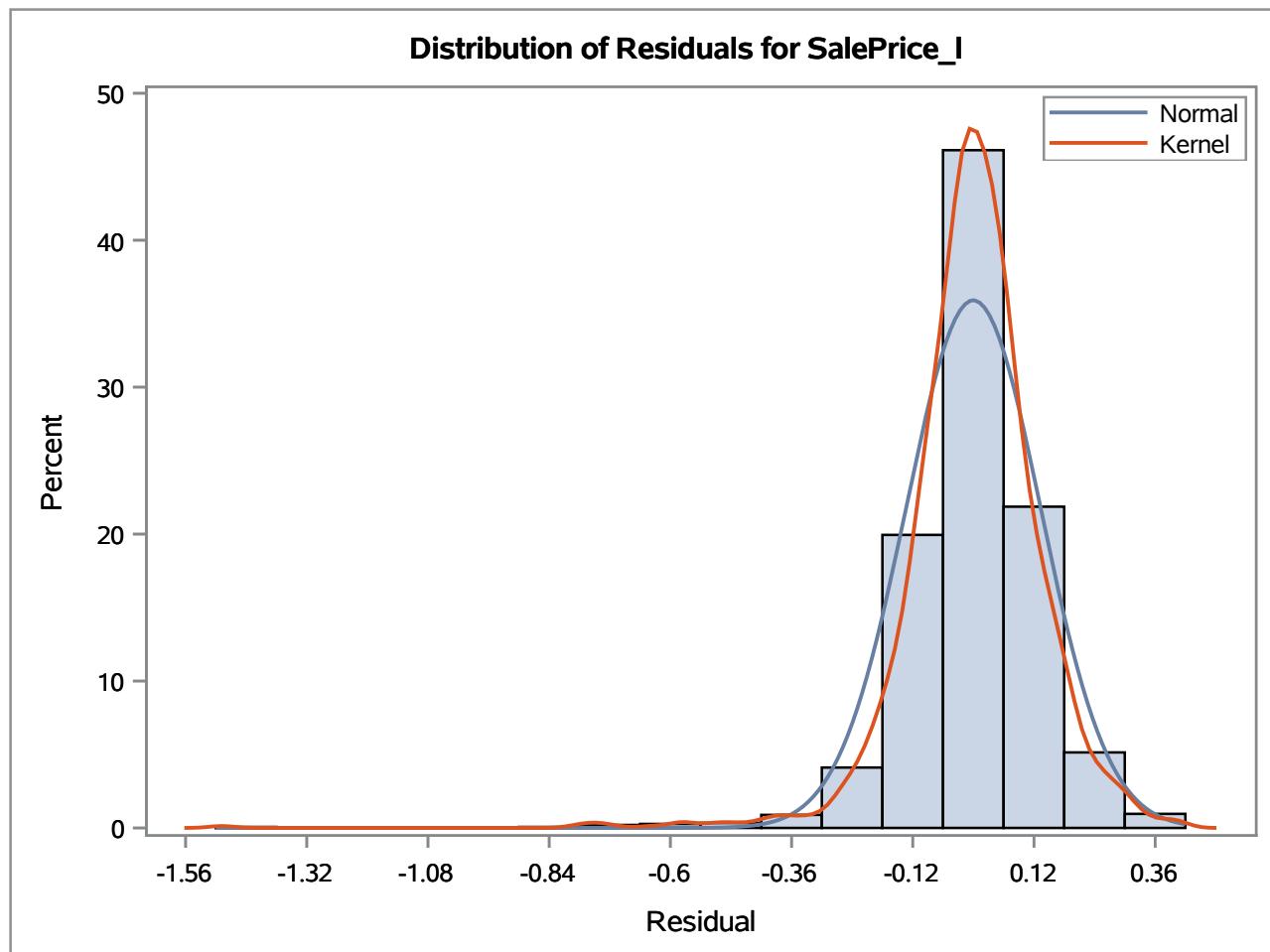
**Dependent Variable: SalePrice\_I**

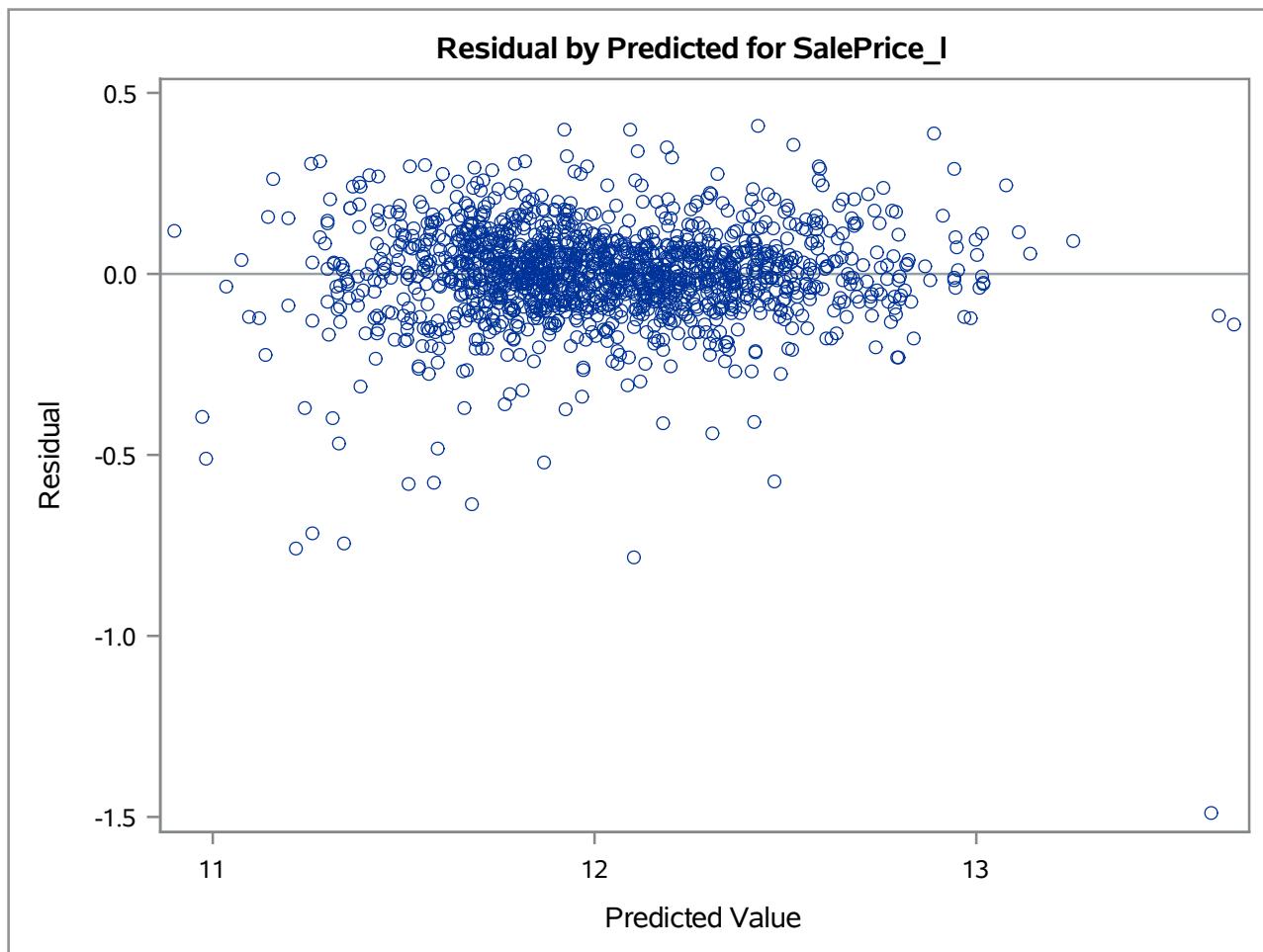
Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
<b>Neighborhood ClearCr</b>	Neighborhood ClearCr	1	-0.01177	0.04987	-0.24	0.8134
<b>Neighborhood CollgCr</b>	Neighborhood CollgCr	1	-0.10449	0.04352	-2.40	0.0165
<b>Neighborhood Crawfor</b>	Neighborhood Crawfor	1	-0.00362	0.04729	-0.08	0.9390
<b>Neighborhood Edwards</b>	Neighborhood Edwards	1	-0.20217	0.04480	-4.51	<.0001
<b>Neighborhood Gilbert</b>	Neighborhood Gilbert	1	-0.09989	0.04540	-2.20	0.0279
<b>Neighborhood IDOTRR</b>	Neighborhood IDOTRR	1	-0.26984	0.05011	-5.39	<.0001
<b>Neighborhood MeadowV</b>	Neighborhood MeadowV	1	-0.23722	0.05985	-3.96	<.0001
<b>Neighborhood Mitchel</b>	Neighborhood Mitchel	1	-0.15495	0.04612	-3.36	0.0008
<b>Neighborhood NAmes</b>	Neighborhood NAmes	1	-0.14537	0.04312	-3.37	0.0008
<b>Neighborhood NPkVill</b>	Neighborhood NPkVill	1	-0.06110	0.06313	-0.97	0.3332
<b>Neighborhood NWAmes</b>	Neighborhood NWAmes	1	-0.15425	0.04458	-3.46	0.0006
<b>Neighborhood NoRidge</b>	Neighborhood NoRidge	1	-0.05150	0.04764	-1.08	0.2799
<b>Neighborhood NridgHt</b>	Neighborhood NridgHt	1	0.05346	0.04520	1.18	0.2371
<b>Neighborhood OldTown</b>	Neighborhood OldTown	1	-0.20554	0.04641	-4.43	<.0001
<b>Neighborhood SWISU</b>	Neighborhood SWISU	1	-0.17725	0.05251	-3.38	0.0008
<b>Neighborhood Sawyer</b>	Neighborhood Sawyer	1	-0.16146	0.04508	-3.58	0.0004
<b>Neighborhood SawyerW</b>	Neighborhood SawyerW	1	-0.14107	0.04539	-3.11	0.0019
<b>Neighborhood Somerst</b>	Neighborhood Somerst	1	-0.00448	0.04533	-0.10	0.9212
<b>Neighborhood StoneBr</b>	Neighborhood StoneBr	1	0.07187	0.05029	1.43	0.1532
<b>Neighborhood Timber</b>	Neighborhood Timber	1	-0.04872	0.04751	-1.03	0.3053
<b>YearBuilt</b>	YearBuilt	1	0.00380	0.00033669	11.28	<.0001
<b>RoofMatl ClyTile</b>	RoofMatl ClyTile	1	-2.50733	0.15758	-15.91	<.0001
<b>RoofMatl CompShg</b>	RoofMatl CompShg	1	-0.12754	0.05746	-2.22	0.0266
<b>RoofMatl Membran</b>	RoofMatl Membran	1	0.09304	0.14930	0.62	0.5333
<b>RoofMatl Roll</b>	RoofMatl Roll	1	-0.12462	0.14859	-0.84	0.4018
<b>RoofMatl Tar&amp;Grv</b>	RoofMatl Tar&Grv	1	-0.11603	0.07027	-1.65	0.0989
<b>RoofMatl WdShake</b>	RoofMatl WdShake	1	-0.21406	0.08470	-2.53	0.0116
<b>BsmtFinSF1</b>	BsmtFinSF1	1	0.00012236	0.00000946	12.93	<.0001
<b>GrLivArea</b>	GrLivArea	1	0.00034134	0.00001194	28.60	<.0001
<b>OverallQual</b>	OverallQual	1	0.07660	0.00481	15.91	<.0001
<b>OverallCond</b>	OverallCond	1	0.05246	0.00371	14.14	<.0001

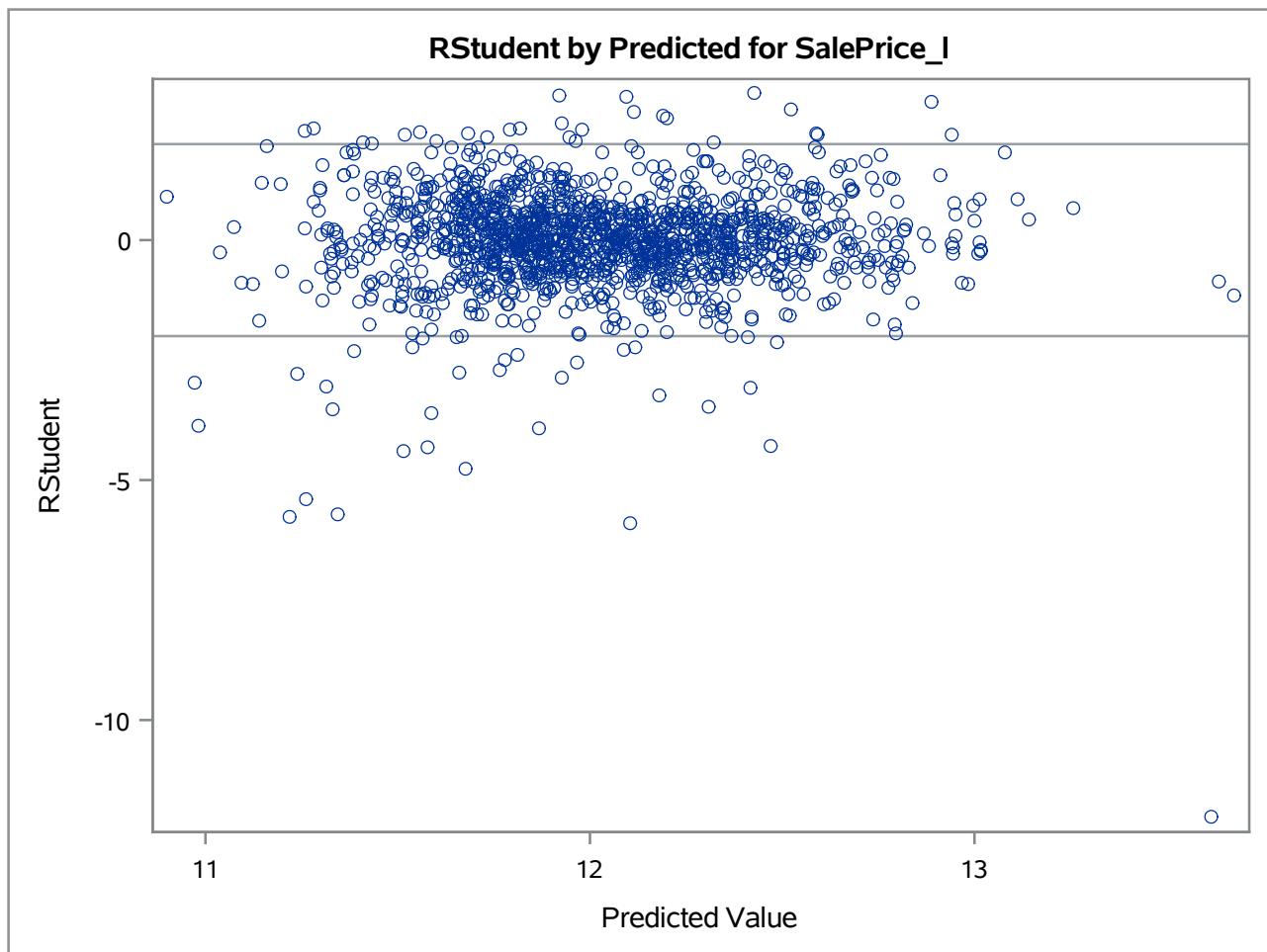
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure**

