Logistic Regression Results

The LOGISTIC Procedure

Model Information		
Data Set	WORK.SORTTEMPTABLESORTED	
Response Variable	1_MONTH_DEFAULT_FLAG	1_MONTH_DEFAULT_FLAG
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	1707629
Number of Observations Used	1668911

Response Profile		
Ordered Value	**1_MONTH_DEFAULT_FLAG**	**Total Frequency**
1	N	1666867
2	Y	2044

Probability modeled is 1_MONTH_DEFAULT_FLAG='Y'.

Note: 38718 observations were deleted due to missing values for the response or explanatory variables.

Backward Elimination Procedure

Class Level Information		
Class	**Value**	**Design Variables**
LOAN_PURPOSE	**BTL**	1
	PPR	-1

Step 0. The following effects were entered:

Intercept PRIMARY_CUSTOMER_AGE CREATION_YEAR ORIGINAL_BALANCE EUR_BALANCE AVERAGE_MONTHS_IN_AR BALANCE_MOVEMENT CASHFLOW LTV NO_MORT_ACCOUNTS NO_MORT_IN_DEFAULT MONTH_END_SINCE_CREA LOAN_PURPOSE 6_MONTH_BALANCE_MOVE 6_MONTH_CASHFLOW 12_MONTH_BALANCE_MOV 12_MONTH_CASHFLOW MORT_AVERAGE_MONTHS_ EUR_BALAN*6_MONTH_CA EUR_BALAN*6_MONTH_BA EUR_BALAN*12_MONTH_B EUR_BALAN*12_MONTH_C NO_OWNERS AVERAGE_M*6_MONTH_CA AVERAGE_M*12_MONTH_C

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

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	31497.609	11288.292
SC	31509.937	11596.484
-2 Log L	31495.609	11238.292

R-Square	0.0121	**Max-rescaled R-Square**	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	20257.3166	24	<.0001
Score	258991.547	24	<.0001

Logistic Regression Results

The LOGISTIC Procedure

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Wald	11949.7494	24	<.0001

Step 1. Effect MORT_AVERAGE_MONTHS_ is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11286.292
SC	31509.937	11582.157
-2 Log L	31495.609	11238.292

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.3166	23	<.0001
Score	258991.480	23	<.0001
Wald	11949.7491	23	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.0000	1	0.9976

Step 2. Effect CREATION_YEAR is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11284.322
SC	31509.937	11567.859
-2 Log L	31495.609	11238.322

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.2870	22	<.0001
Score	258944.438	22	<.0001
Wald	11950.9912	22	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.0296	2	0.9853

Step 3. Effect EUR_BALAN*12_MONTH_B is removed:

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

Logistic Regression Results

The LOGISTIC Procedure

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11282.359
SC	31509.937	11553.568
-2 Log L	31495.609	11238.359

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.2501	21	<.0001
Score	258930.520	21	<.0001
Wald	11951.4083	21	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.0689	3	0.9953

Step 4. Effect 12_MONTH_BALANCE_MOV is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11280.361
SC	31509.937	11539.242
-2 Log L	31495.609	11238.361

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.2482	20	<.0001
Score	258922.868	20	<.0001
Wald	11951.4718	20	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.0711	4	0.9994

Step 5. Effect EUR_BALAN*6_MONTH_BA is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11278.408
SC	31509.937	11524.962
-2 Log L	31495.609	11238.408

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.2005	19	<.0001

Logistic Regression Results

The LOGISTIC Procedure

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Score	258912.243	19	<.0001
Wald	11951.1995	19	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.1272	5	0.9997

Step 6. Effect 6_MONTH_BALANCE_MOVE is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11276.426
SC	31509.937	11510.652
-2 Log L	31495.609	11238.426

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.1827	18	<.0001
Score	258911.323	18	<.0001
Wald	11952.1482	18	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.1401	6	0.9999

Step 7. Effect MONTH_END_SINCE_CREA is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11274.509
SC	31509.937	11496.407
-2 Log L	31495.609	11238.509

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20257.0997	17	<.0001
Score	258891.766	17	<.0001
Wald	11954.4081	17	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.2243	7	1.0000

Step 8. Effect AVERAGE_M*6_MONTH_CA is removed:

Logistic Regression Results

The LOGISTIC Procedure

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11272.722
SC	31509.937	11482.292
-2 Log L	31495.609	11238.722

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20256.8872	16	<.0001
Score	258804.355	16	<.0001
Wald	11954.1421	16	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.4261	8	0.9999

