

## Logistic Regression Results

### The LOGISTIC Procedure

Model Information	
Data Set	WORK.SORTTEMPTABLESORTED
Response Variable	D
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	418
Number of Observations Used	276

Response Profile		
Ordered Value	D	Total Frequency
1	0	165
2	1	111

Probability modeled is D='1'.

Note: 142 observations were deleted due to missing values for the response or explanatory variables.

### Backward Elimination Procedure

Class Level Information				
Class	Value	Design Variables		
Z1	1	1		
	2	0		
Z6	0	1		
	1	0		
Z3	0	1		
	1	0		
Z5	0	1		
	1	0		
Z7	0	1	0	
	1	0	1	
	0.5	0	0	
Z17	1	1	0	0
	2	0	1	0
	3	0	0	1
	4	0	0	0
Z4	0	1		
	1	0		

Step 0. The following effects were entered:

## Logistic Regression Results

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Intercept Z8 Z2 Z9 Z10 Z11 Z13 Z14 Z15 Z16 Z1 Z6 Z3 Z5 Z7 Z17 Z4 logz12

#### Model Convergence Status

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

#### Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	276.792
SC	377.604	352.821
-2 Log L	371.984	234.792

R-Square 0.3917 Max-rescaled R-Square 0.5292

#### Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	137.1913	20	<.0001
Score	108.1878	20	<.0001
Wald	64.4976	20	<.0001

Step 1. Effect Z9 is removed:

#### Model Convergence Status

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

#### Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	274.818
SC	377.604	347.226
-2 Log L	371.984	234.818

R-Square 0.3916 Max-rescaled R-Square 0.5291

#### Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	137.1658	19	<.0001
Score	107.7848	19	<.0001
Wald	64.3381	19	<.0001

#### Residual Chi-Square Test

Chi-Square	DF	Pr > ChiSq
0.0254	1	0.8733

Step 2. Effect Z7 is removed:

#### Model Convergence Status

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

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Step 2. Effect Z7 is removed:

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	271.144
SC	377.604	336.311
-2 Log L	371.984	235.144

R-Square 0.3909 Max-rescaled R-Square 0.5281

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	136.8399	17	<.0001
Score	107.6605	17	<.0001
Wald	65.1006	17	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.3489	3	0.9506

Step 3. Effect Z10 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	269.177
SC	377.604	330.724
-2 Log L	371.984	235.177

R-Square 0.3908 Max-rescaled R-Square 0.5280

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	136.8061	16	<.0001
Score	107.4960	16	<.0001
Wald	65.1269	16	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.3805	4	0.9840

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Step 4. Effect Z15 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	267.264
SC	377.604	325.190
-2 Log L	371.984	235.264

R-Square	0.3906	Max-rescaled R-Square	0.5278
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	136.7199	15	<.0001
Score	107.4267	15	<.0001
Wald	65.0792	15	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.4641	5	0.9934

Step 5. Effect Z5 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	265.459
SC	377.604	319.765
-2 Log L	371.984	235.459

R-Square	0.3902	Max-rescaled R-Square	0.5272
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	136.5245	14	<.0001
Score	106.9366	14	<.0001
Wald	64.7252	14	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.6635	6	0.9952

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Step 6. Effect Z1 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	264.028
SC	377.604	314.714
-2 Log L	371.984	236.028

R-Square	0.3890	Max-rescaled R-Square	0.5255
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	135.9555	13	<.0001
Score	106.4978	13	<.0001
Wald	64.7829	13	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
1.2284	7	0.9903

Step 7. Effect Z14 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	262.651
SC	377.604	309.717
-2 Log L	371.984	236.651

R-Square	0.3876	Max-rescaled R-Square	0.5236
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	135.3322	12	<.0001
Score	106.4001	12	<.0001
Wald	63.9930	12	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
1.8512	8	0.9852

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Step 8. Effect Z17 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	262.171
SC	377.604	298.375
-2 Log L	371.984	242.171

R-Square	0.3752	Max-rescaled R-Square	0.5069
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	129.8130	9	<.0001
Score	104.2502	9	<.0001
Wald	65.5347	9	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
6.5517	11	0.8341

Step 9. Effect Z3 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	261.698
SC	377.604	294.282
-2 Log L	371.984	243.698

R-Square	0.3717	Max-rescaled R-Square	0.5022
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	128.2856	8	<.0001
Score	102.5383	8	<.0001
Wald	64.5340	8	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
7.8979	12	0.7931

## Logistic Regression Results

### The LOGISTIC Procedure

Step 10. Effect Z6 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	261.261
SC	377.604	290.224
-2 Log L	371.984	245.261

R-Square	0.3682	Max-rescaled R-Square	0.4974
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	126.7225	7	<.0001
Score	101.1555	7	<.0001
Wald	63.0198	7	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
9.4421	13	0.7388

Step 11. Effect Z4 is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	261.954
SC	377.604	287.297
-2 Log L	371.984	247.954

R-Square	0.3620	Max-rescaled R-Square	0.4890
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Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	124.0293	6	<.0001
Score	100.6516	6	<.0001
Wald	64.2369	6	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
11.9407	14	0.6111

## Logistic Regression Results

### The LOGISTIC Procedure

Step 12. Effect Z13 is removed:

#### Model Convergence Status

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

#### Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	373.984	261.802
SC	377.604	283.524
-2 Log L	371.984	249.802

R-Square 0.3577 Max-rescaled R-Square 0.4833

#### Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	122.1817	5	<.0001
Score	99.4290	5	<.0001
Wald	63.8366	5	<.0001

#### Residual Chi-Square Test

Chi-Square	DF	Pr > ChiSq
13.6368	15	0.5532

Note: No (additional) effects met the 0.05 significance level for removal from the model.