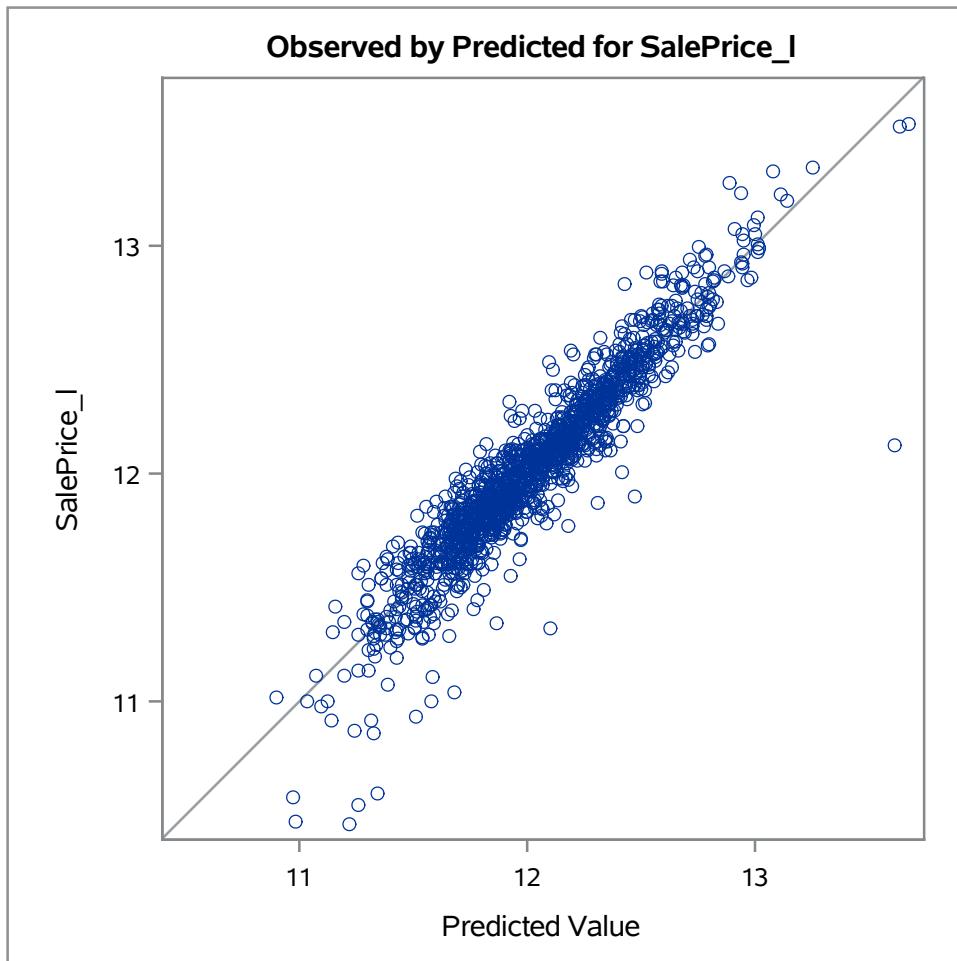
Model: MODEL1

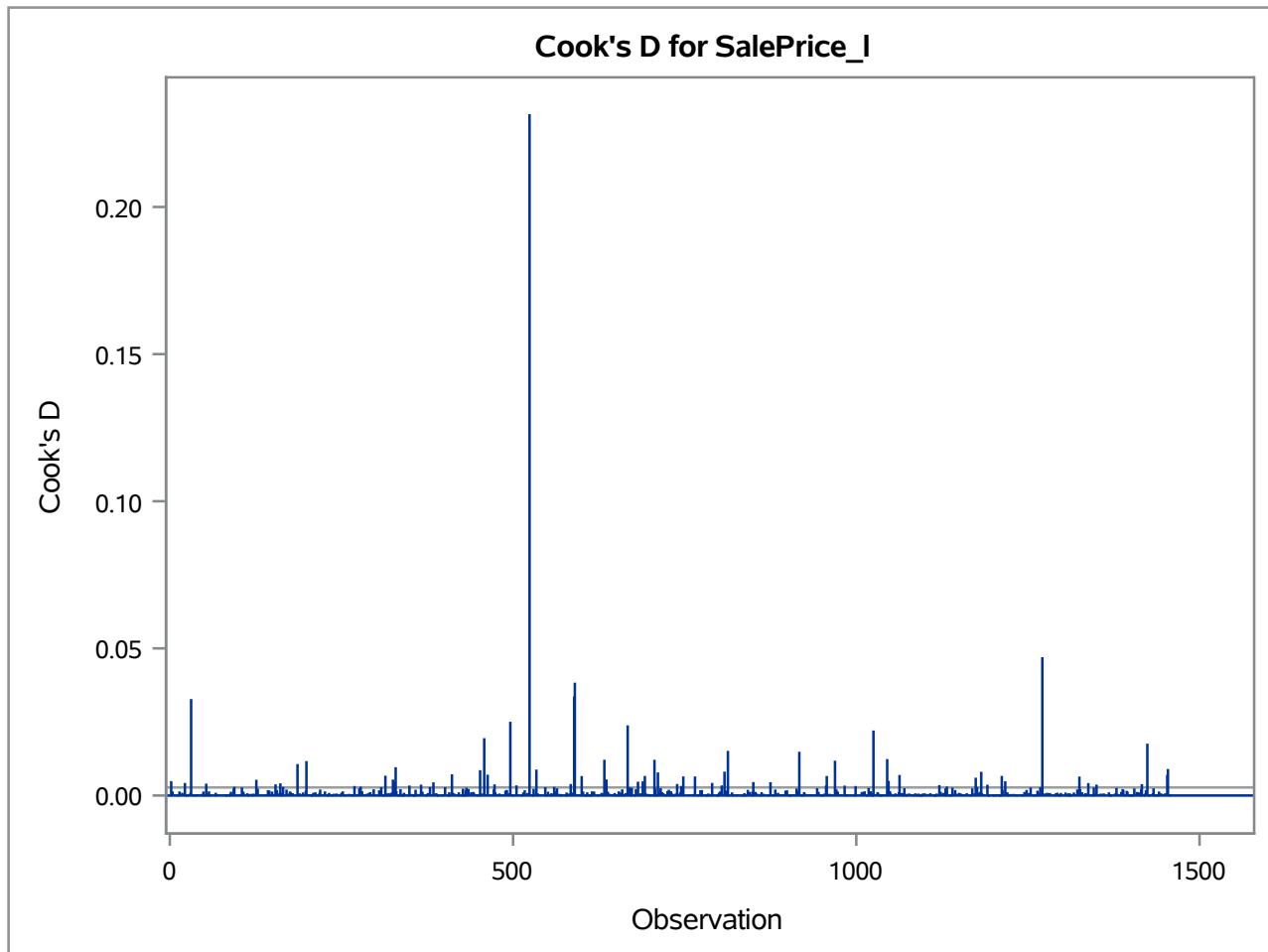
Dependent Variable: SalePrice\_I



**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

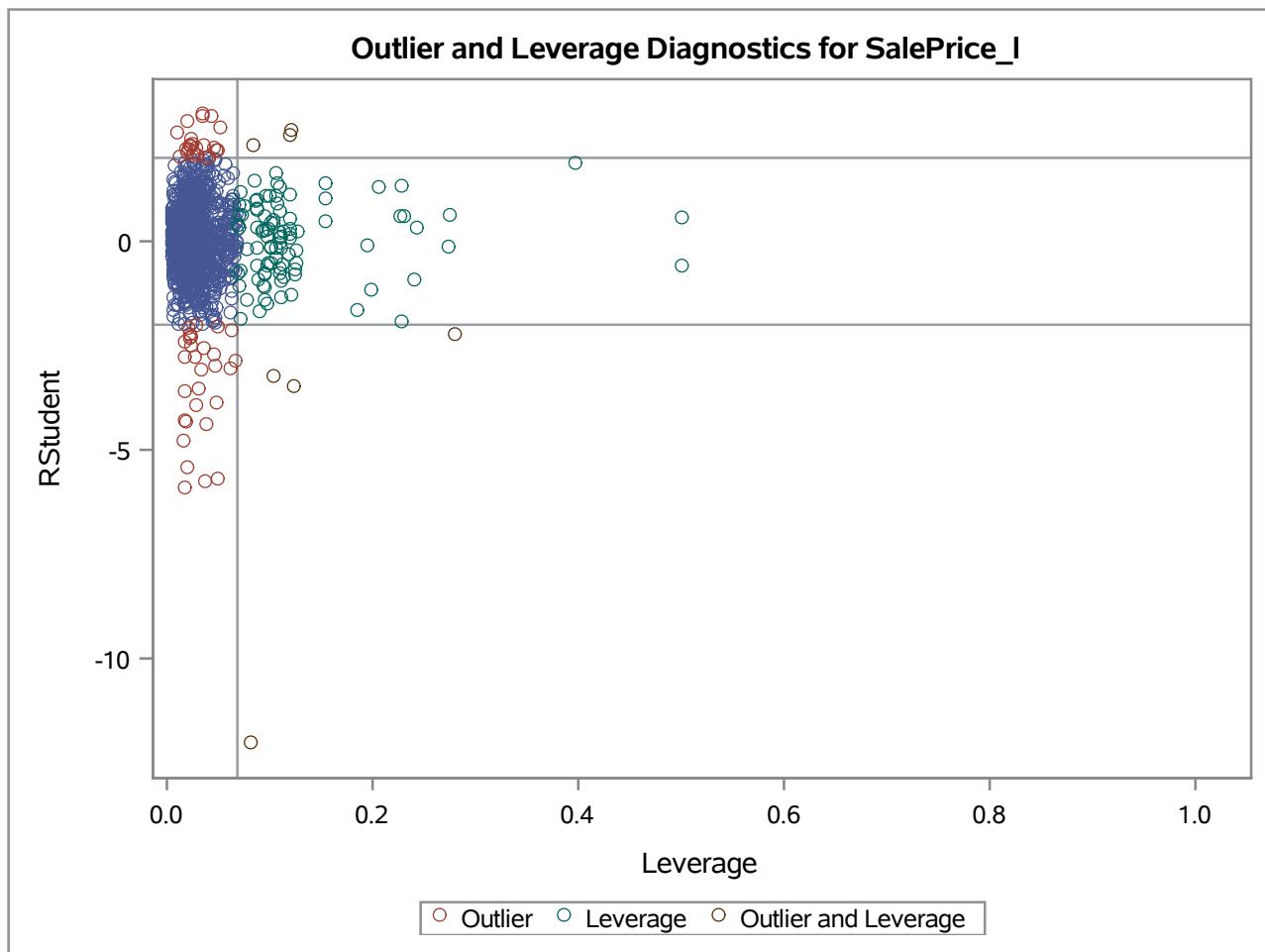
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

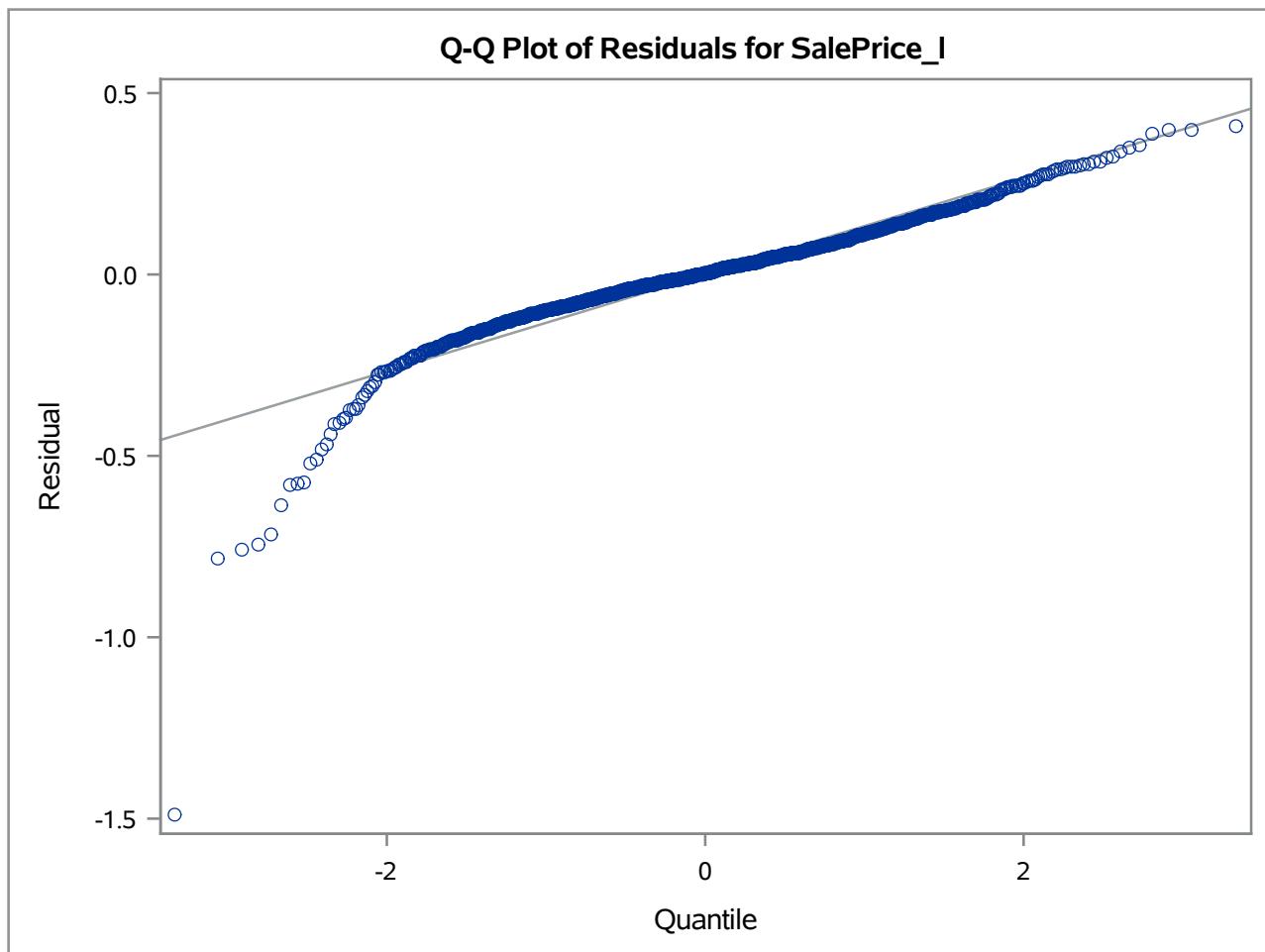
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure**

Model: MODEL1

Dependent Variable: SalePrice\_I

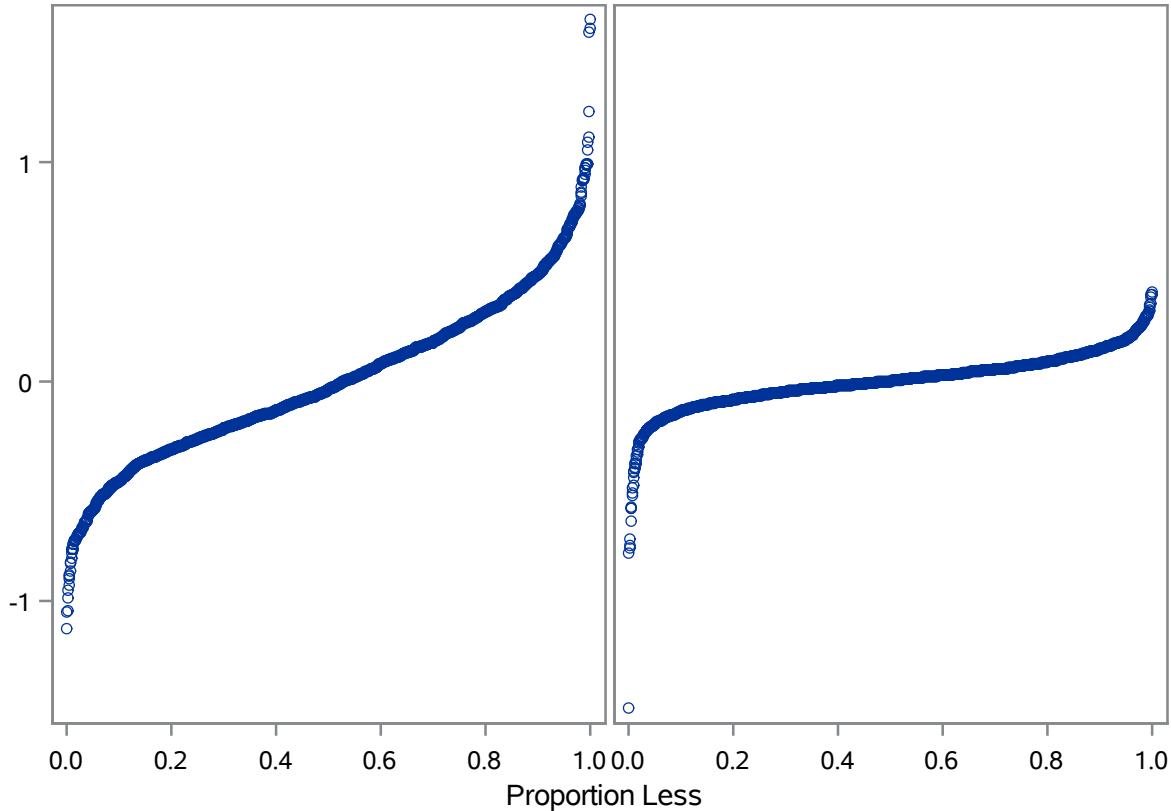


**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Residual-Fit Spread Plot for SalePrice\_I**

Fit-Mean

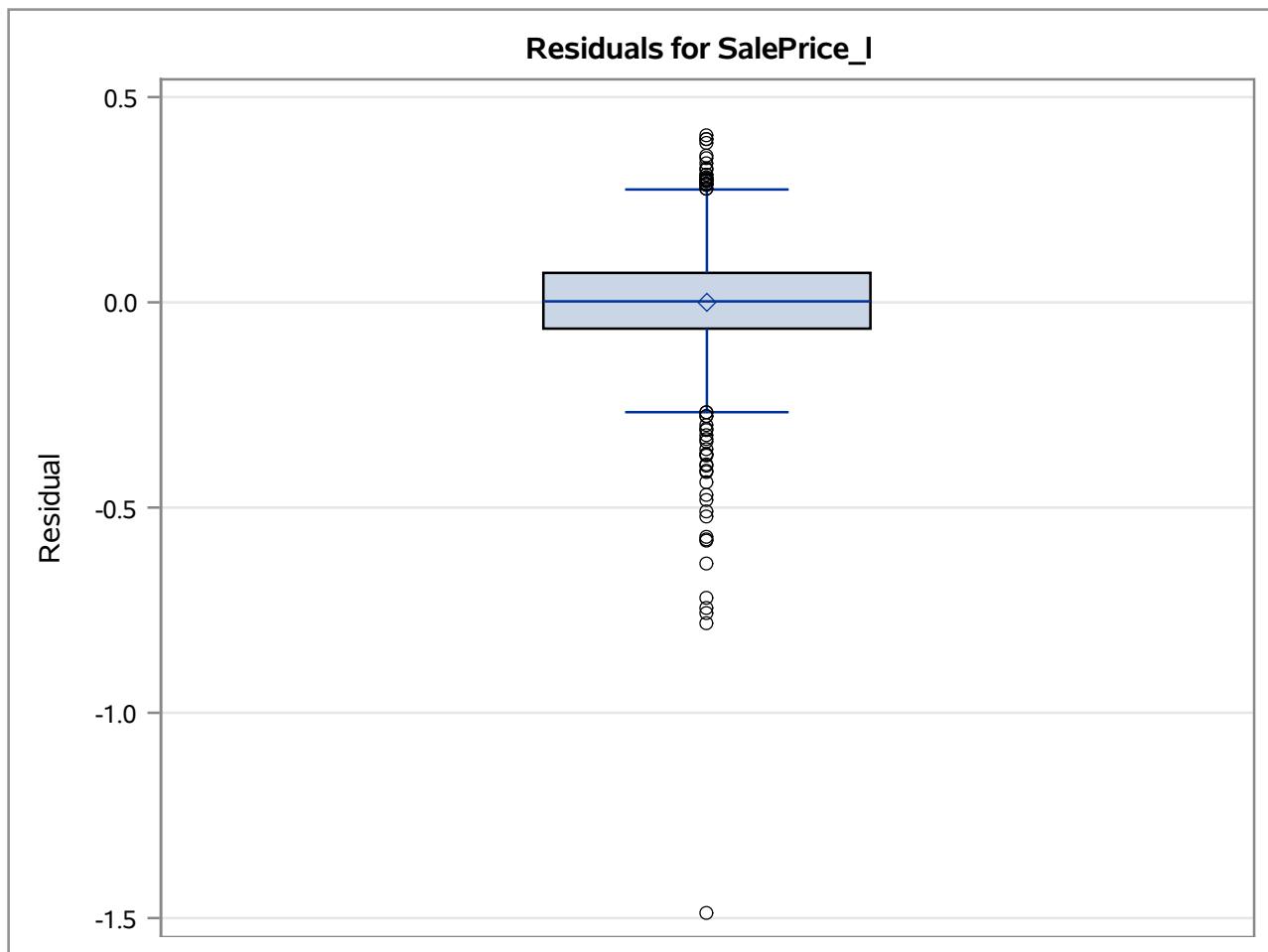
Residual



**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure**

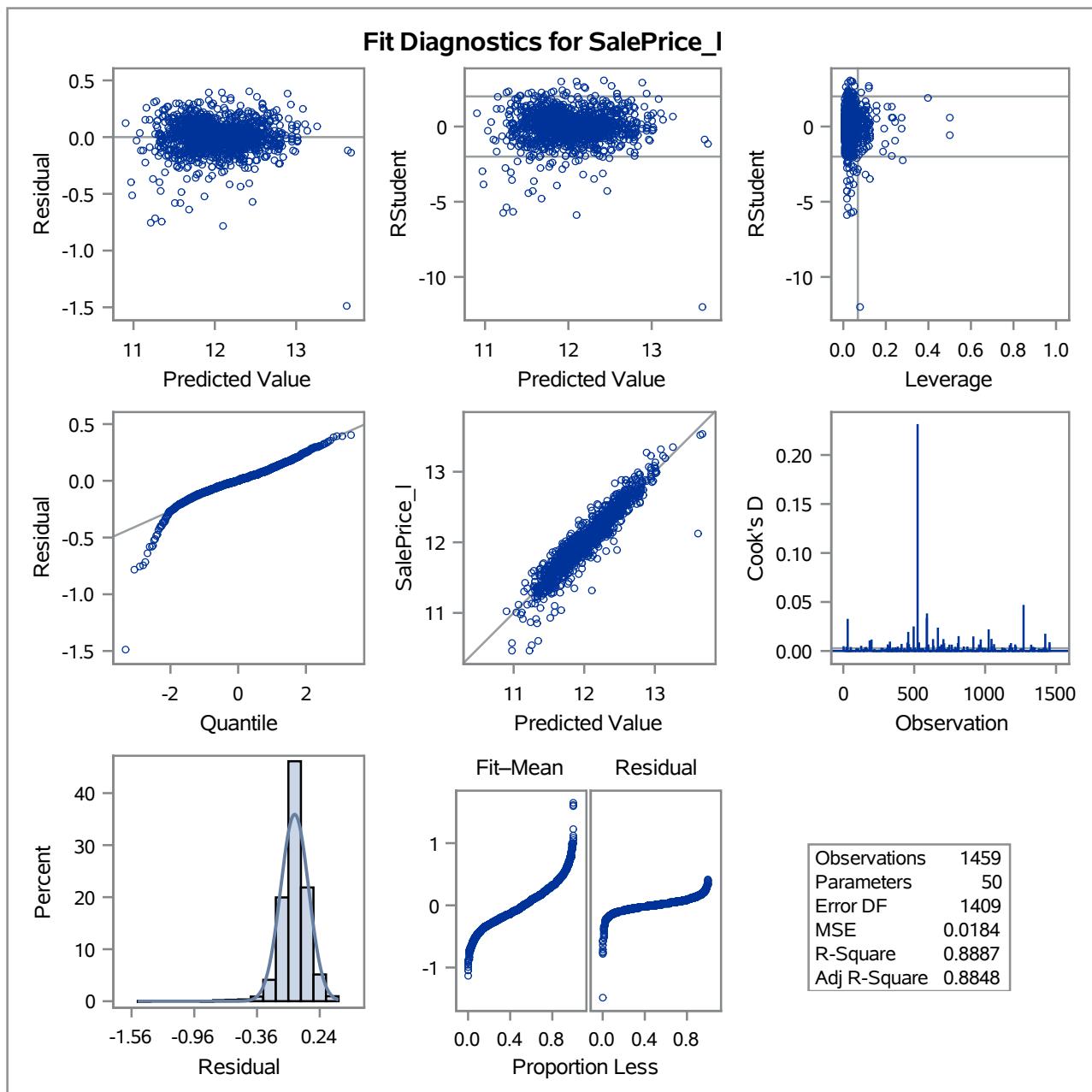
Model: MODEL1

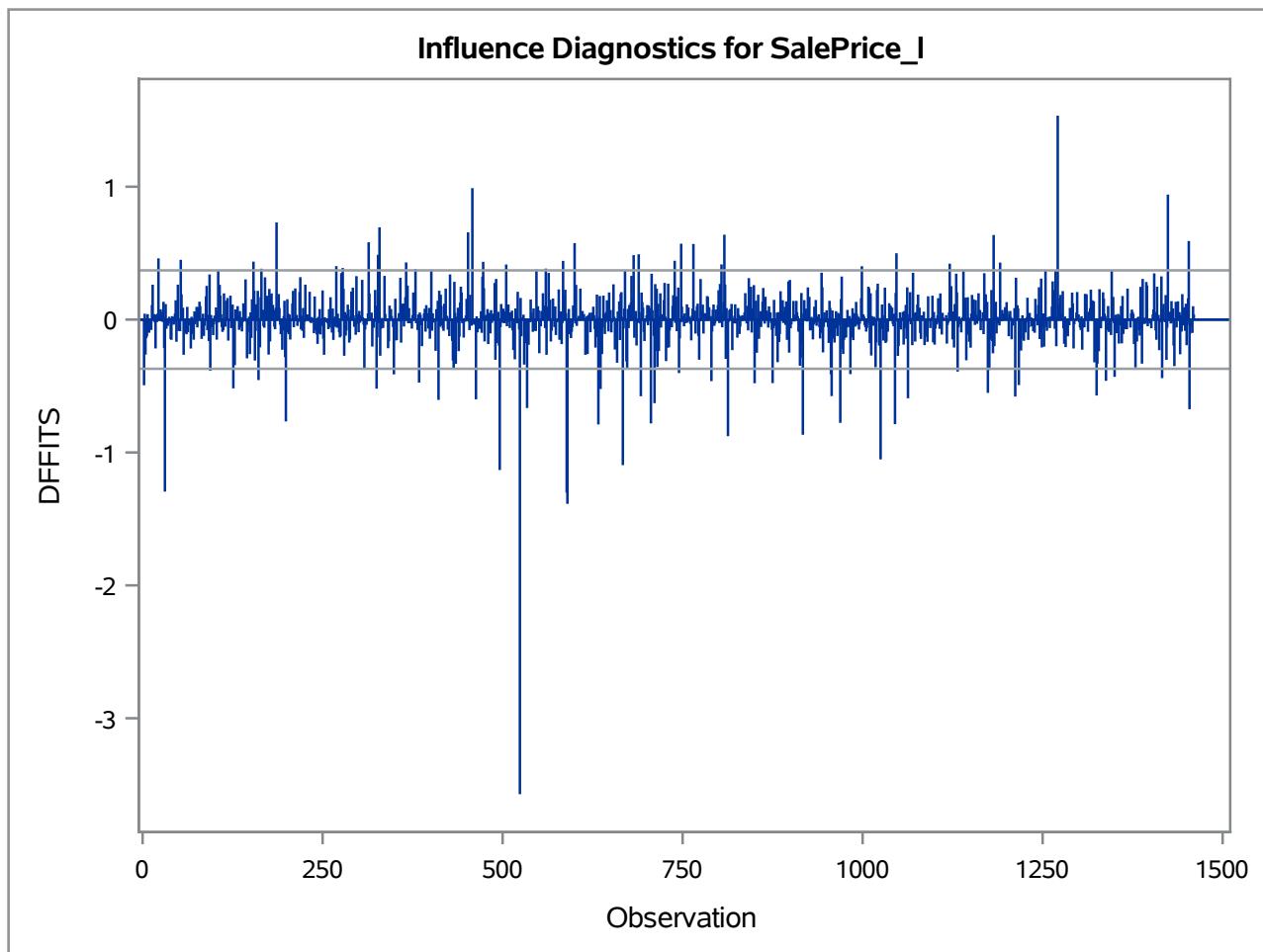
Dependent Variable: SalePrice\_I

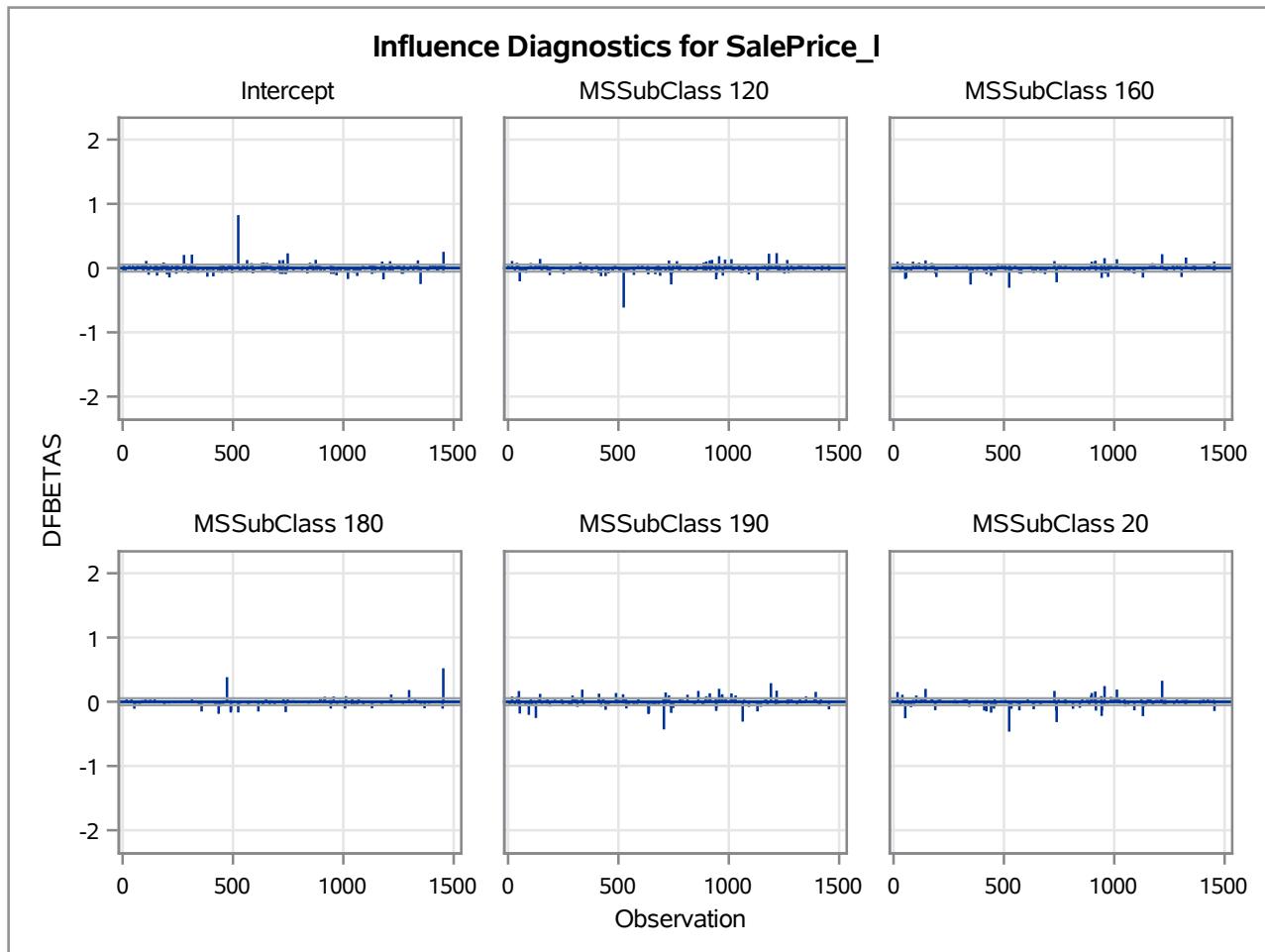


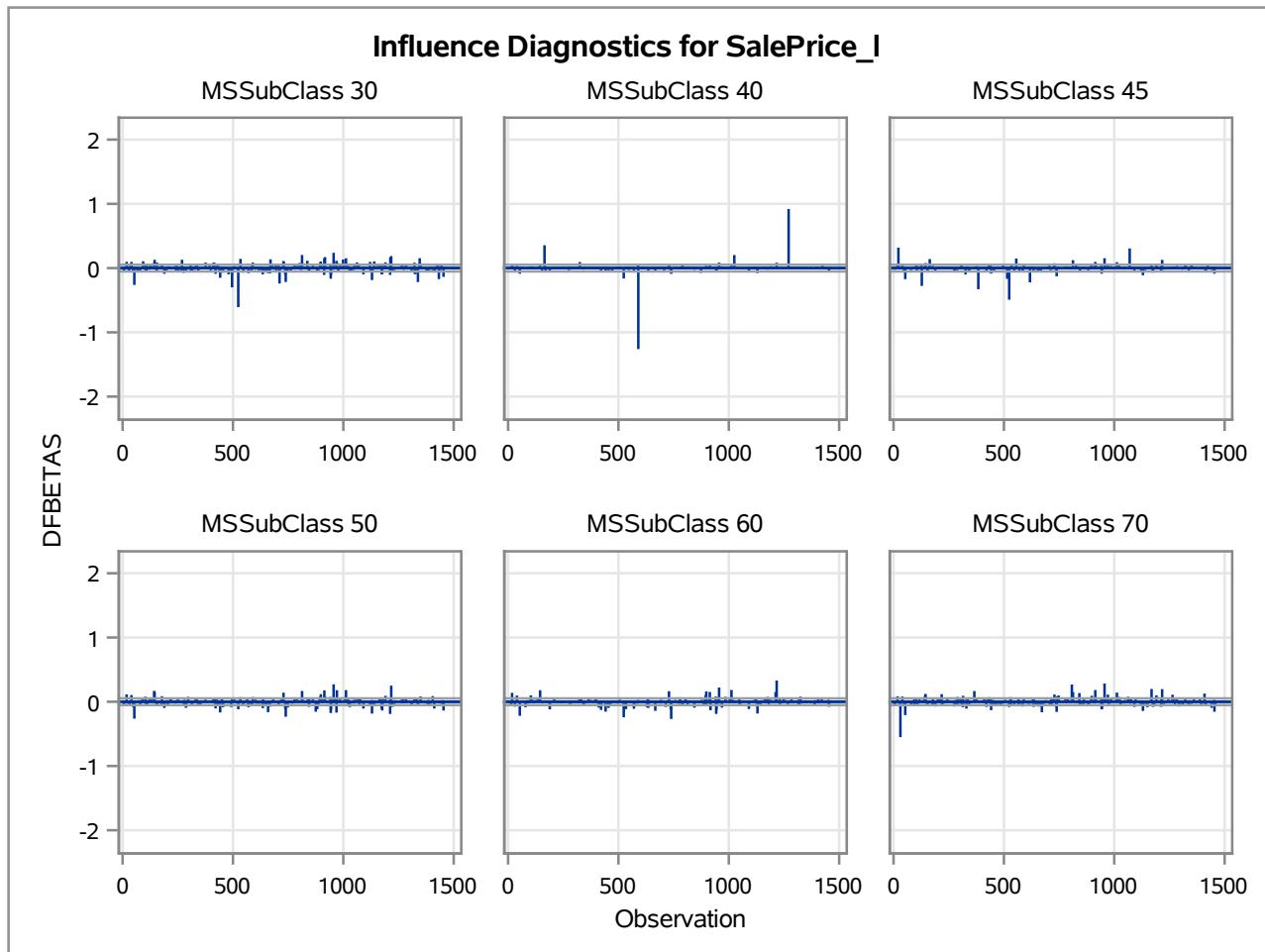
# Stepwise Multiple Linear Regression - All vars No Ints

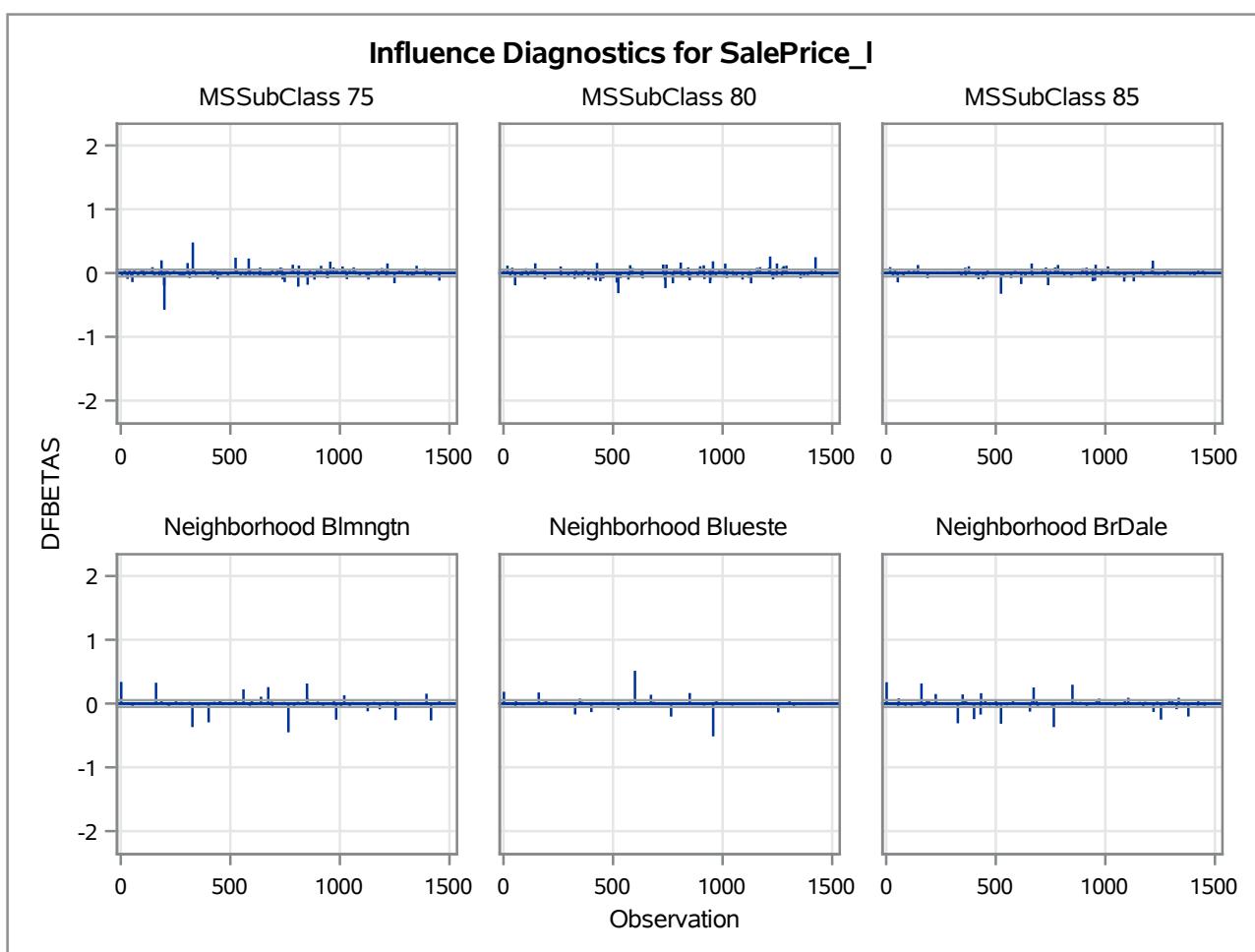
**The REG Procedure**  
**Model: MODEL1**  
**Dependent Variable: SalePrice\_I**