#### Summary of Backward Elimination

Step	Effect Removed	DF	Number In	Wald Chi-Square	Pr > ChiSq	Variable Label
1	Z9	1	16	0.0254	0.8733	
2	Z7	2	15	0.3174	0.8533	
3	Z10	1	14	0.0338	0.8542	
4	Z15	1	13	0.0860	0.7693	
5	Z5	1	12	0.1960	0.6580	
6	Z1	1	11	0.5677	0.4512	
7	Z14	1	10	0.6182	0.4317	
8	Z17	3	9	4.2897	0.2318	
9	Z3	1	8	1.5325	0.2157	
10	Z6	1	7	1.5744	0.2096	
11	Z4	1	6	2.0473	0.1525	
12	Z13	1	5	1.8621	0.1724	

#### Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	249.8018	270	0.9252	0.8059
Pearson	283.1148	270	1.0486	0.2796



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Number of unique profiles: 276

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
Z8	1	10.1260	0.0015
Z2	1	12.2559	0.0005
Z11	1	5.1777	0.0229
Z16	1	12.7741	0.0004
logz12	1	15.1189	0.0001

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-18.1015	2.8415	40.5829	<.0001
Z8	1	0.2185	0.0687	10.1260	0.0015
Z2	1	0.0557	0.0159	12.2559	0.0005
Z11	1	0.00501	0.00220	5.1777	0.0229
Z16	1	0.6707	0.1877	12.7741	0.0004
logz12	1	0.8958	0.2304	15.1189	0.0001

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	86.7	Somers' D	0.735
Percent Discordant	13.3	Gamma	0.735
Percent Tied	0.0	Tau-a	0.355
Pairs	18315	c	0.867

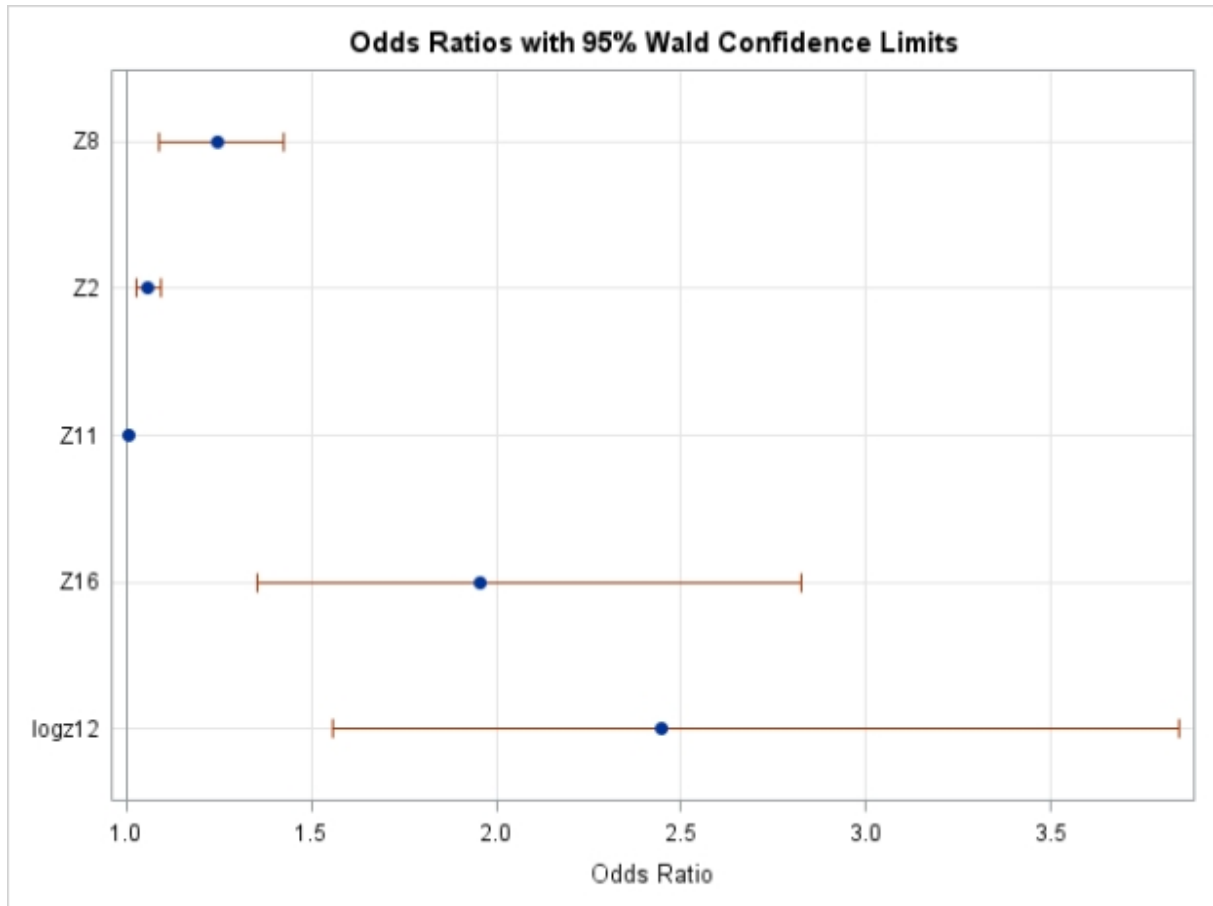
Parameter Estimates and Wald Confidence Intervals			
Parameter	Estimate	95% Confidence Limits	
Intercept	-18.1015	-23.6707	-12.5324
Z8	0.2185	0.0839	0.3531
Z2	0.0557	0.0245	0.0870
Z11	0.00501	0.000695	0.00933
Z16	0.6707	0.3029	1.0386
logz12	0.8958	0.4442	1.3473

Odds Ratio Estimates and Wald Confidence Intervals				
Effect	Unit	Estimate	95% Confidence Limits	
Z8	1.0000	1.244	1.088	1.423
Z2	1.0000	1.057	1.025	1.091
Z11	1.0000	1.005	1.001	1.009
Z16	1.0000	1.956	1.354	2.825
logz12	1.0000	2.449	1.559	3.847

## Logistic Regression Results

### The LOGISTIC Procedure

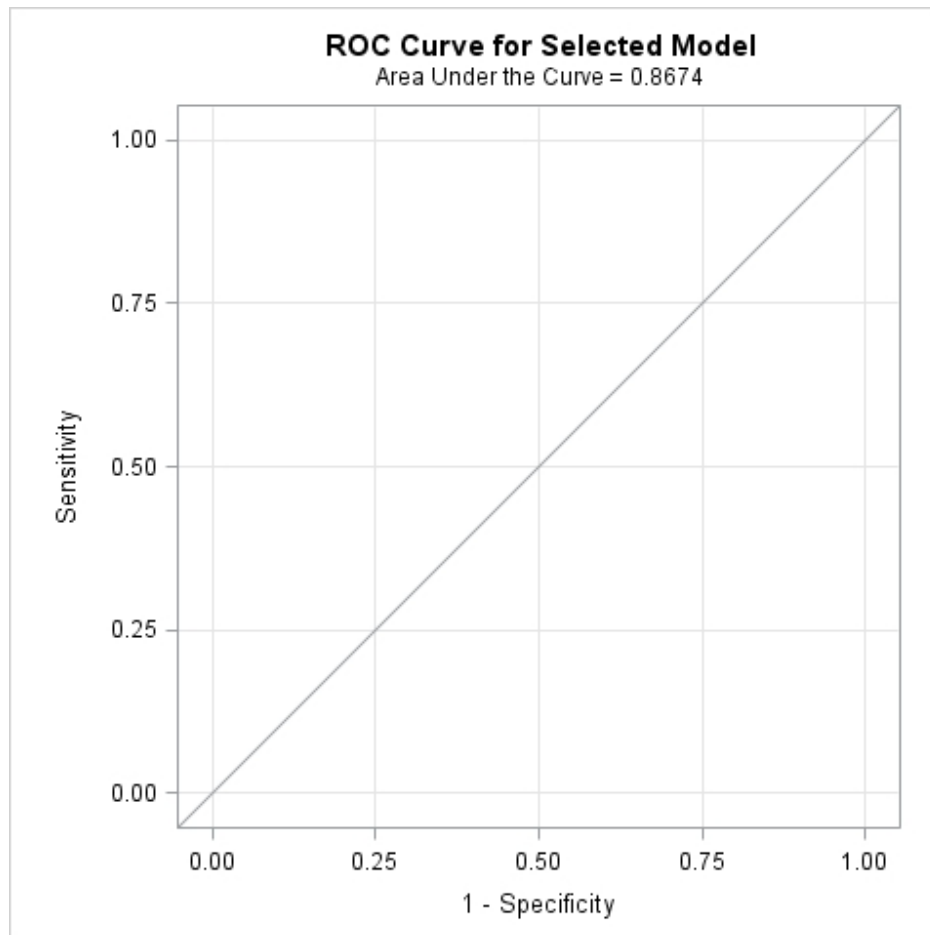
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

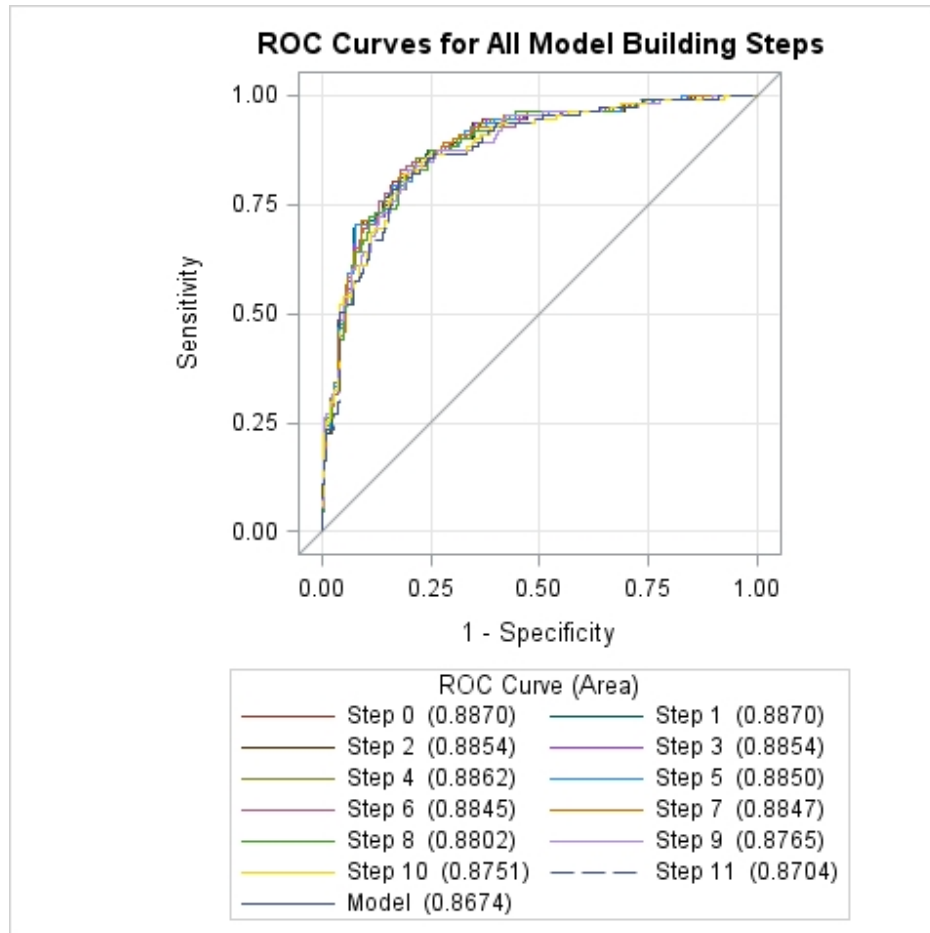
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