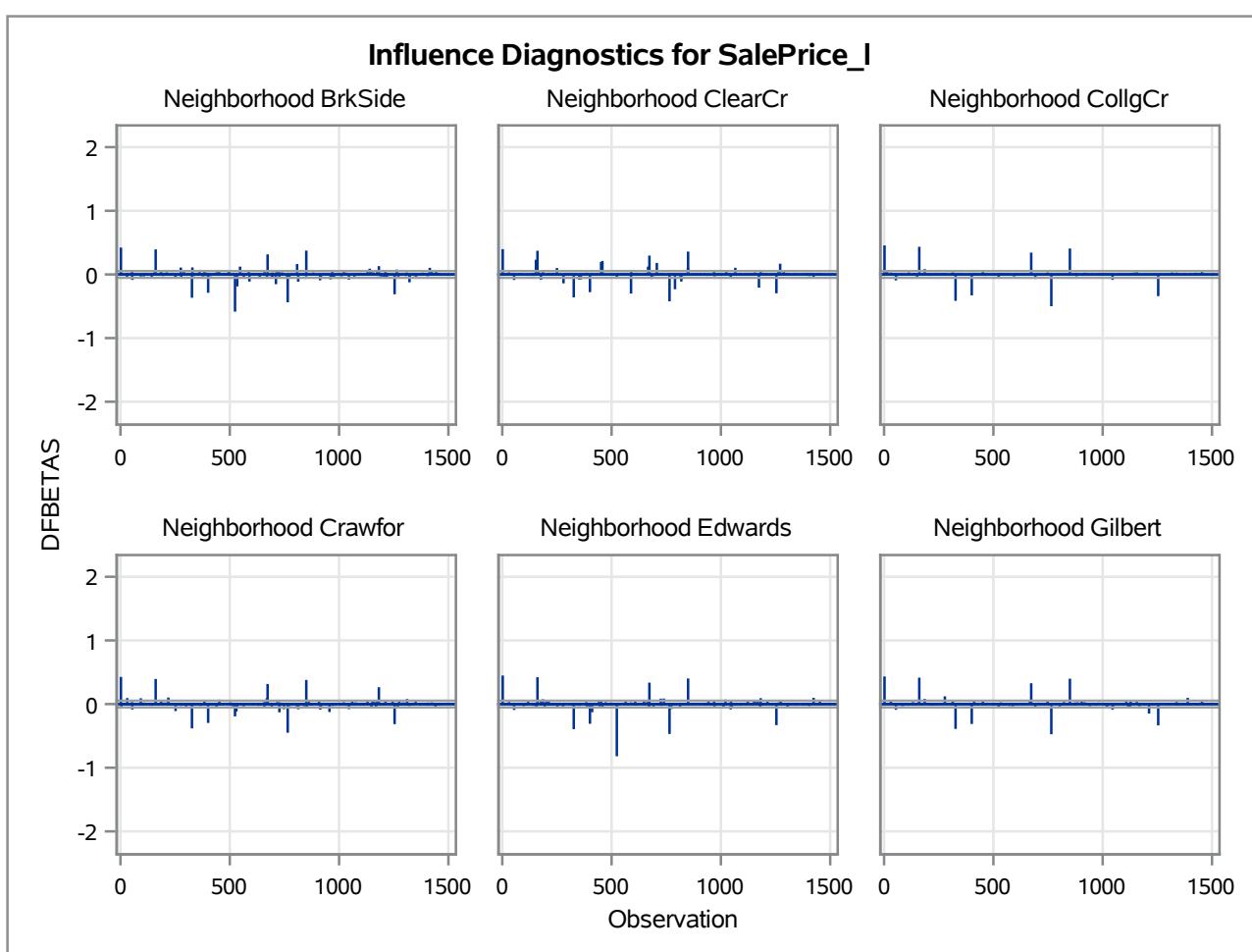


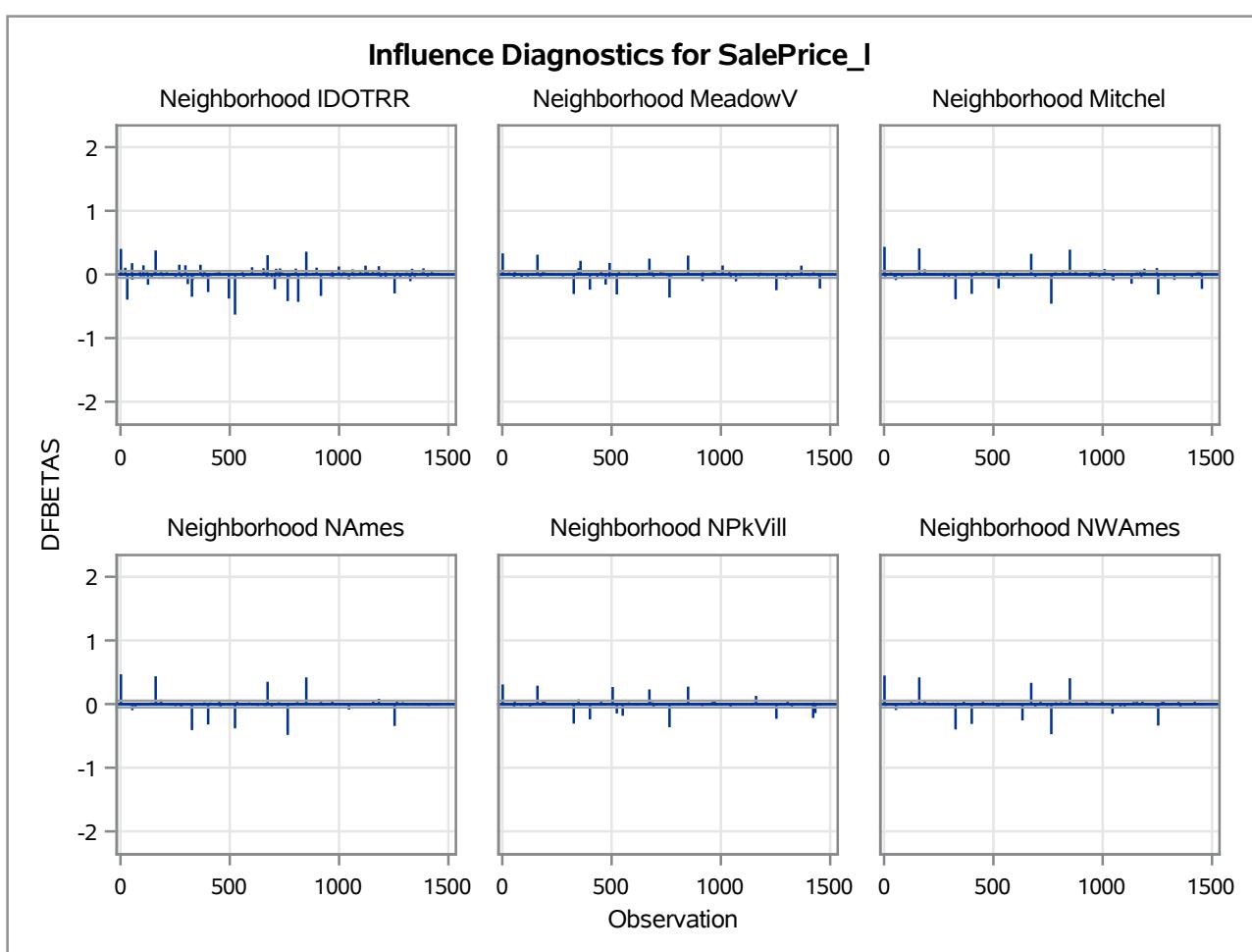
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

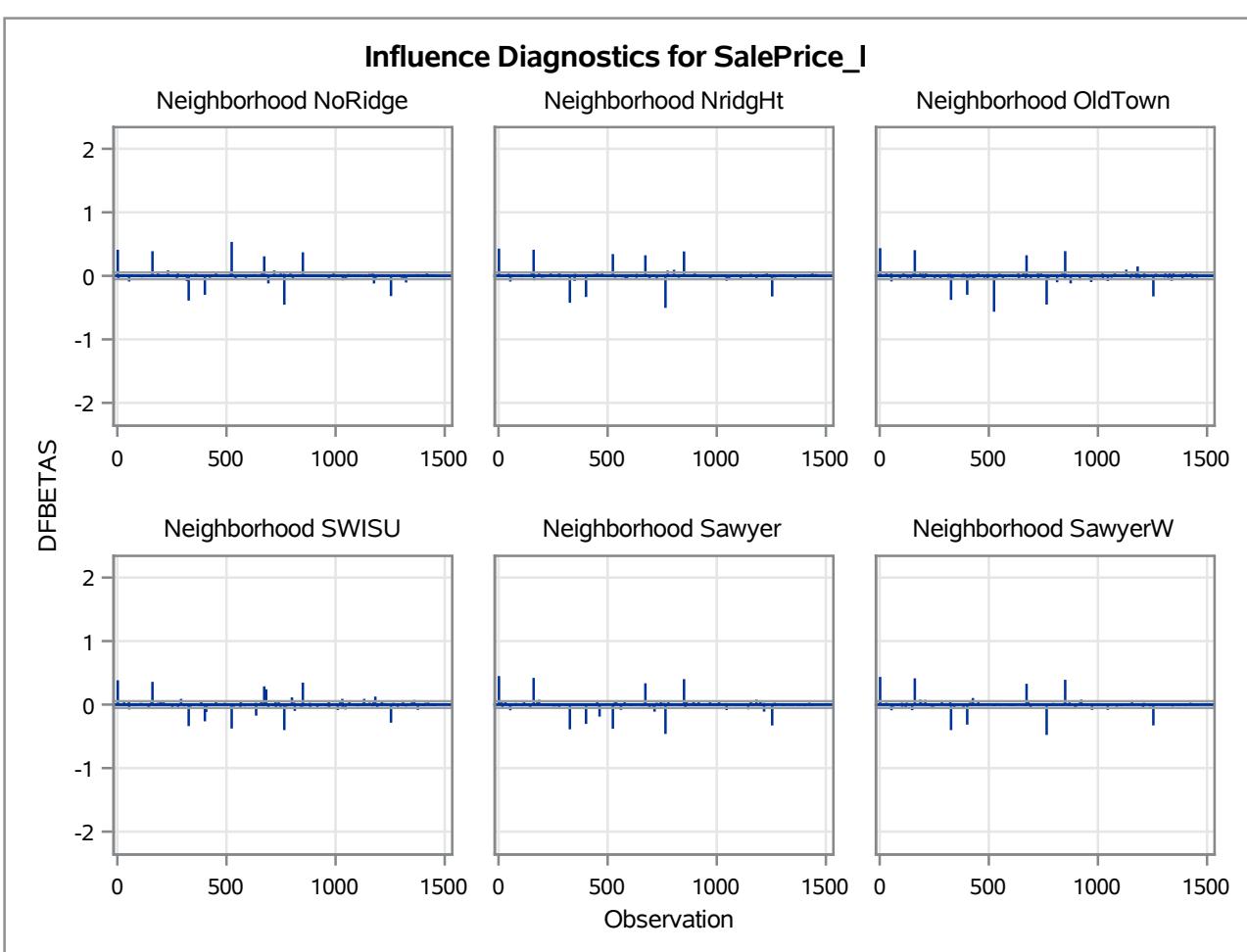
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

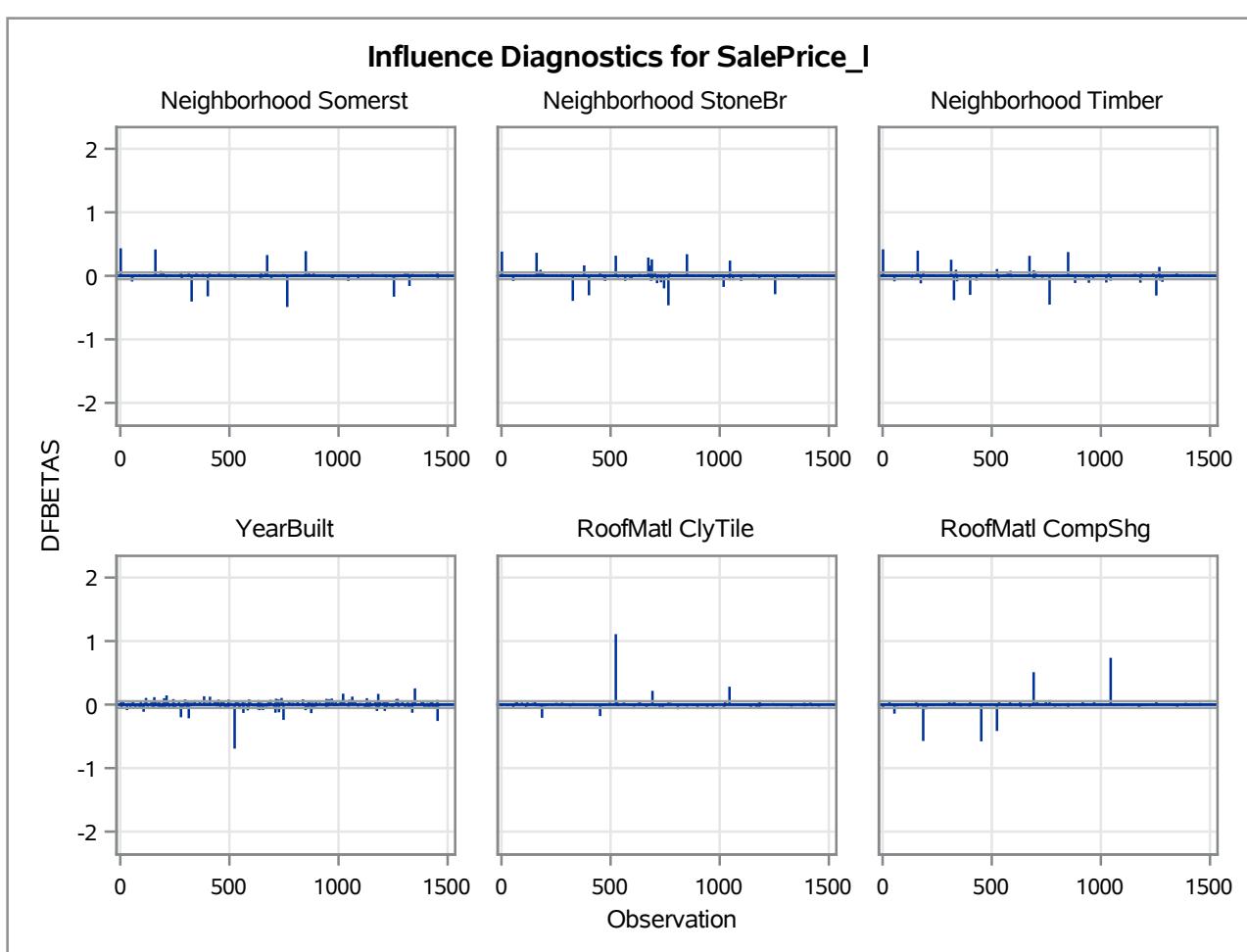
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

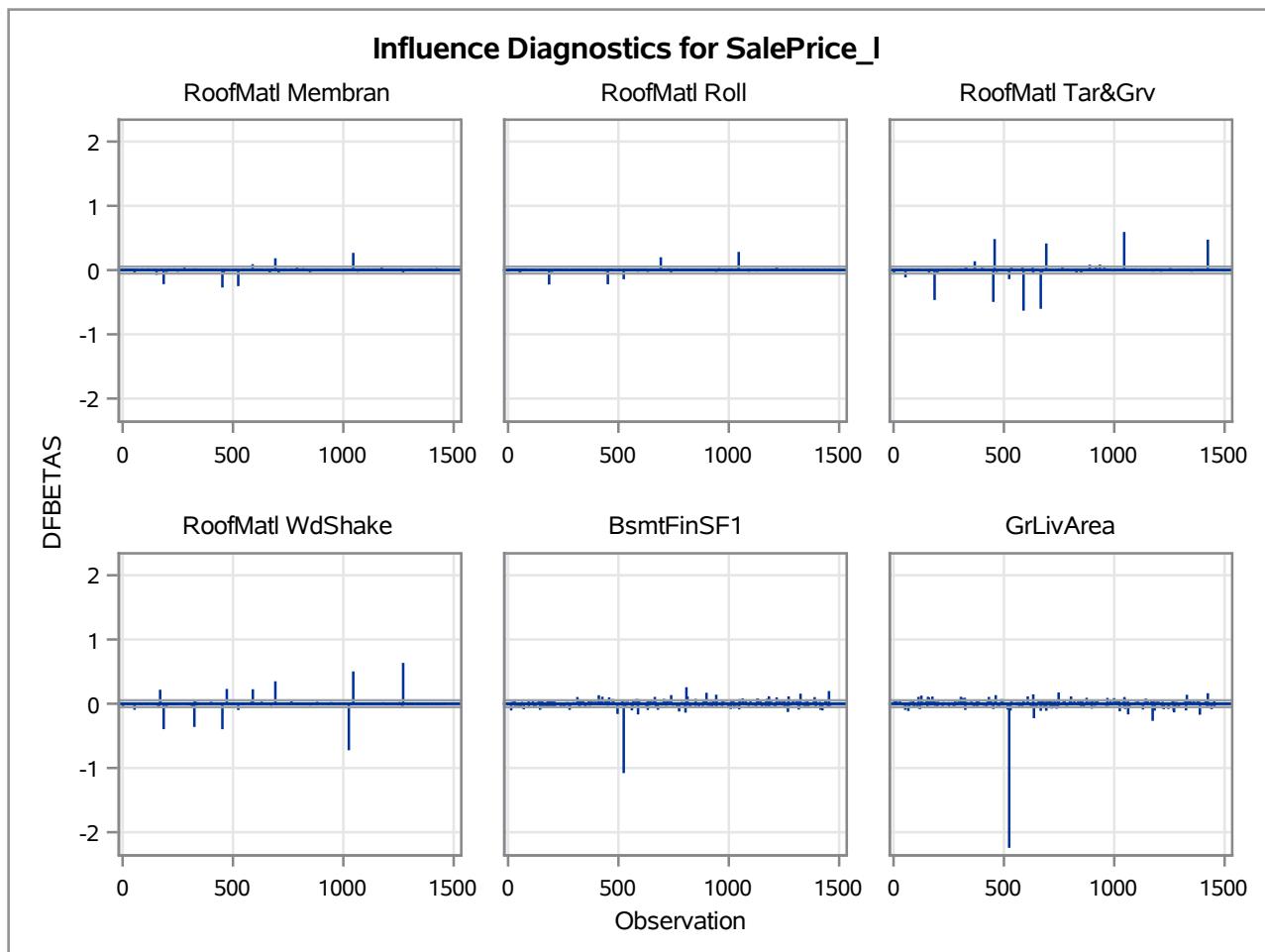
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

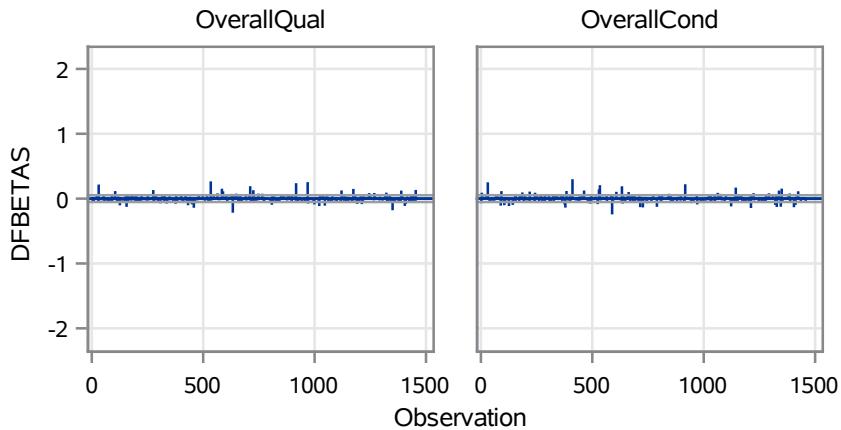
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

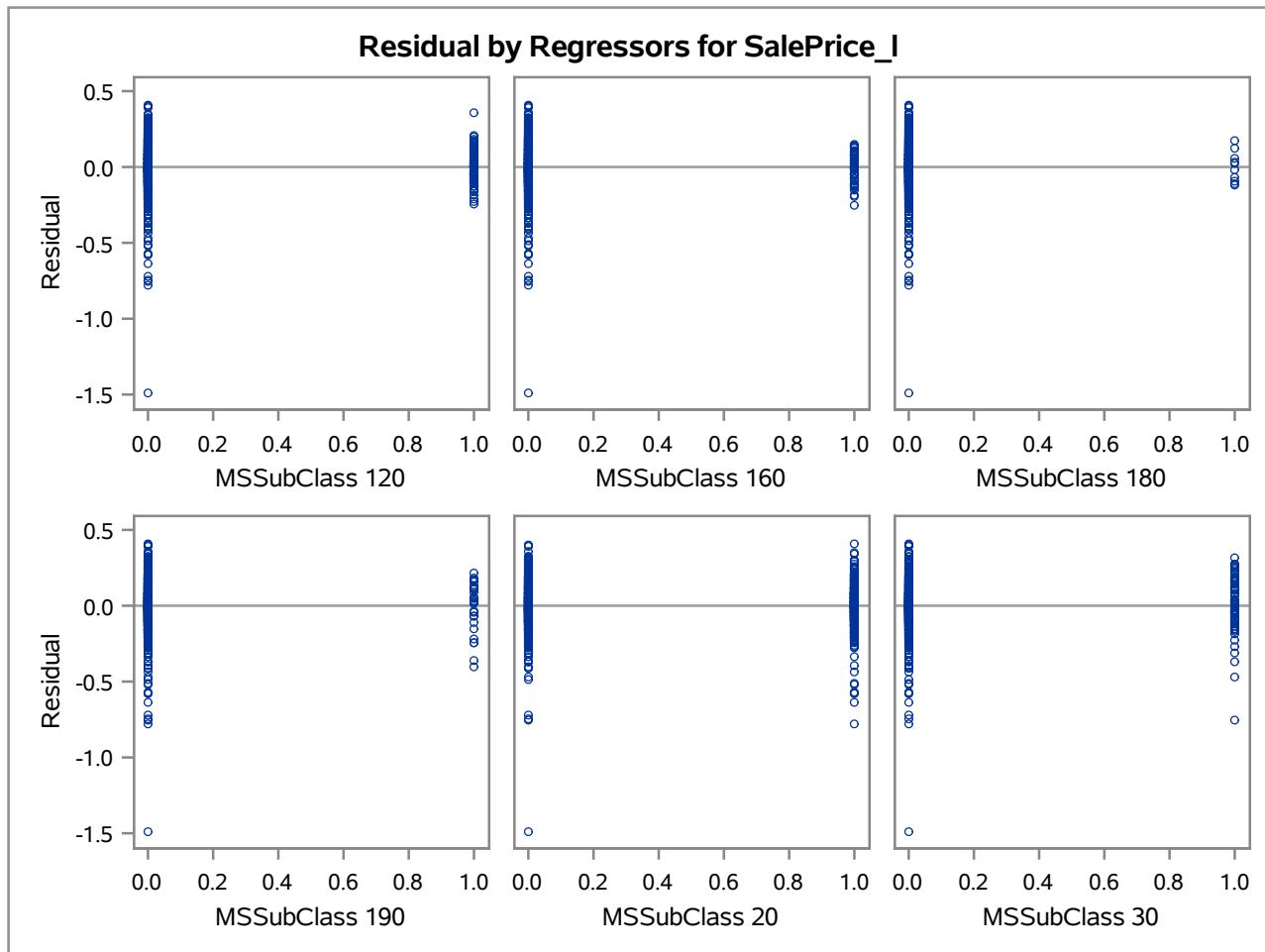
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