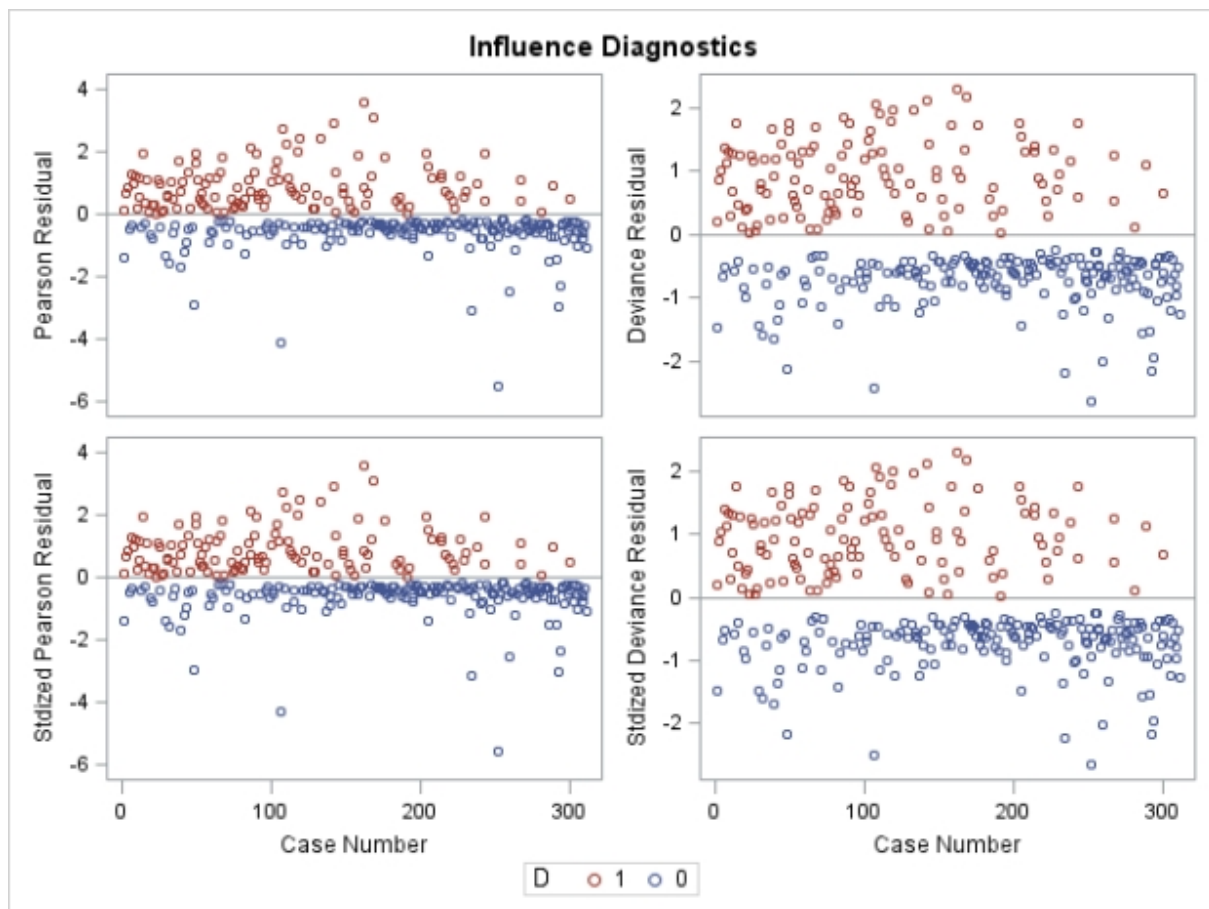
Number of unique profiles: 276



Partition for the Hosmer and Lemeshow Test					
Group	Total	D = 1		D = 0	
		Observed	Expected	Observed	Expected
1	28	1	1.76	27	26.24
2	28	2	2.75	26	25.25
3	28	3	3.87	25	24.13
4	28	5	5.20	23	22.80
5	28	6	7.04	22	20.96
6	28	11	10.36	17	17.64
7	28	17	13.78	11	14.22
8	28	21	18.89	7	9.11
9	28	23	23.93	5	4.07
10	24	22	23.42	2	0.58

**Logistic Regression Results****The LOGISTIC Procedure****Number of unique profiles: 276****Hosmer and Lemeshow Goodness-of-Fit Test**