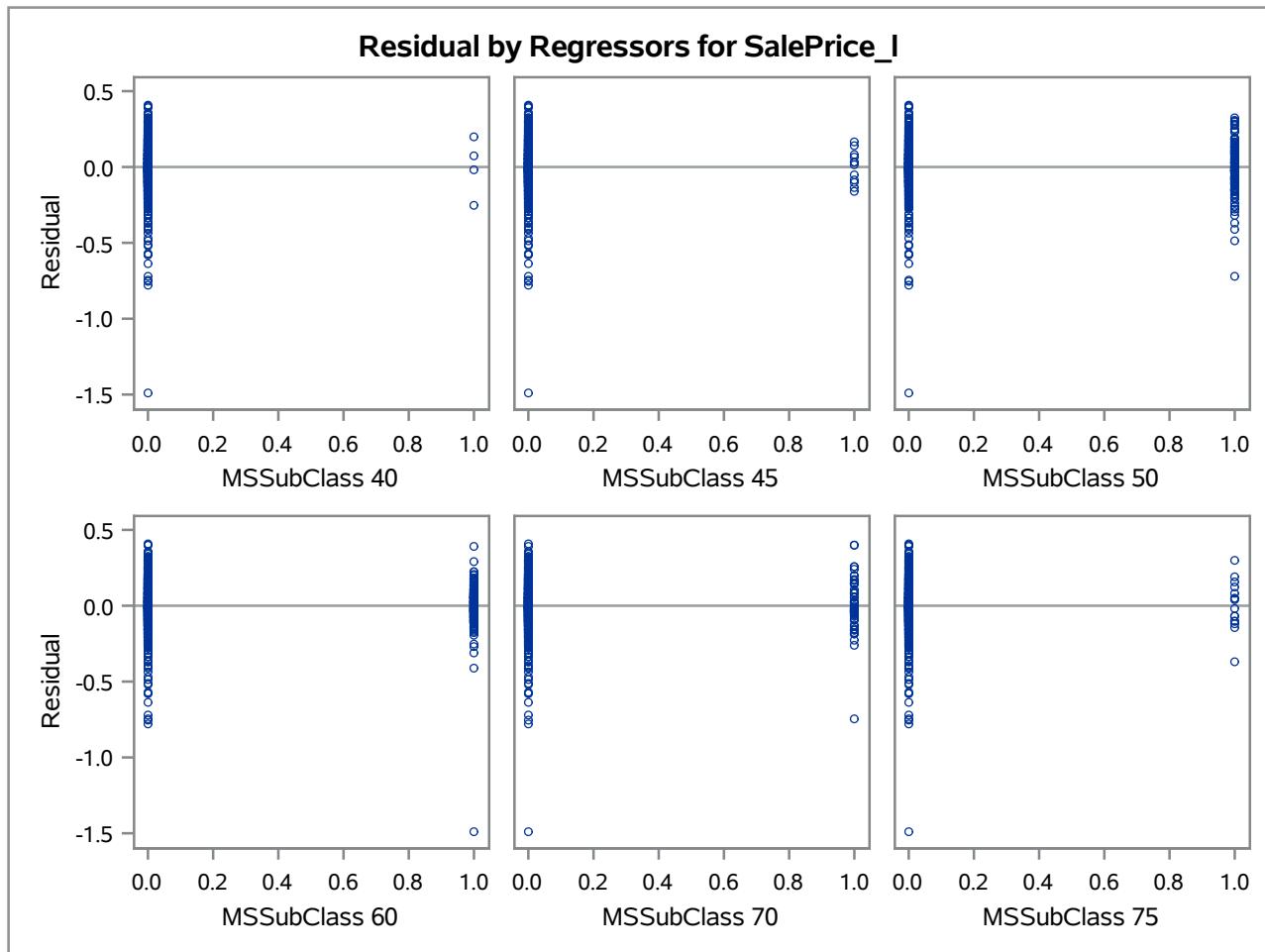
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

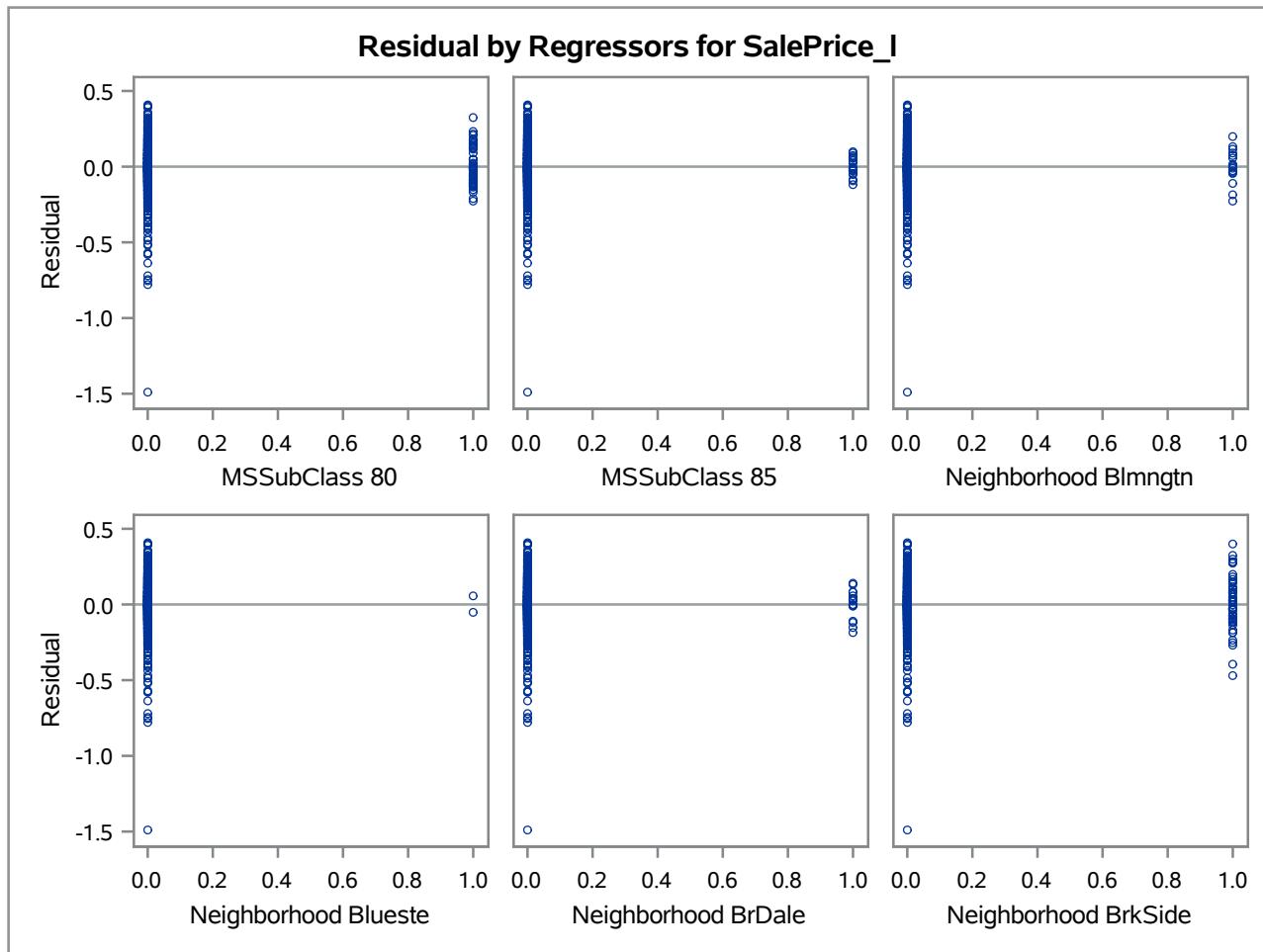
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

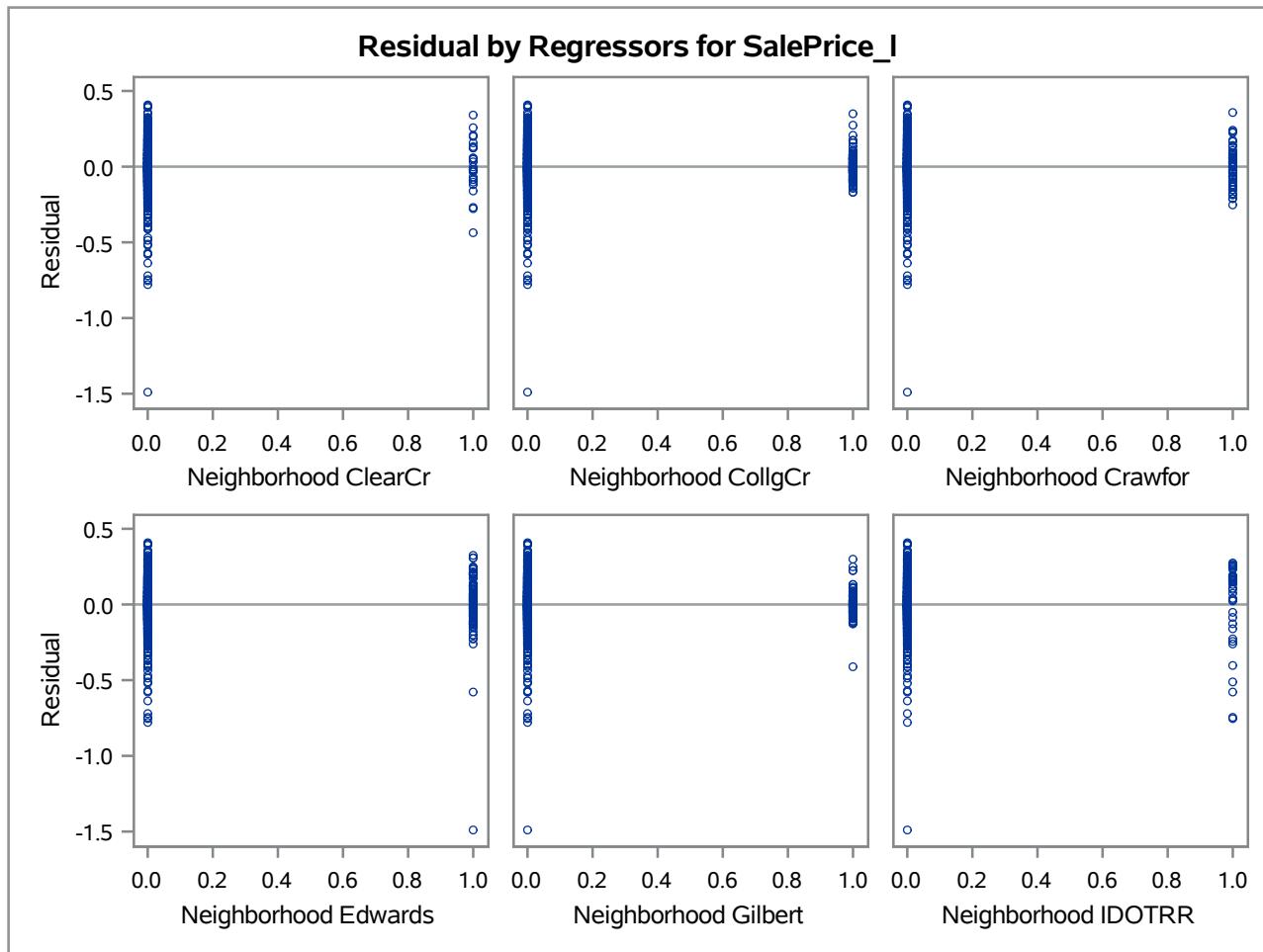
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

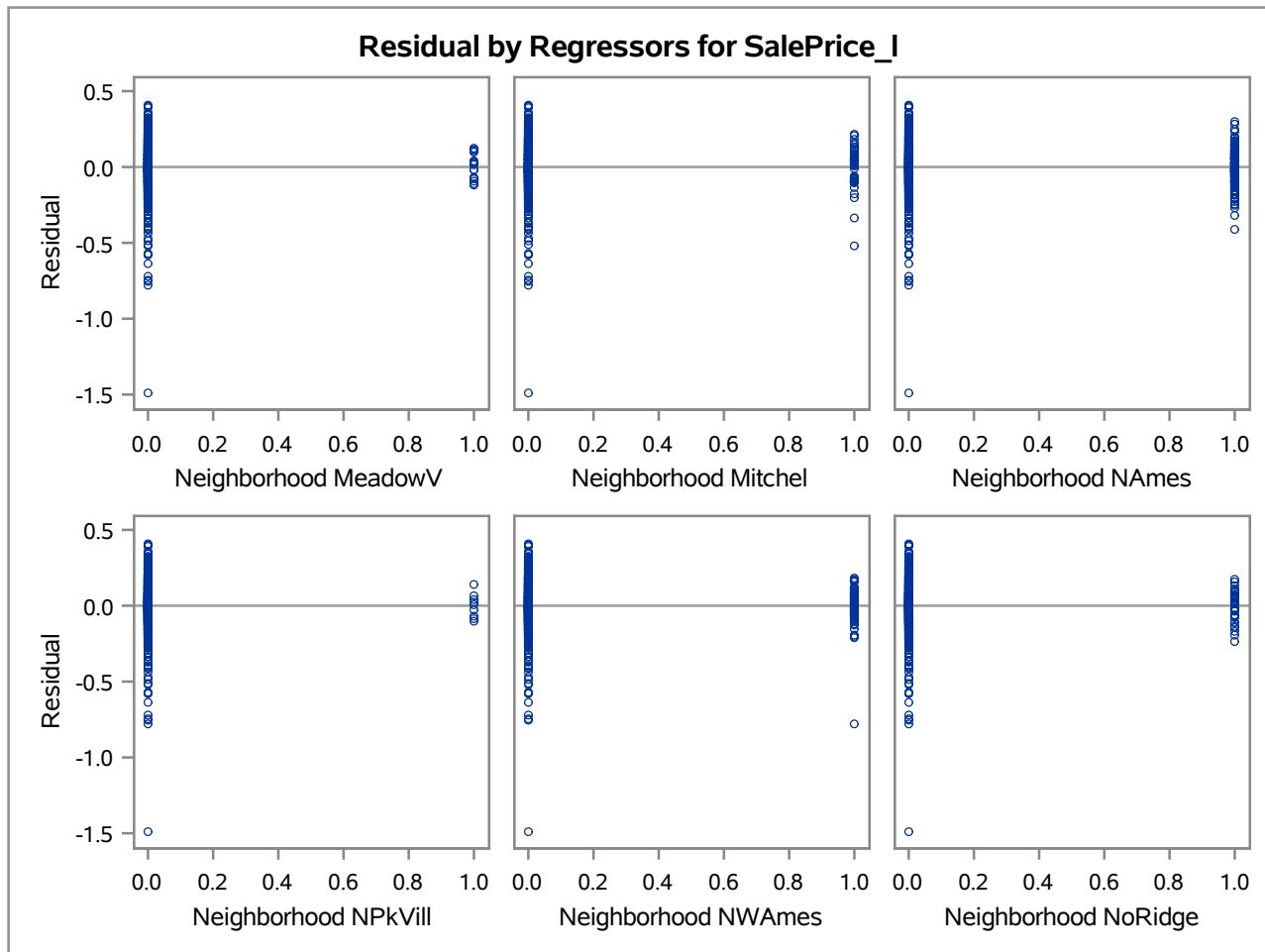
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I****Influence Diagnostics for SalePrice\_I**

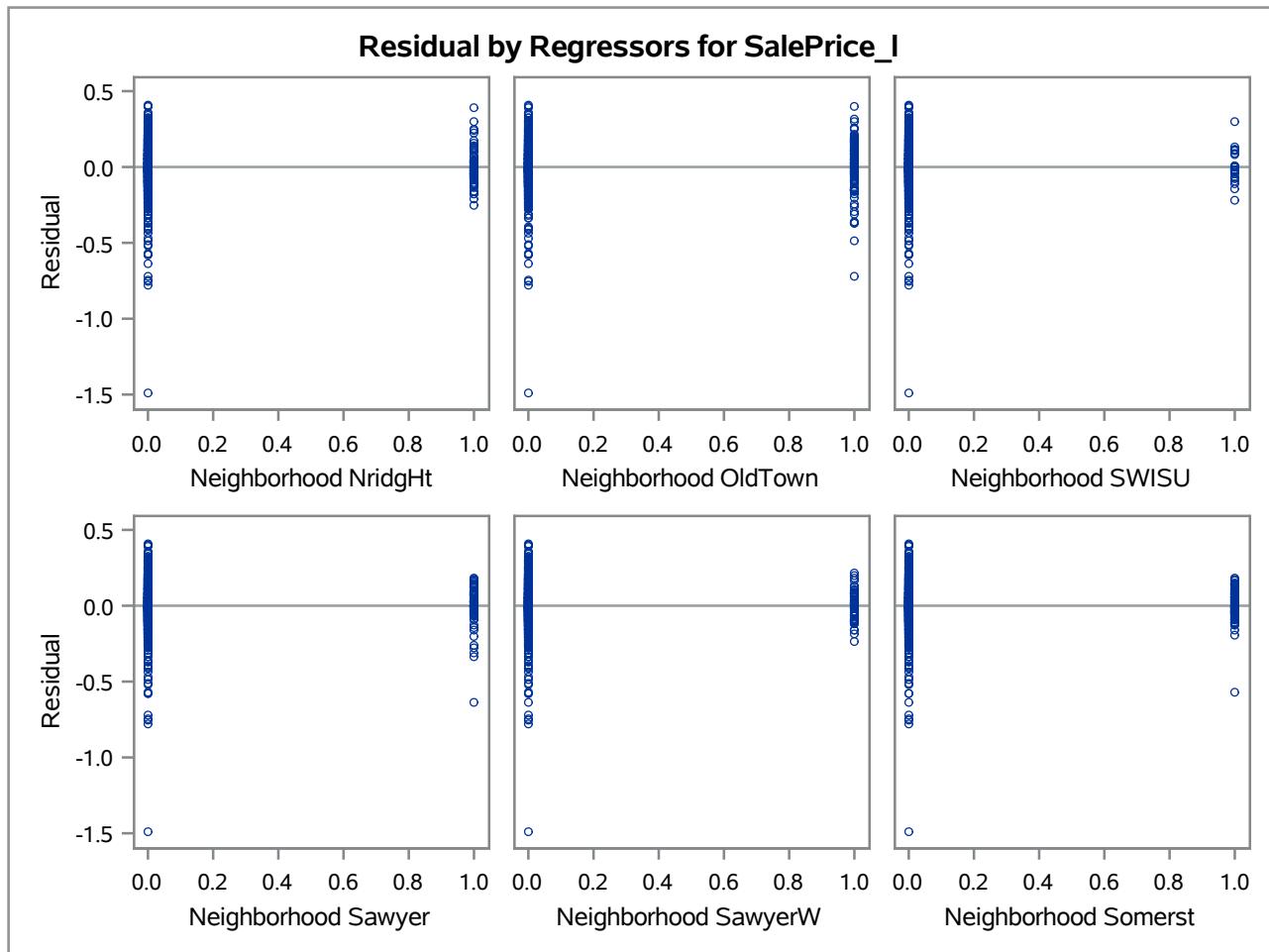
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

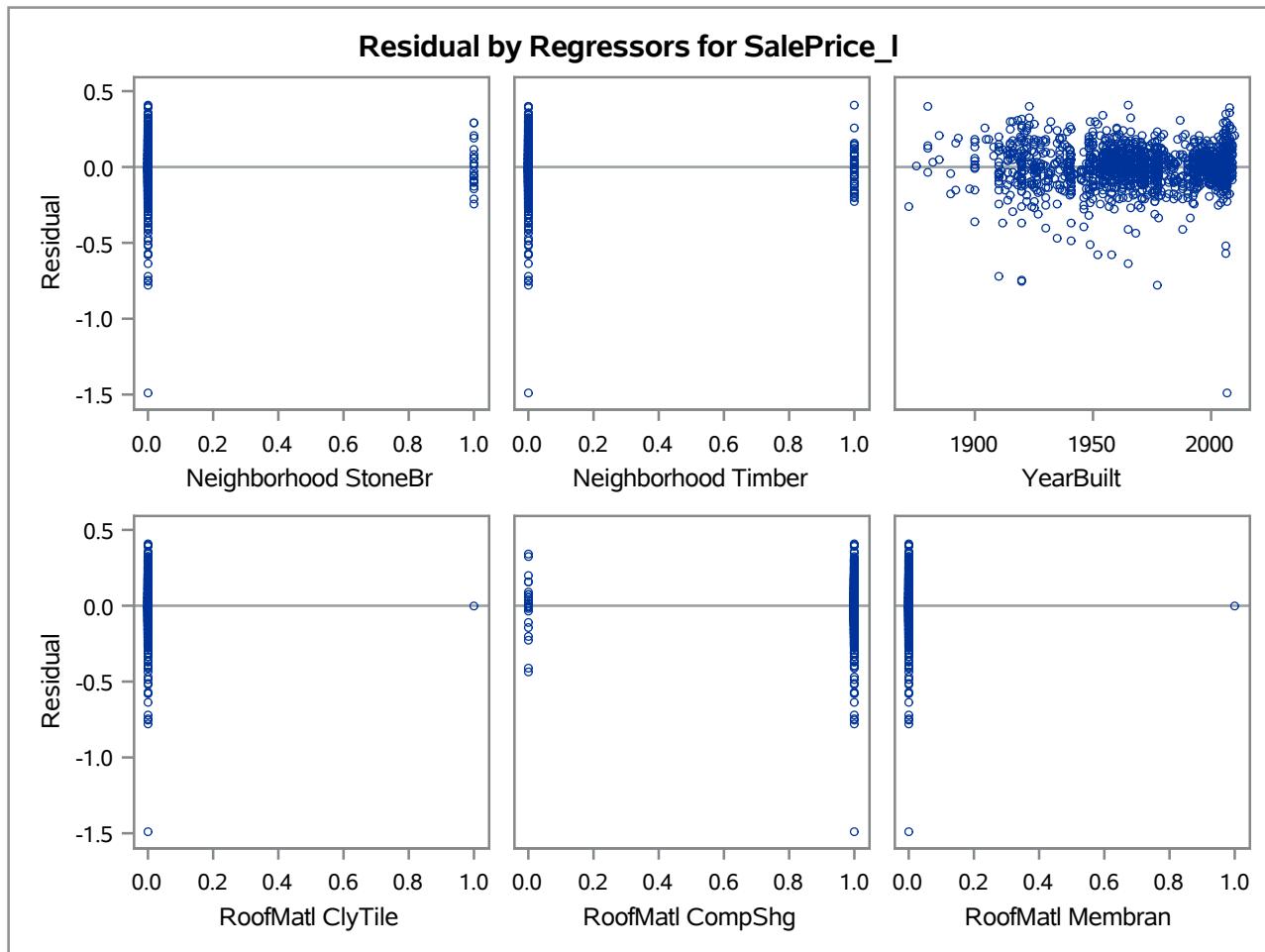
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

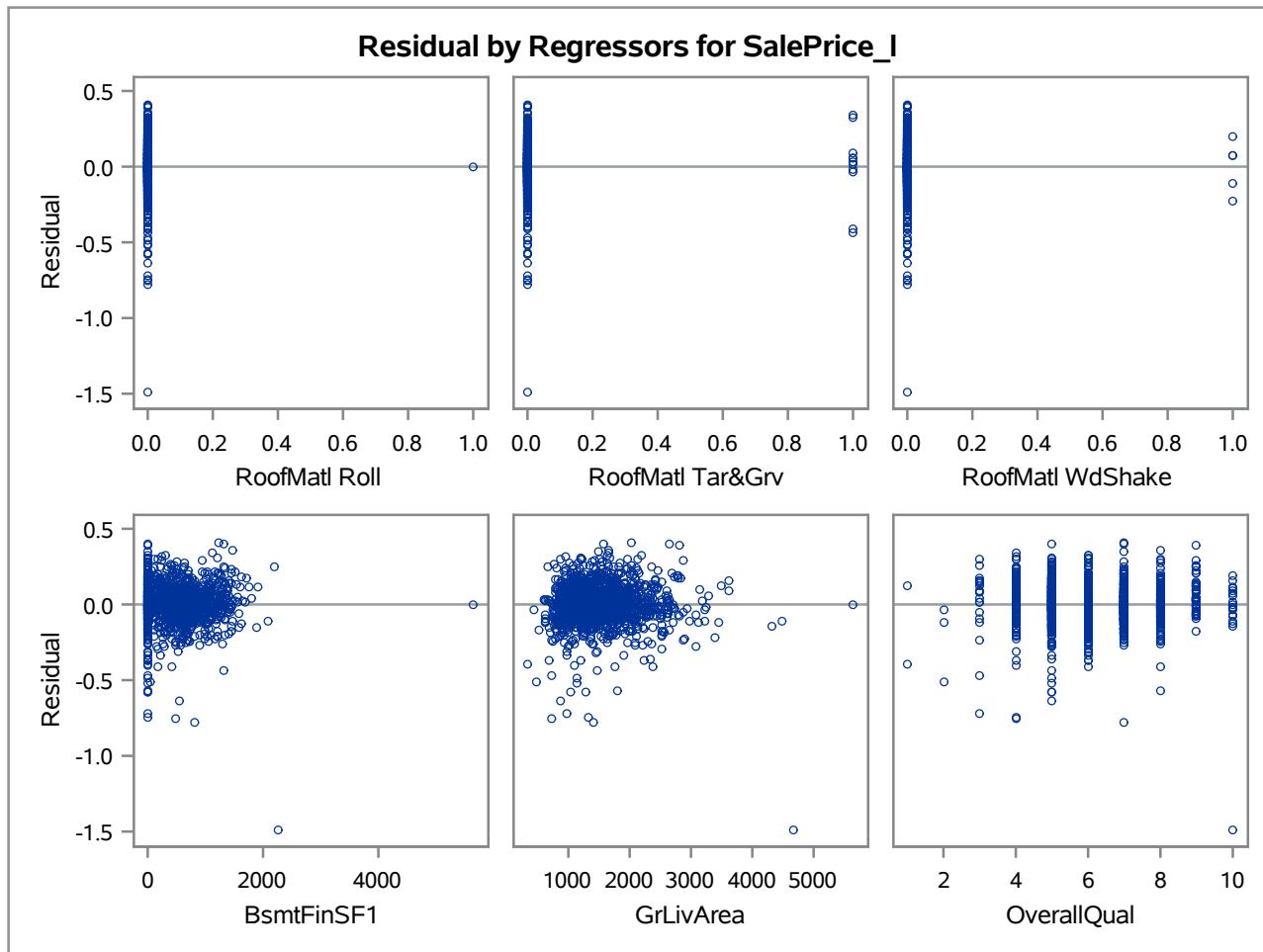
**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

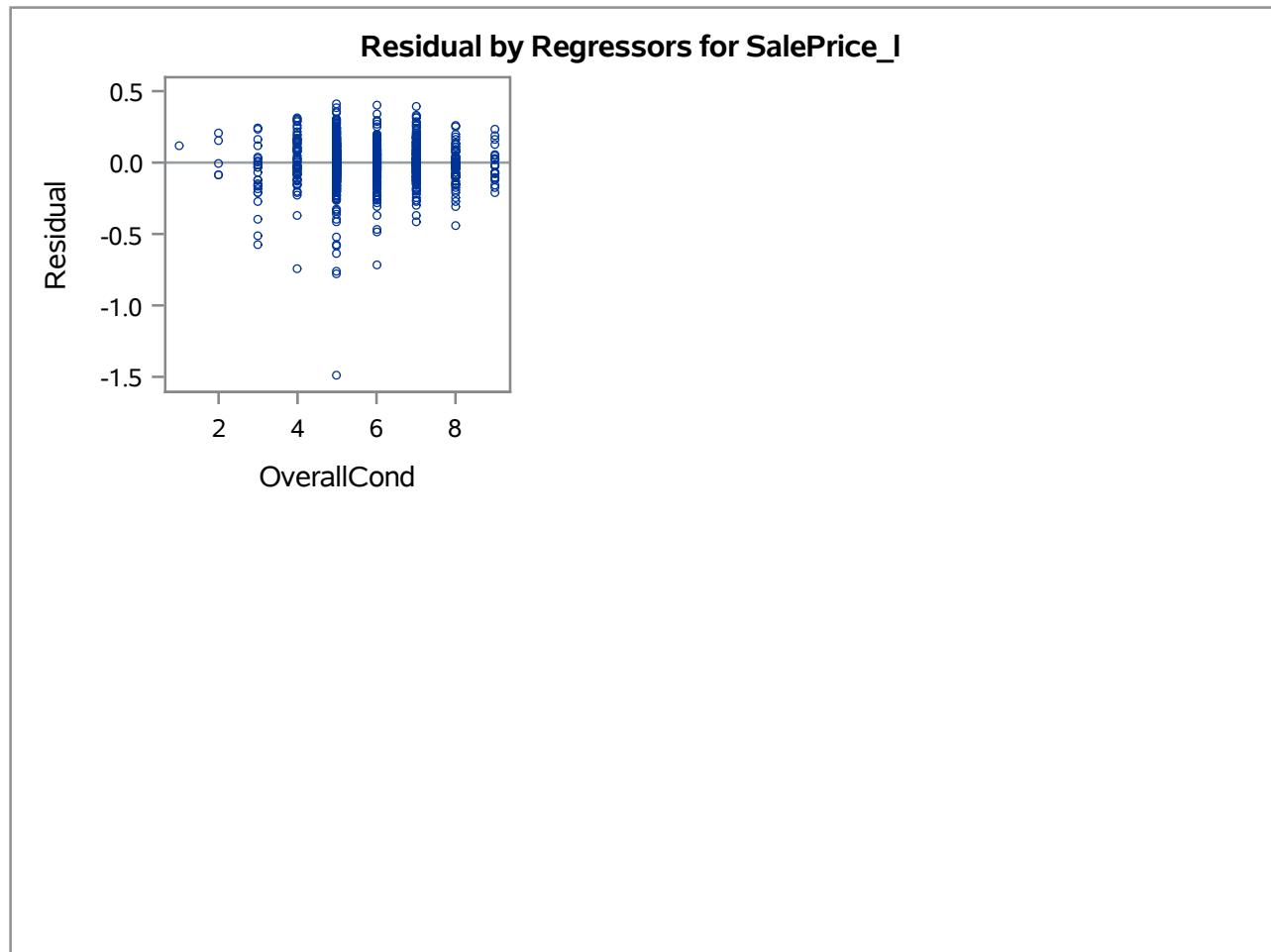
# Stepwise Multiple Linear Regression - All vars No Ints

**The REG Procedure**

Model: MODEL1

Dependent Variable: SalePrice\_I



**Stepwise Multiple Linear Regression - All vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

## Forward Multiple Linear Regression - All Vars No Ints

### The GLMSELECT Procedure

<b>Data Set</b>	WORK.TRAIN_6
<b>Dependent Variable</b>	SalePrice_I
<b>Selection Method</b>	Forward
<b>Select Criterion</b>	Significance Level
<b>Stop Criterion</b>	Significance Level
<b>Choose Criterion</b>	Cross Validation
<b>Entry Significance Level (SLE)</b>	0.5
<b>Cross Validation Method</b>	Split
<b>Cross Validation Fold</b>	5
<b>Effect Hierarchy Enforced</b>	Single

<b>Number of Observations Read</b>	2919
<b>Number of Observations Used</b>	1121

### Class Level Information

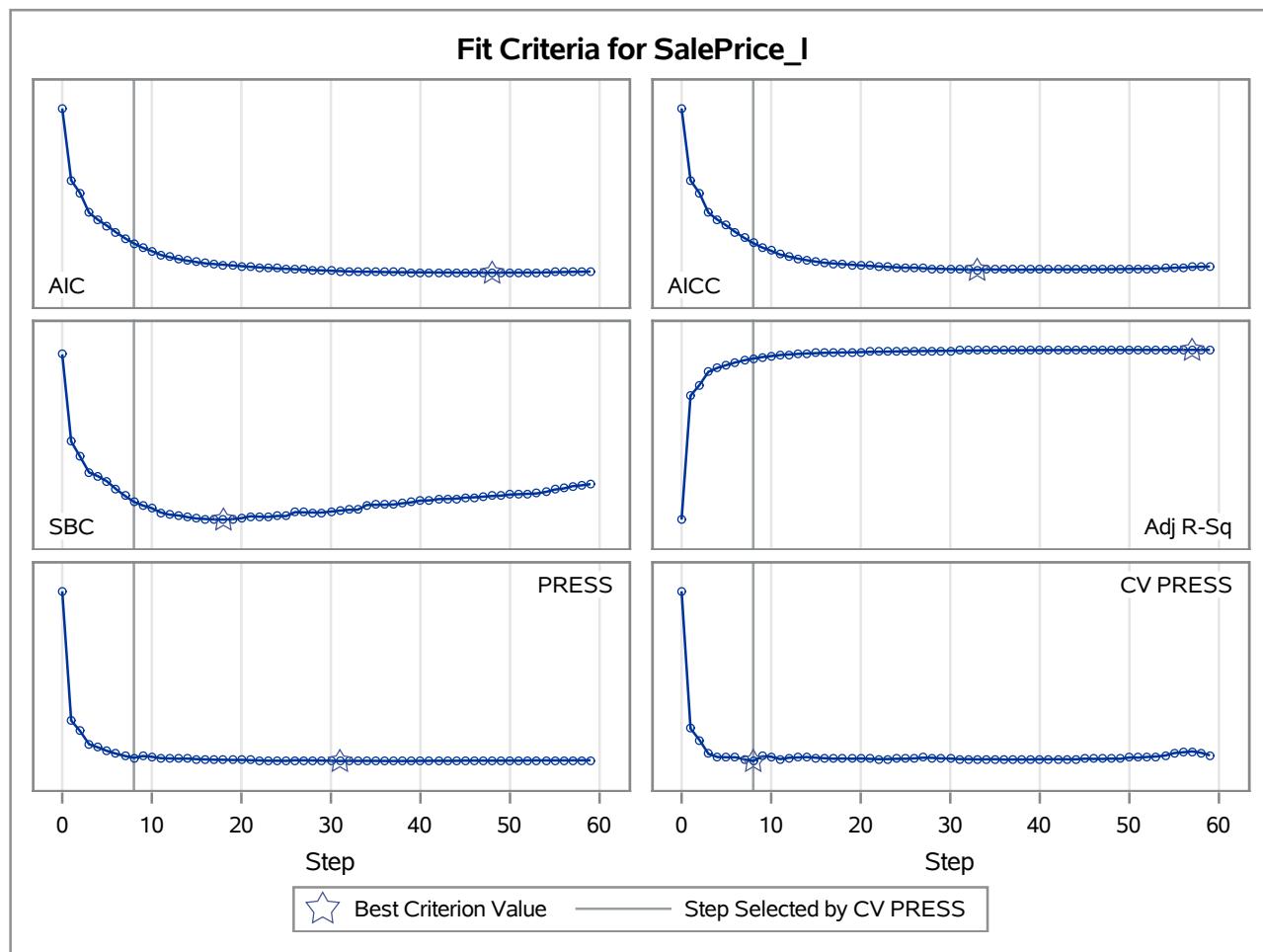
Class	Levels	Values
MSZoning	6	C FV NA RH RL RM
MSSubClass	15	120 160 180 190 20 30 40 45 50 60 70 75 80 85 90
Street	2	Grvl Pave
Alley	3	Gr NA Pa
LotShape	4	IR1 IR2 IR3 Reg
LandContour	4	Bnk HLS Low Lvl
Utilities	2	AllPub NA
LotConfig	5	Corner CulDSac FR2 FR3 Inside
LandSlope	3	Gtl Mod Sev
Neighborhood	25	Blmgtn Blueste BrDale BrkSide ClearCr CollgCr Crawfor Edwards Gilbert IDOTRR MeadowV Mitchel NAmes NPkVll NWAmes NoRidge NridgHt OldTown SWISU Sawyer SawyerW Somerst StoneBr Timber Veenker
Condition1	9	Artery Feedr Norm PosA PosN RRAe RRAn RRNe RRNn
Condition2	6	Artery Feedr Norm PosA PosN RRNn
BldgType	5	1Fam 2fmCon Duplex Twnhs TwnhsE
HouseStyle	8	1.5Fin 1.5Unf 1Story 2.5Fin 2.5Unf 2Story Soyer SLvl
RoofStyle	6	Flat Gable Gambr Hip Mansa Shed
RoofMatl	7	ClyTile CompShg Membran Roll Tar&Grv WdShake WdShngl
Exterior1st	14	AsbShng BrkComm BrkFace CBlock CemntBd HdBoard ImStucc MetalSd Plywood Stone Stucco VinylSd Wd Sdng WdShing
Exterior2nd	16	AsbShng AsphShn Brk Cmn BrkFace CBlock CmentBd HdBoard ImStucc MetalSd Other Plywood Stone Stucco VinylSd Wd Sdng Wd Shng
MasVnrType	5	BrkCmn BrkFace NA None Stone
ExterQual	4	Ex Fa Gd TA

## Forward Multiple Linear Regression - All Vars No Ints

### The GLMSELECT Procedure

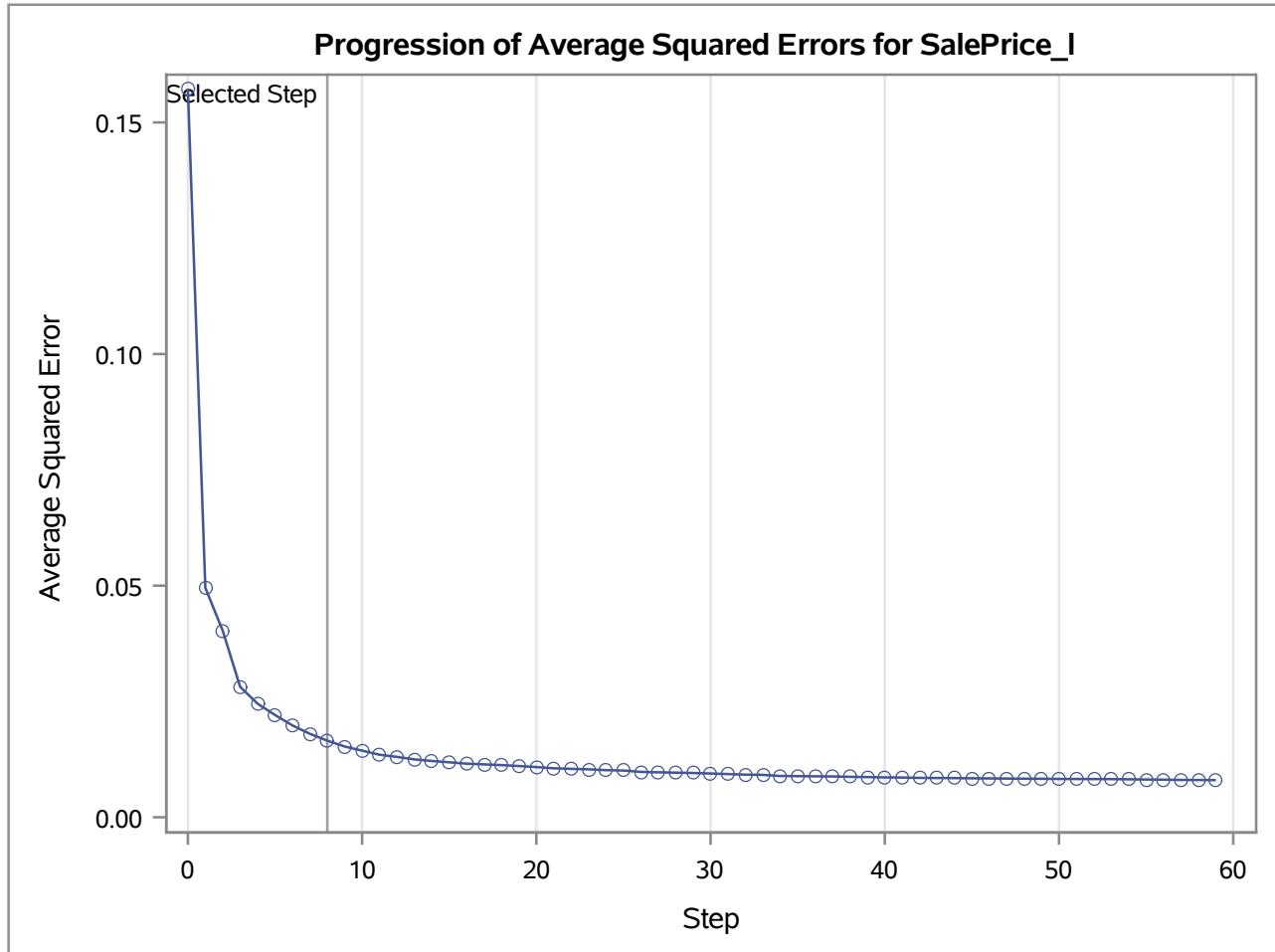
Class Level Information		
Class	Levels	Values
ExterCond	5	Ex Fa Gd Po TA
Foundation	6	BrkTil CBlock PConc Slab Stone Wood
BsmtQual	5	Ex Fa Gd NA TA
BsmtCond	5	Fa Gd NA Po TA
BsmtExposure	5	Av Gd Mn NA No
BsmtFinType1	7	ALQ BLQ GLQ LwQ NA Rec Unf
BsmtFinType2	7	ALQ BLQ GLQ LwQ NA Rec Unf
Heating	5	GasA GasW Grav OthW Wall
HeatingQC	5	Ex Fa Gd Po TA
CentralAir	2	N Y
Electrical	6	FuseA FuseF FuseP Mix NA SBrkr
KitchenQual	5	Ex Fa Gd NA TA
Functional	7	Maj1 Maj2 Min1 Min2 Mod NA Typ
FireplaceQu	6	Ex Fa Gd NA Po TA
GarageType	6	2Types Attchd Basment BuiltIn CarPort Detached
GarageFinish	3	Fin RFn Unf
GarageQual	5	Ex Fa Gd Po TA
GarageCond	5	Ex Fa Gd Po TA
PavedDrive	3	N P Y
PoolQC	4	Ex Fa Gd NA
Fence	5	GdPrv GdWo MnPrv MnWw NA
MiscFeature	5	Gar2 NA Othr Shed TenC
SaleType	7	COD CWD Con NA New Oth WD
SaleCondition	6	Abnorml AdjLand Alloca Family Normal Partial