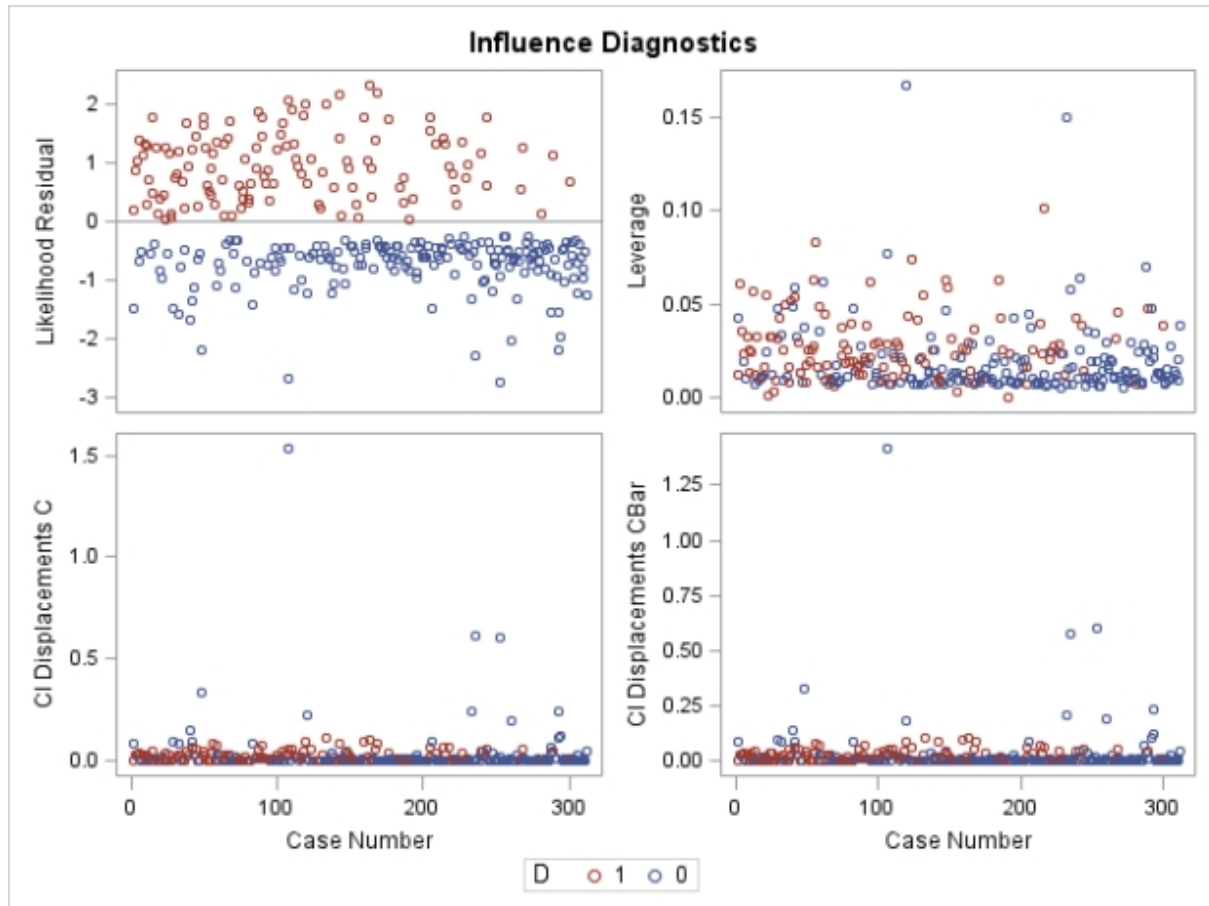
Chi-Square	DF	Pr > ChiSq
7.1239	8	0.5233



## Logistic Regression Results

### The LOGISTIC Procedure

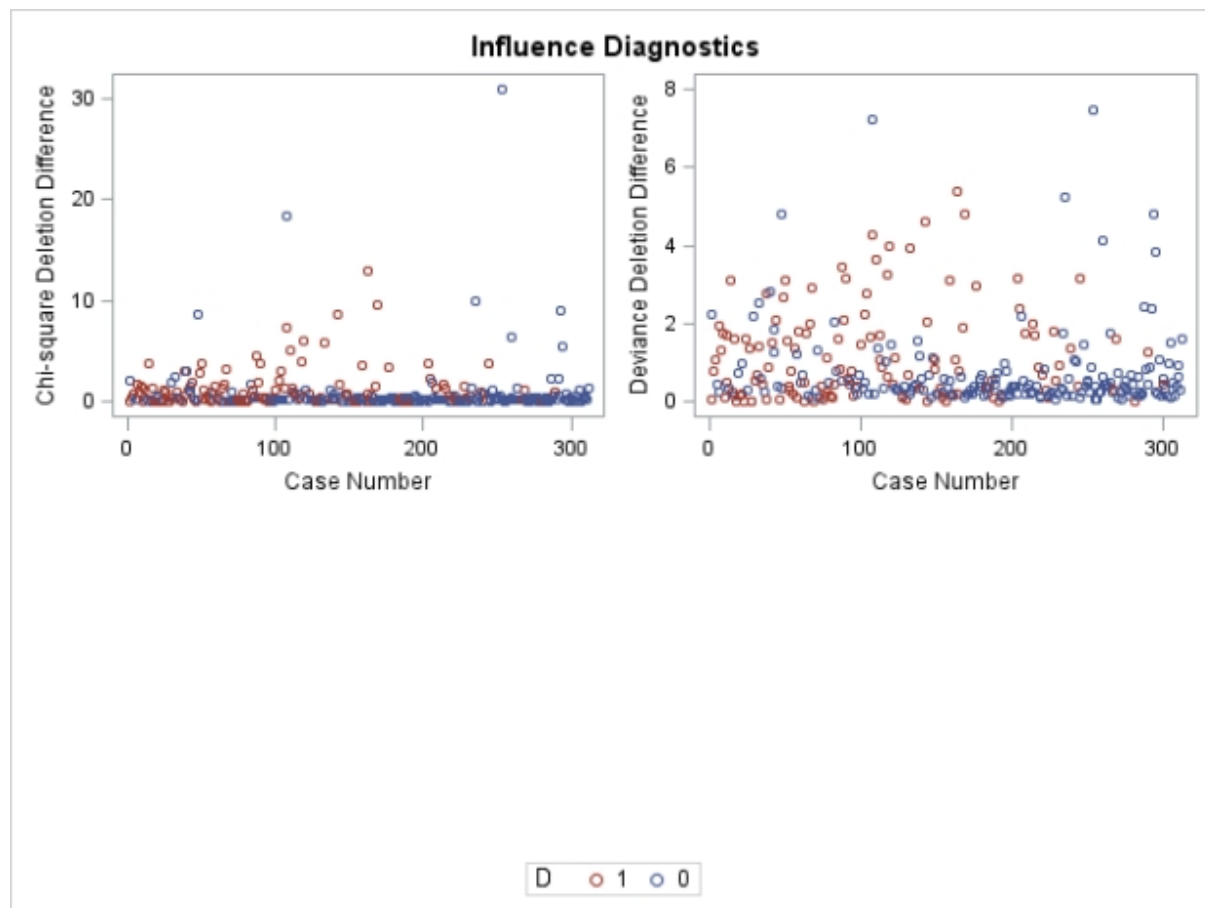
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

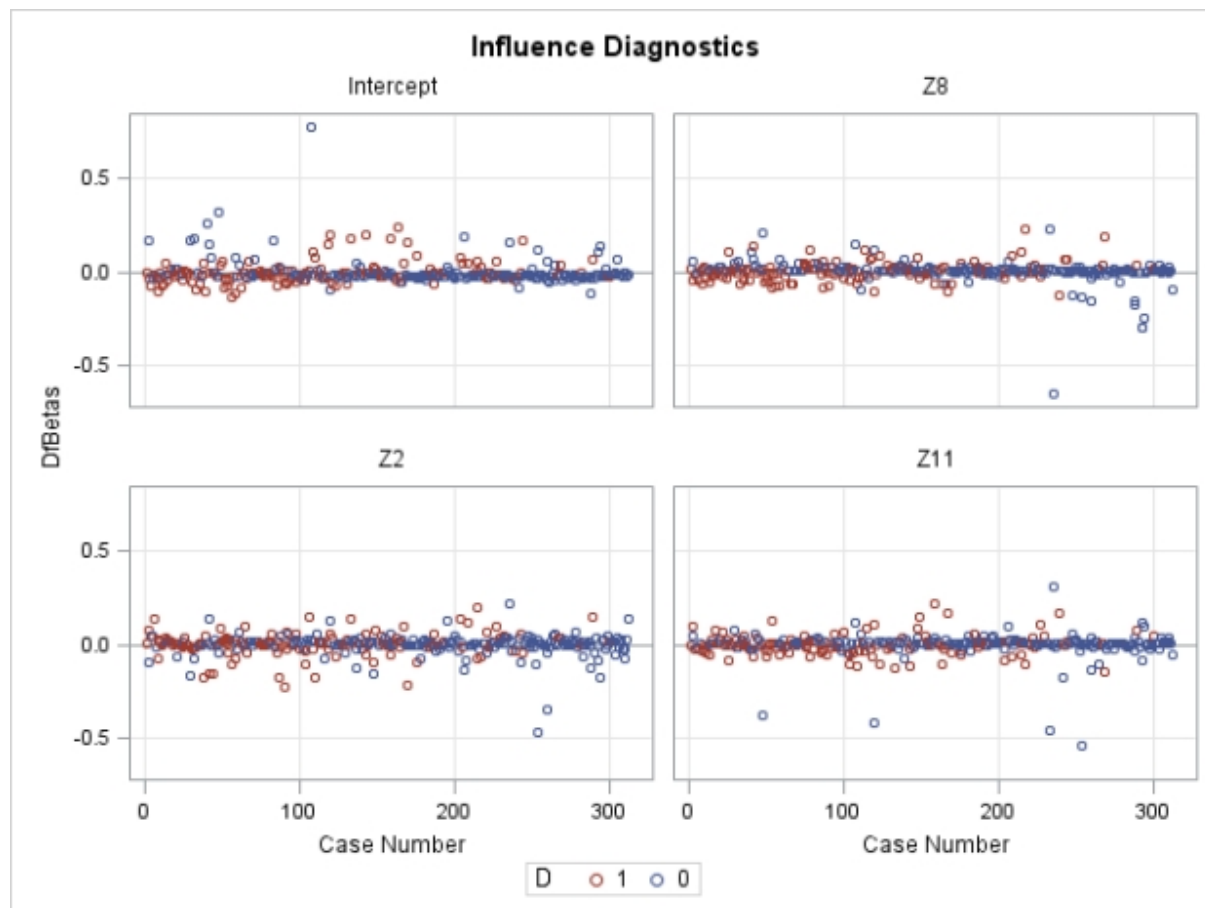
Number of unique profiles: 276



## Logistic Regression Results

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Number of unique profiles: 276