Dimensions	
Number of Effects	80
Number of Parameters	266

**Forward Multiple Linear Regression - All Vars No Ints****The GLMSELECT Procedure**

**Forward Multiple Linear Regression - All Vars No Ints****The GLMSELECT Procedure**

Effect Entered



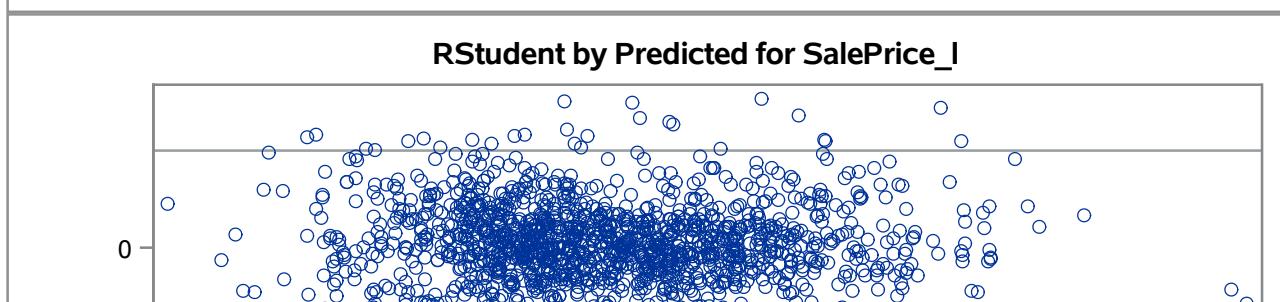
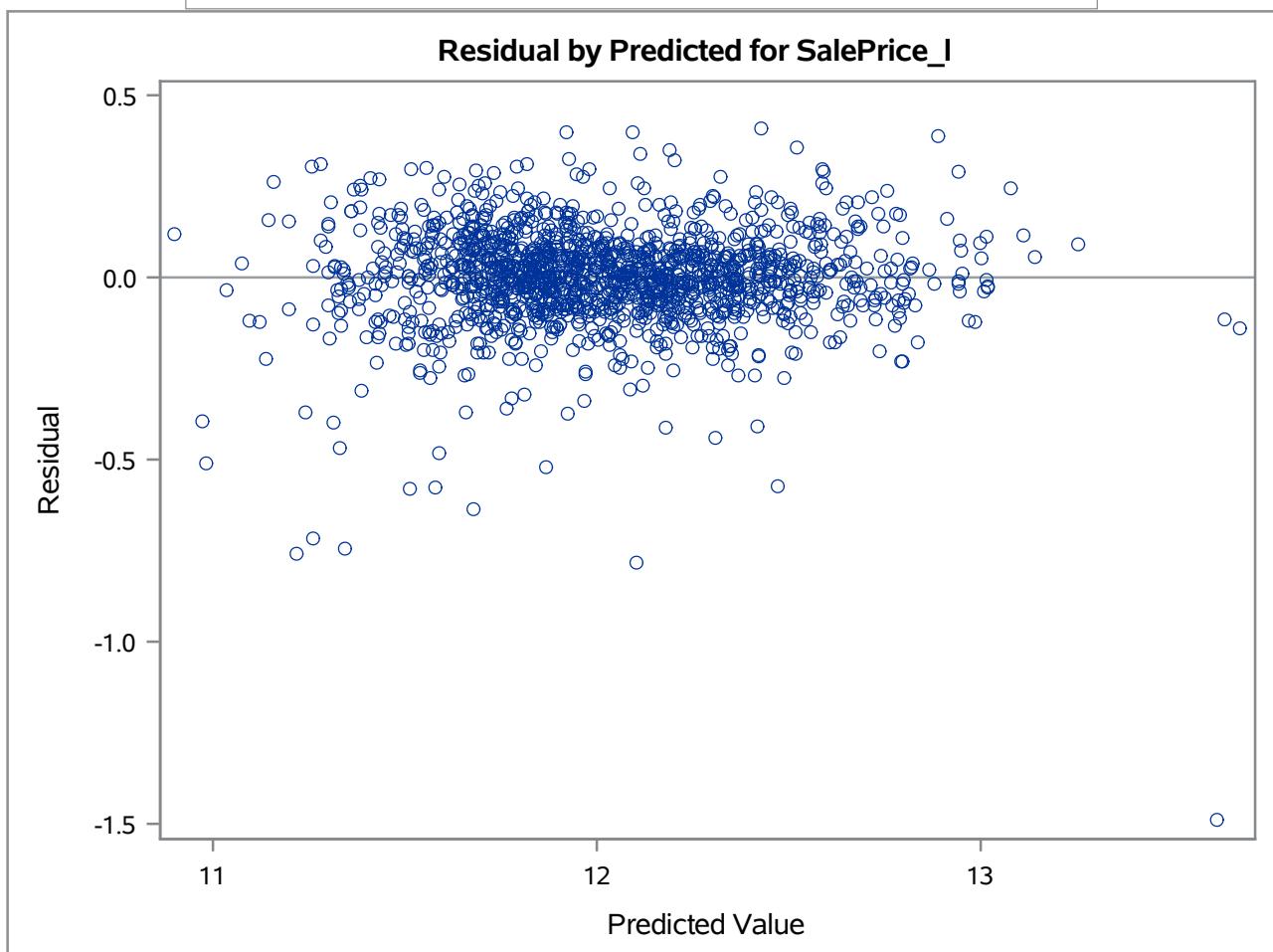
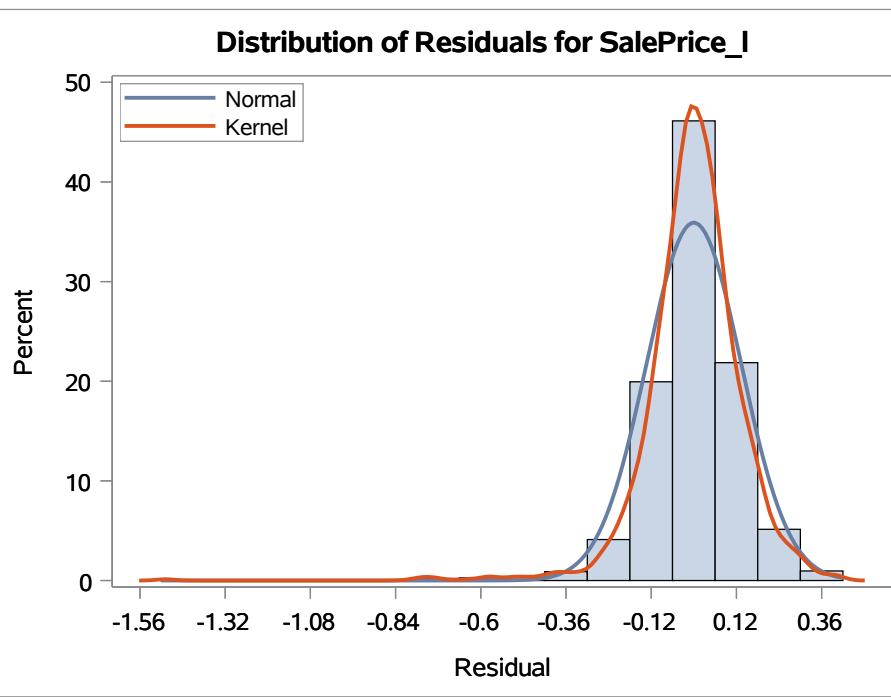
## Forward Multiple Linear Regression - All Vars No Ints

### The GLMSELECT Procedure Selected Model

E  
f  
f  
e  
c  
t  
  
E  
n  
t  
e  
r  
e  
d

**The selected model, based on Cross Validation, is the model at Step 8.**

The REG Procedure  
Model: MODEL1  
Dependent Variable: SalePrice\_I



**The GLMSELECT Procedure**

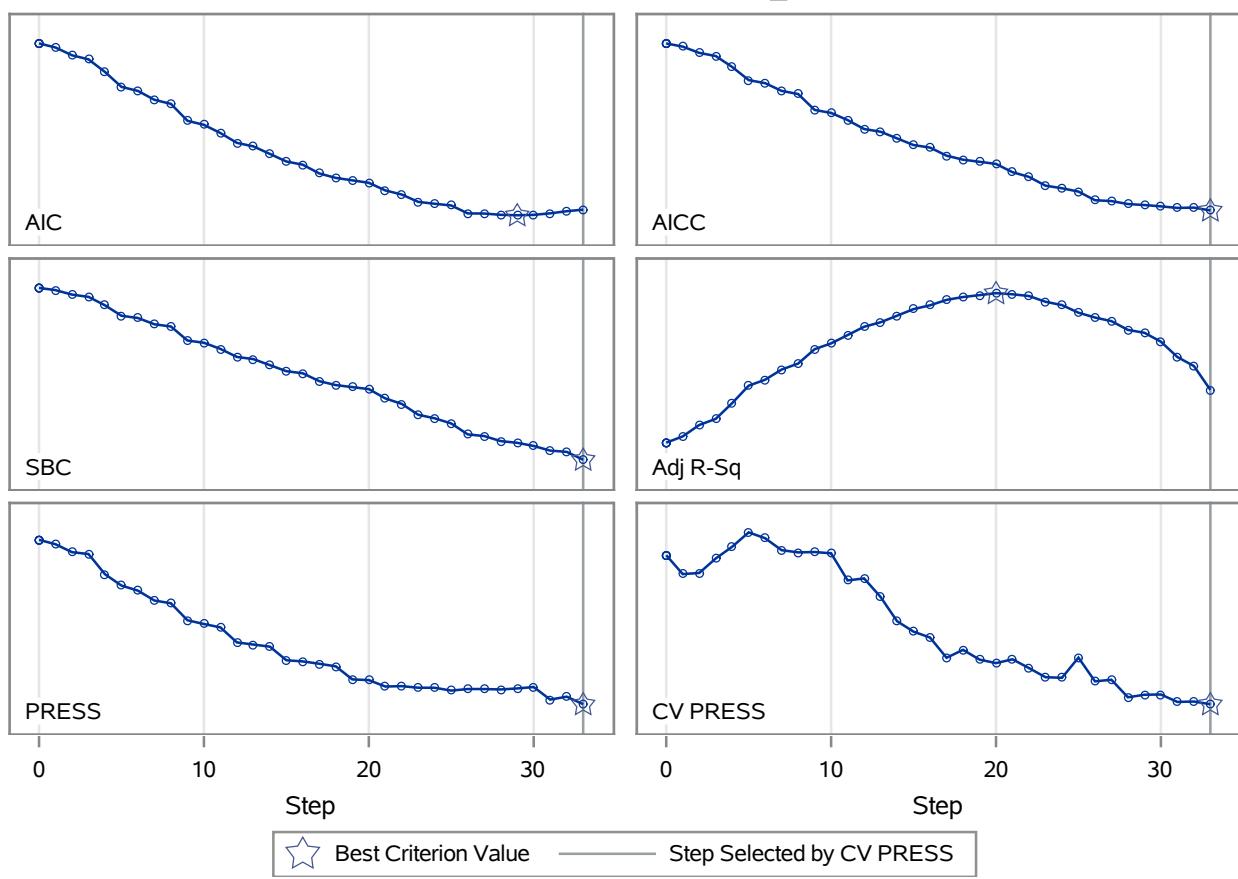
Effect Entered

**Note:** Effects dropped at step 0 are redundant.

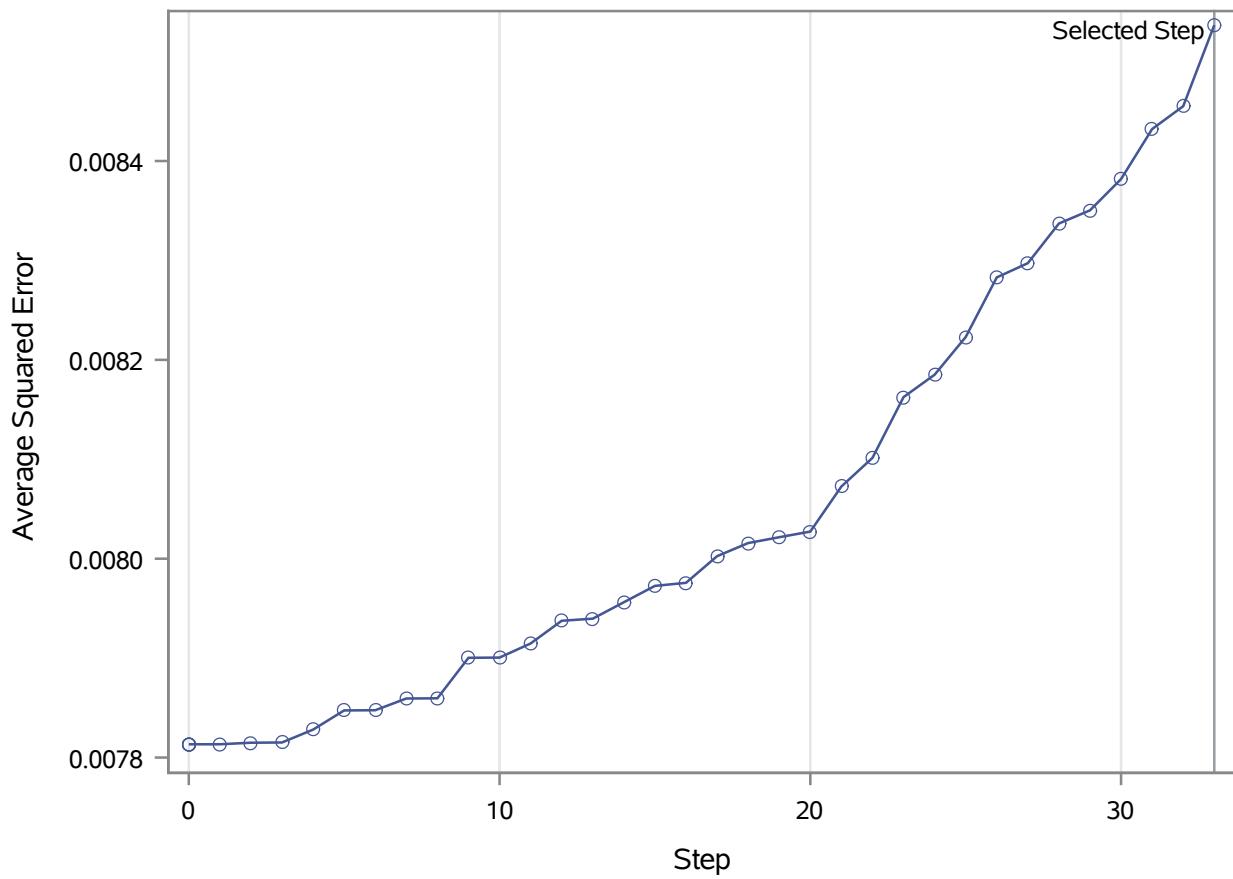
**Backward Selection Multiple Linear Regression - All Vars No Ints****The GLMSELECT Procedure**

Effect Entered

### Fit Criteria for SalePrice\_I



### Progression of Average Squared Errors for SalePrice\_I



**Backward Selection Multiple Linear Regression - All Vars No Ints****The GLMSELECT Procedure  
Selected Model**

Effect Entered

The selected model, based on Cross Validation, is the model at Step 33.

**Backward Selection Multiple Linear Regression - All Vars No Ints****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

Effect Entered

**Note:** Model is not full rank. Least-squares solutions for the parameters are not unique. Some statistics will be misleading. A reported DF of 0 or B means that the estimate is biased.