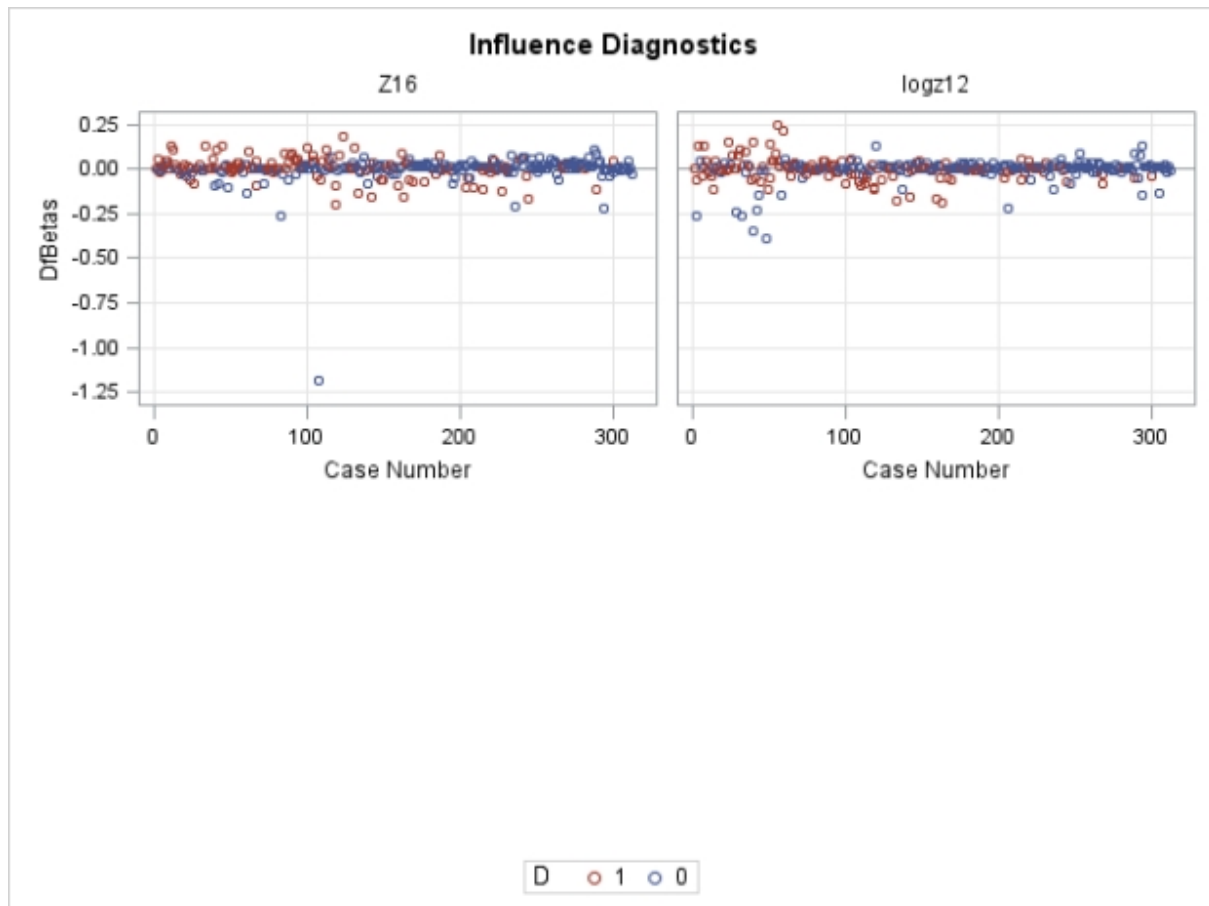




## Logistic Regression Results

### The LOGISTIC Procedure

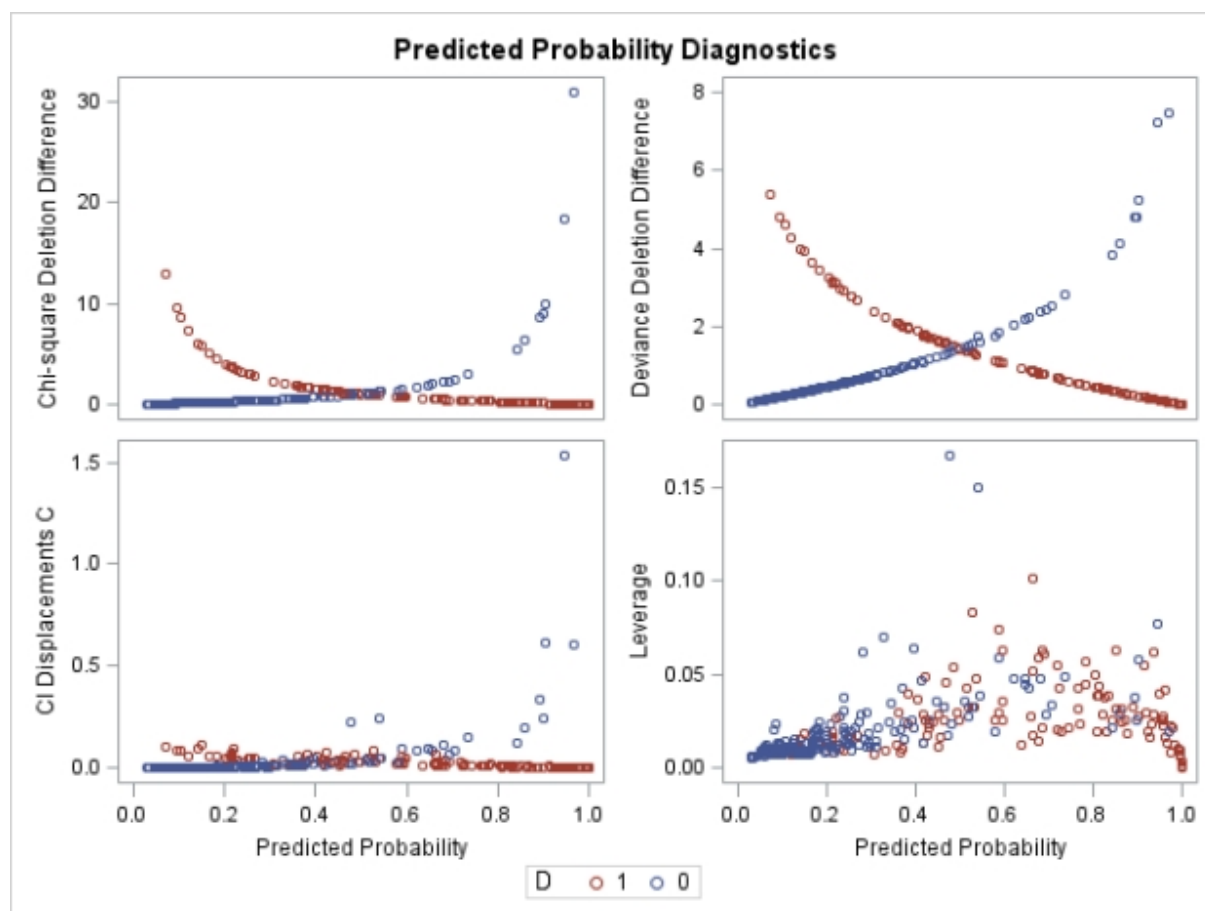
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

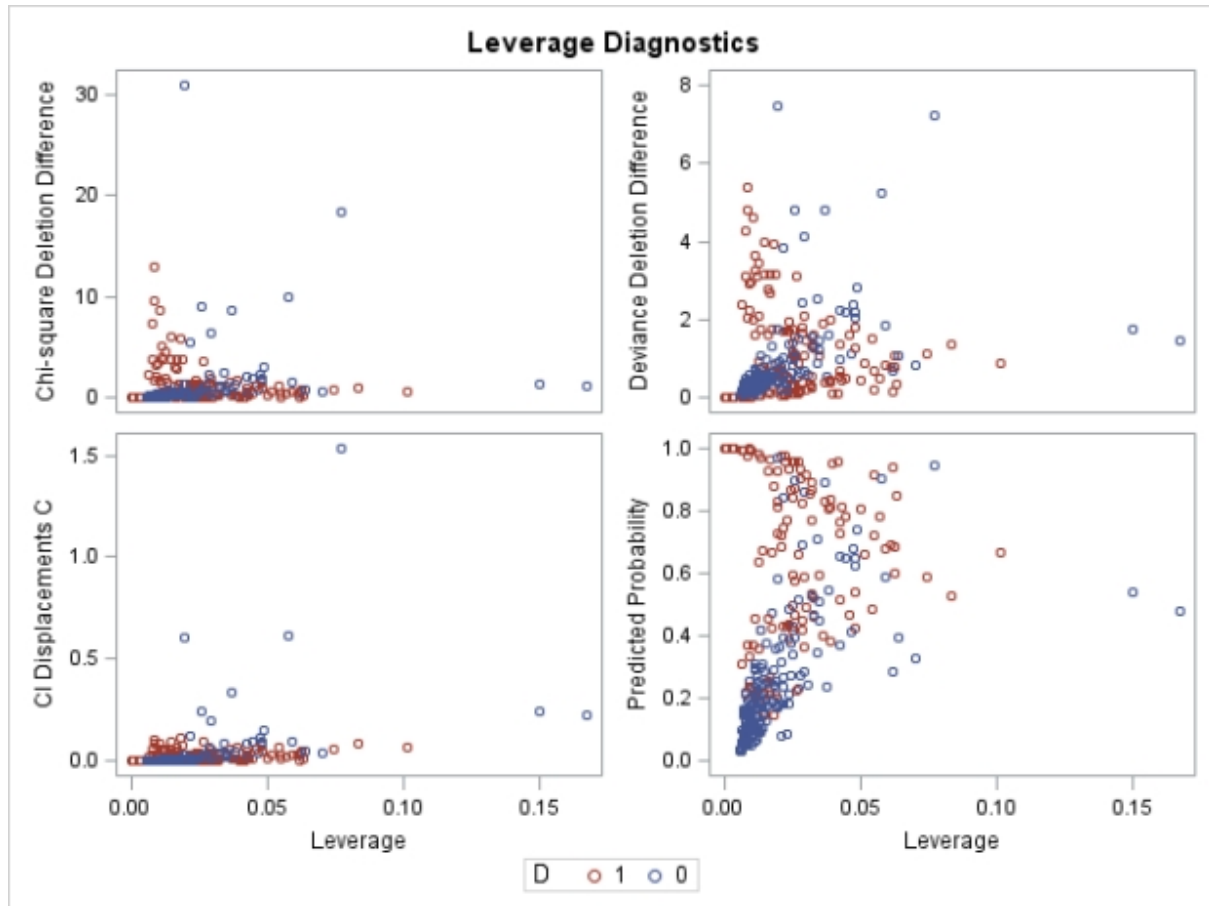
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

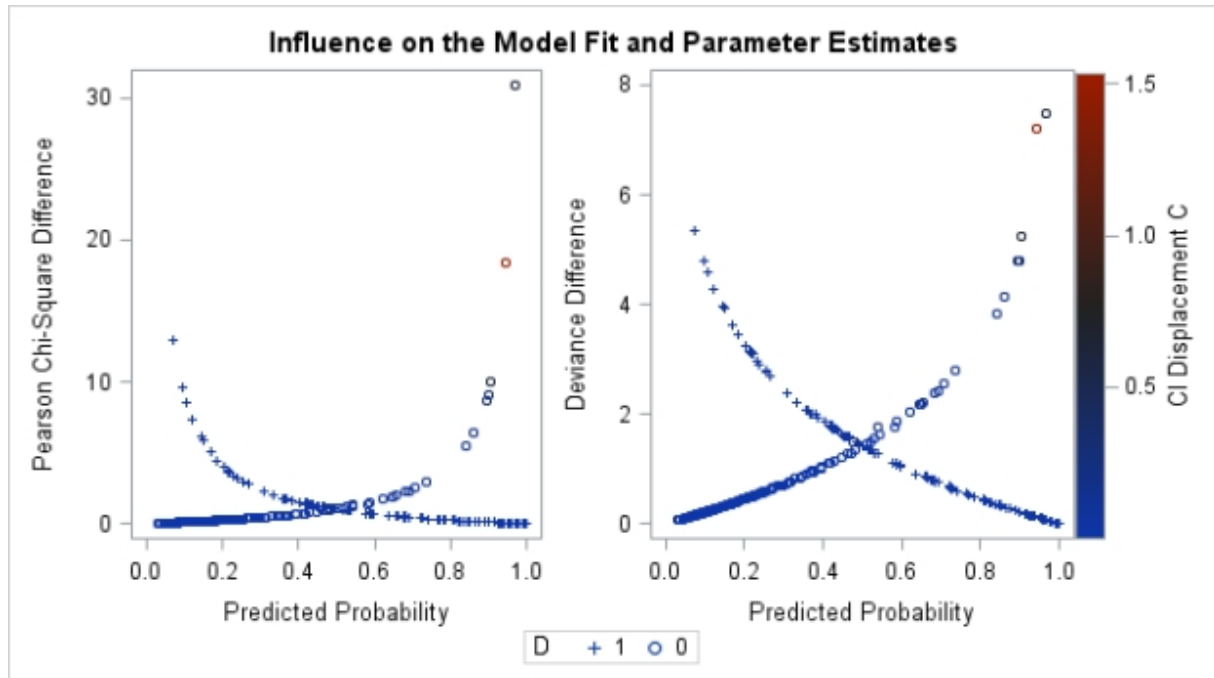
Number of unique profiles: 276



## Logistic Regression Results

### The LOGISTIC Procedure

Number of unique profiles: 276



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### The LOGISTIC Procedure

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