**Note:** The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

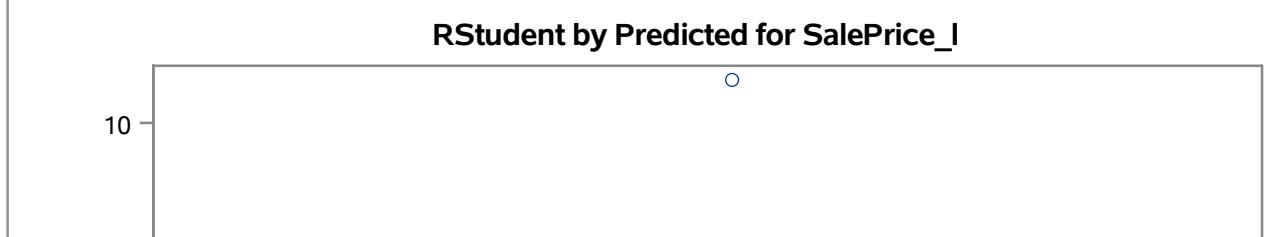
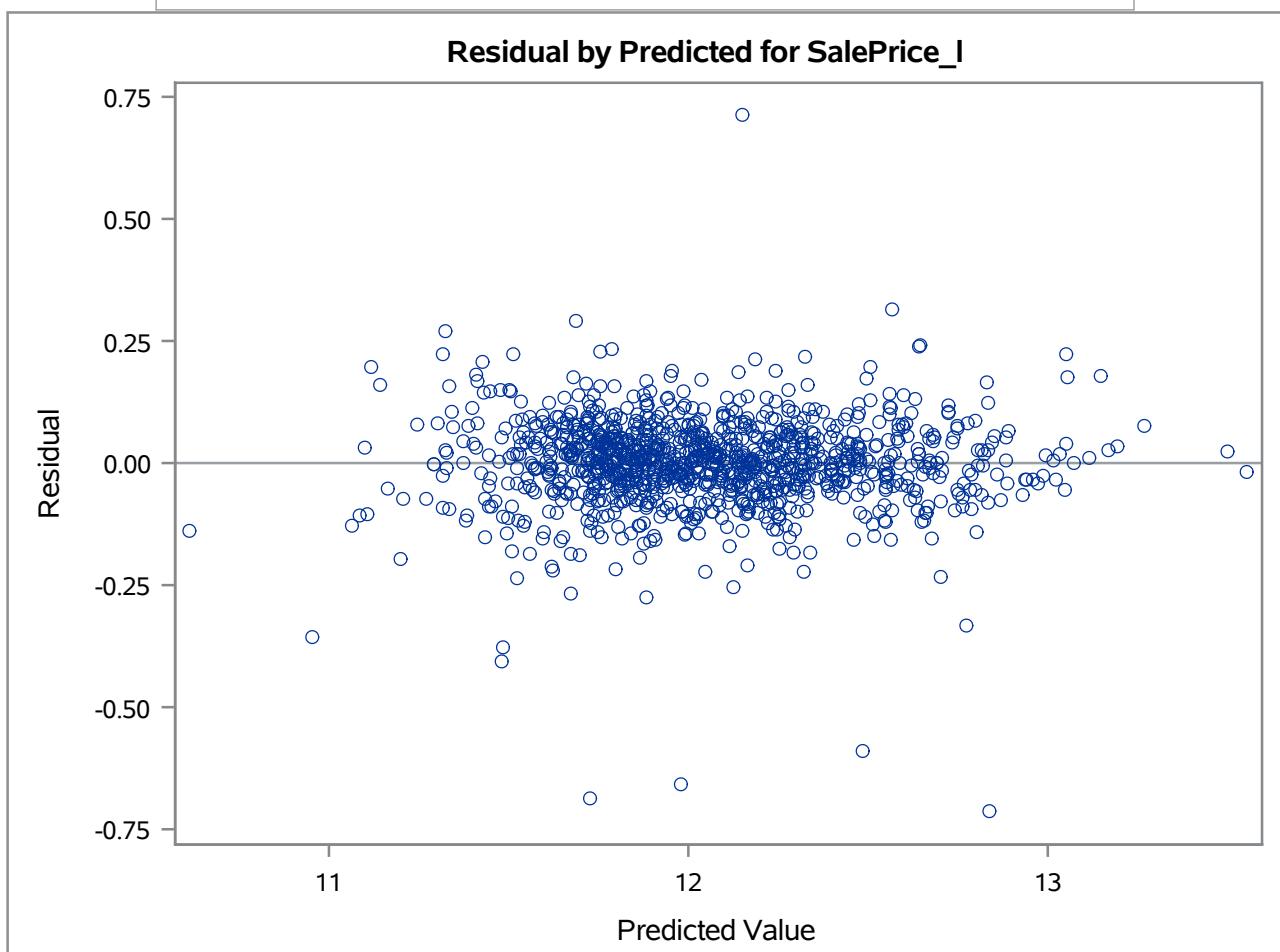
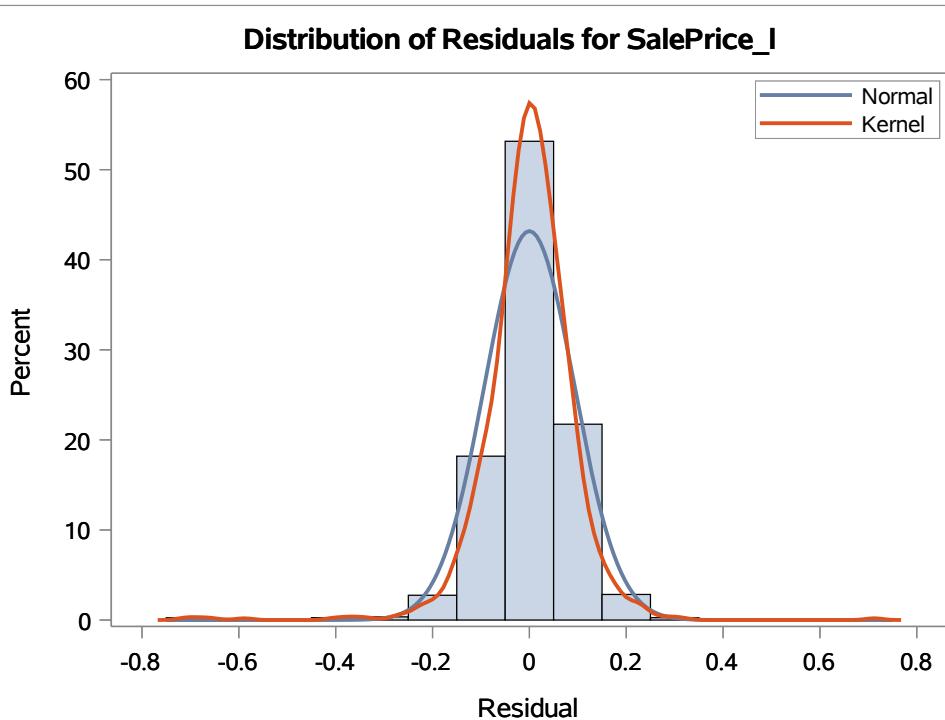
**Backward Selection Multiple Linear Regression - All Vars No Ints**

The REG Procedure

Model: MODEL1

Dependent Variable: SalePrice\_I

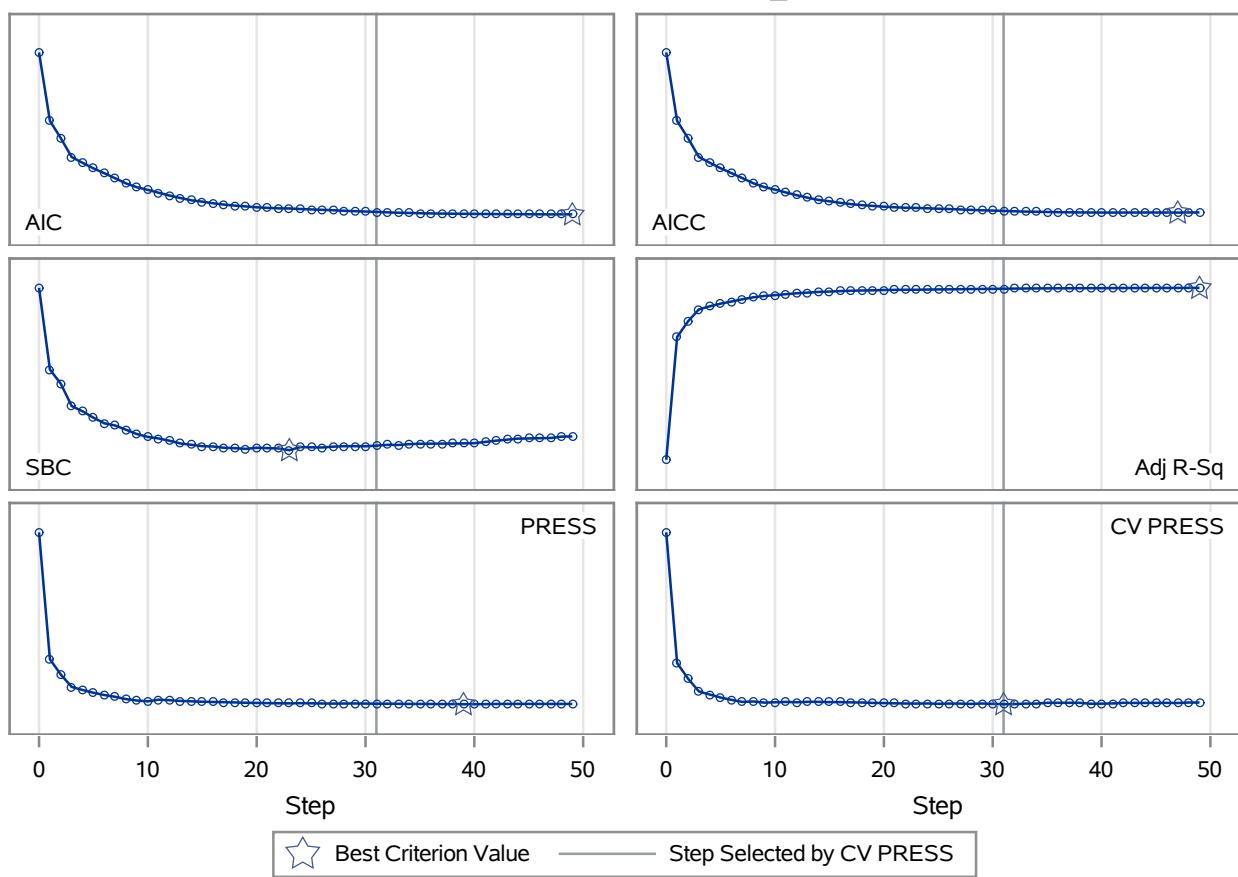
E  
f  
f  
e  
c  
t  
  
E  
n  
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e  
r  
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d



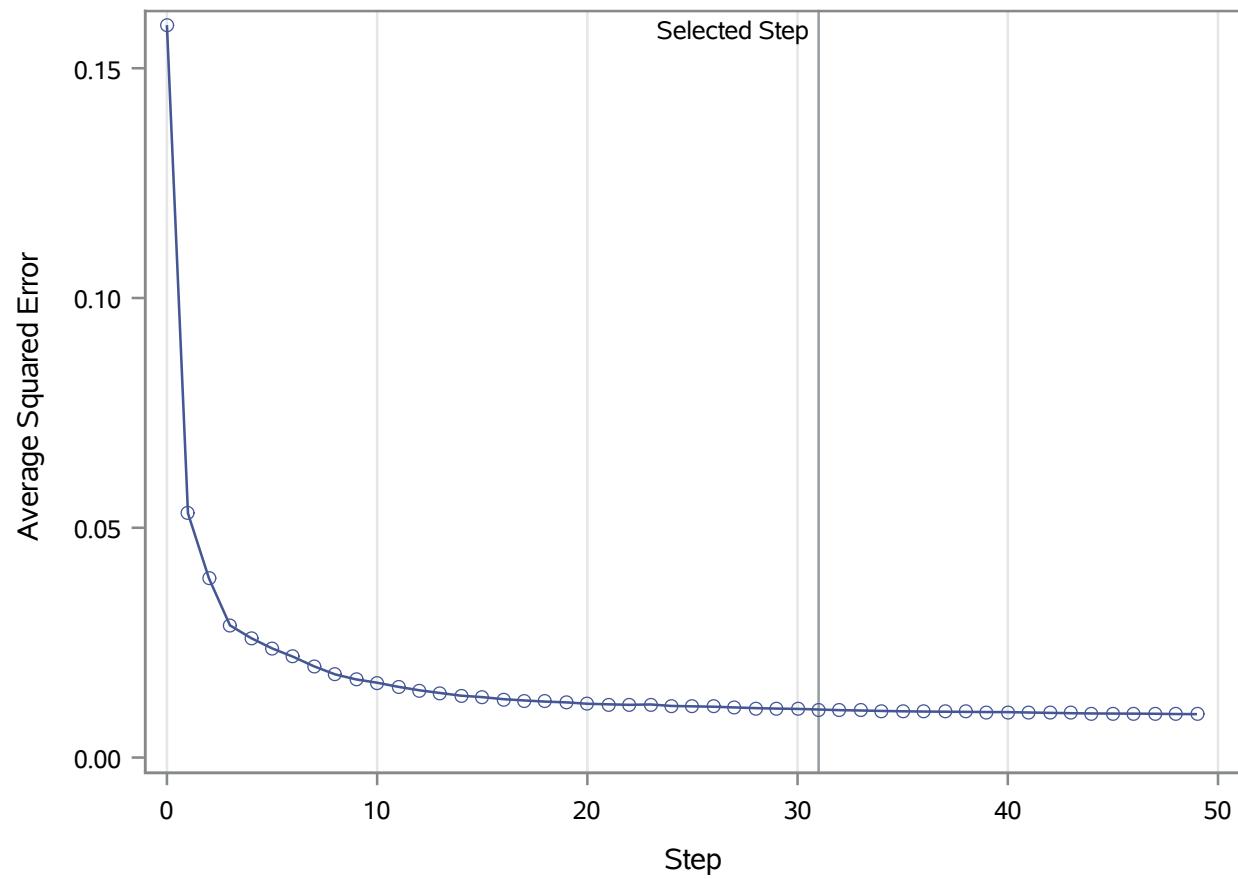
**The GLMSELECT Procedure**

E  
f  
f  
e  
c  
t  
  
E  
n  
t  
e  
r  
e  
d

### Fit Criteria for SalePrice\_I



### Progression of Average Squared Errors for SalePrice\_I



**Stepwise Multiple Linear Regression - All vars No Ints with Multiple Imputation****The GLMSELECT Procedure  
Selected Model**

Effect Entered

The selected model, based on Cross Validation, is the model at Step 31.

**Stepwise Multiple Linear Regression - All vars No Ints with Multiple Imputation****The REG Procedure****Model: MODEL1****Dependent Variable: SalePrice\_I**

Effect Entered

**Note:** Model is not full rank. Least-squares solutions for the parameters are not unique. Some statistics will be misleading. A reported DF of 0 or B means that the estimate is biased.

**Note:** The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

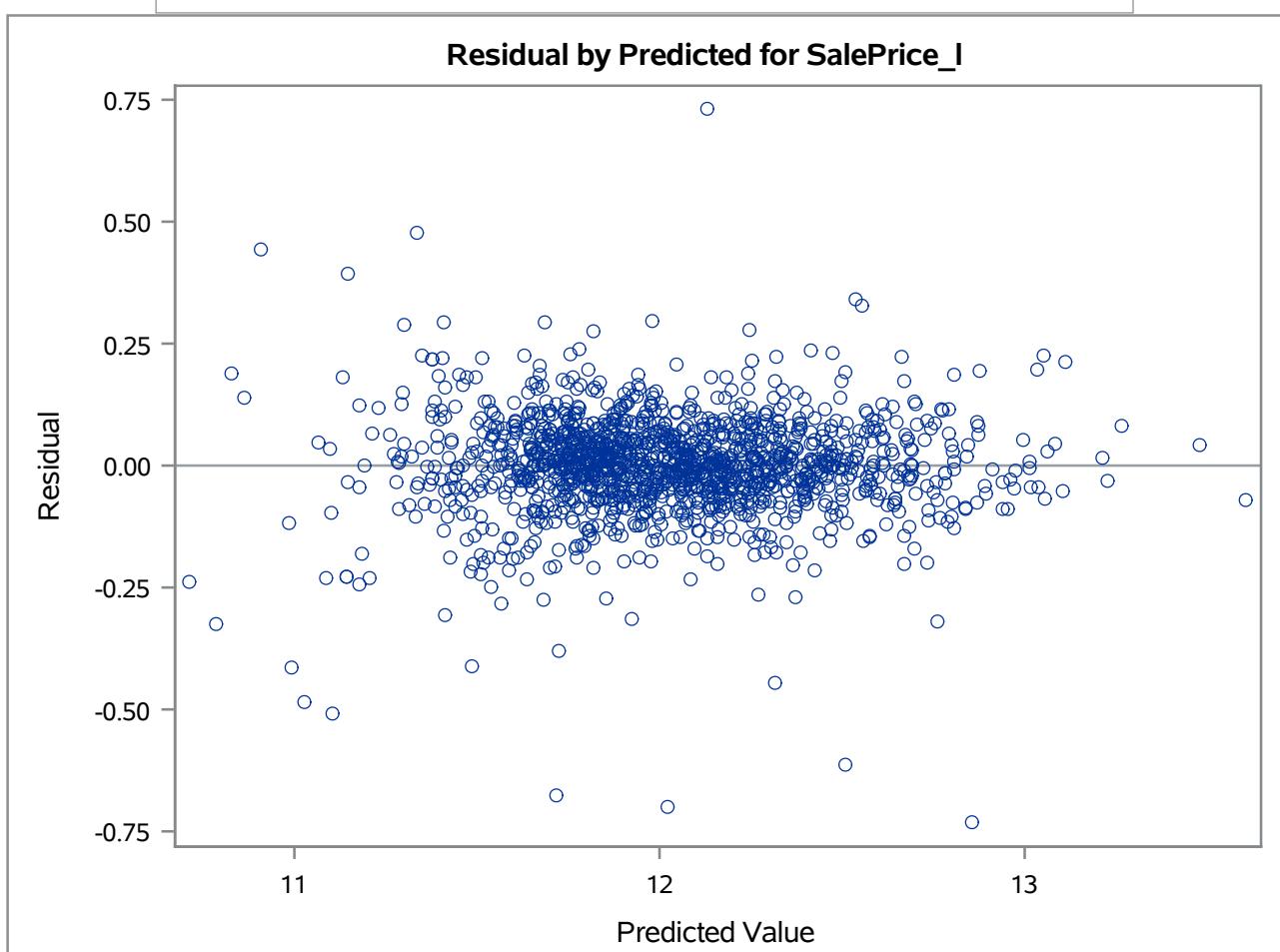
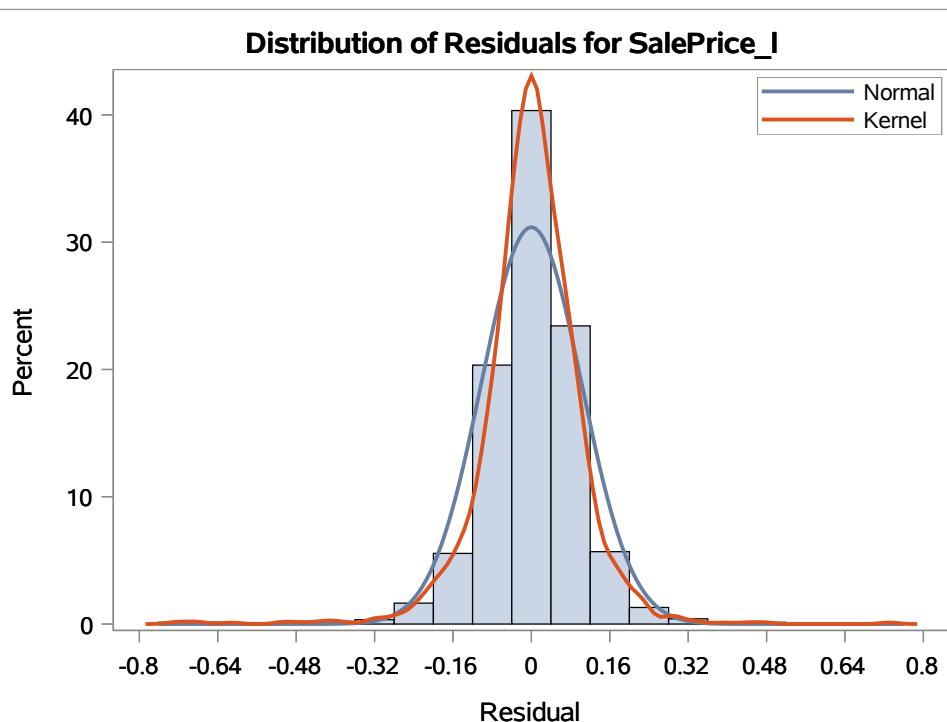
**Stepwise Multiple Linear Regression - All vars No Ints with Multiple Imputation**

The REG Procedure

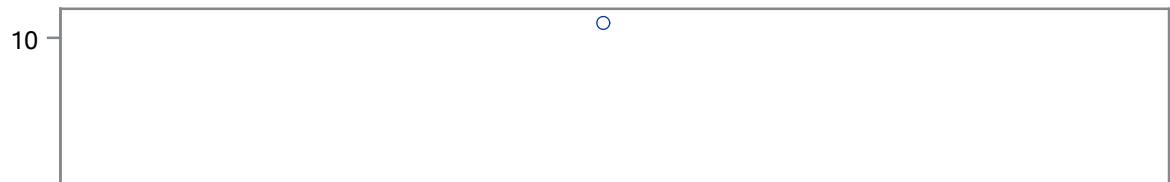
Model: MODEL1

Dependent Variable: SalePrice\_I

E  
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f  
e  
c  
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E  
n  
t  
e  
r  
e  
d



RStudent by Predicted for SalePrice\_I



## The MEANS Procedure

E  
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e  
c  
t  
  
E  
n  
t  
e  
r  
e  
d