Step 9. Effect CASHFLOW is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11271.024
SC	31509.937	11468.267
-2 Log L	31495.609	11239.024

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20256.5852	15	<.0001
Score	258790.702	15	<.0001
Wald	11955.0345	15	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
1.4795	9	0.9973

Step 10. Effect EUR_BALAN*6_MONTH_CA is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11270.066
SC	31509.937	11454.981
-2 Log L	31495.609	11240.066

R-Square	0.0121	Max-rescaled R-Square	0.6453

Logistic Regression Results

The LOGISTIC Procedure

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20255.5428	14	<.0001
Score	258789.074	14	<.0001
Wald	11959.4341	14	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
2.9168	10	0.9833

Step 11. Effect 6_MONTH_CASHFLOW is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11268.568
SC	31509.937	11441.156
-2 Log L	31495.609	11240.568

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20255.0406	13	<.0001
Score	258788.458	13	<.0001
Wald	11961.1452	13	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
4.9925	11	0.9315

Step 12. Effect EUR_BALAN*12_MONTH_C is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11266.845
SC	31509.937	11427.105
-2 Log L	31495.609	11240.845

R-Square	0.0121	Max-rescaled R-Square	0.6453

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20254.7641	12	<.0001
Score	258762.571	12	<.0001
Wald	11960.9876	12	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
5.3296	12	0.9461

Logistic Regression Results

The LOGISTIC Procedure

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11266.745
SC	31509.937	11414.678
-2 Log L	31495.609	11242.745

R-Square	0.0121	Max-rescaled R-Square	0.6452

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20252.8635	11	<.0001
Score	258762.297	11	<.0001
Wald	11964.2439	11	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
7.2096	13	0.8910

Step 14. Effect NO_OWNERS is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11266.340
SC	31509.937	11401.944
-2 Log L	31495.609	11244.340

R-Square	0.0121	Max-rescaled R-Square	0.6452

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20251.2691	10	<.0001
Score	258760.463	10	<.0001
Wald	11965.3433	10	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
8.8673	14	0.8395

Step 15. Effect PRIMARY_CUSTOMER_AGE is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11265.707
SC	31509.937	11388.984
-2 Log L	31495.609	11245.707

R-Square	0.0121	Max-rescaled R-Square	0.6451

Logistic Regression Results

The LOGISTIC Procedure

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20249.9017	9	<.0001
Score	258754.490	9	<.0001
Wald	11960.9448	9	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
10.2625	15	0.8029

Step 16. Effect EUR_BALANCE is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11267.536
SC	31509.937	11378.485
-2 Log L	31495.609	11249.536

R-Square	0.0121	Max-rescaled R-Square	0.6450

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20246.0726	8	<.0001
Score	258746.532	8	<.0001
Wald	11966.0737	8	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
14.1468	16	0.5878

Step 17. Effect ORIGINAL_BALANCE is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	31497.609	11266.769
SC	31509.937	11365.391
-2 Log L	31495.609	11250.769

R-Square	0.0121	Max-rescaled R-Square	0.6449

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	20244.8396	7	<.0001
Score	258745.329	7	<.0001
Wald	11969.1913	7	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
13.9835	17	0.6683

Logistic Regression Results

The LOGISTIC Procedure

Summary of Backward Elimination						
Step	Effect Removed	DF	Number In	Wald Chi-Square	Pr > ChiSq	Variable Label
1	MORT_AVERAGE_MONTHS_	1	23	0.0000	0.9976	MORT_AVERAGE_MONTHS_IN_ARREARS
2	CREATION_YEAR	1	22	0.0296	0.8634	CREATION_YEAR
3	EUR_BALAN*12_MONTH_B	1	21	0.0399	0.8418	
4	12_MONTH_BALANCE_MOV	1	20	0.0020	0.9647	12_MONTH_BALANCE_MOVEMENT
5	EUR_BALAN*6_MONTH_BA	1	19	0.0484	0.8258	
6	6_MONTH_BALANCE_MOVE	1	18	0.0180	0.8933	6_MONTH_BALANCE_MOVEMENT
7	MONTH_END_SINCE_CREA	1	17	0.0831	0.7732	MONTH_END_SINCE_CREATION
8	AVERAGE_M*6_MONTH_CA	1	16	0.2126	0.6447	
9	CASHFLOW	1	15	0.5995	0.4388	CASHFLOW
10	EUR_BALAN*6_MONTH_CA	1	14	1.2125	0.2708	
11	6_MONTH_CASHFLOW	1	13	0.6136	0.4334	6_MONTH_CASHFLOW
12	EUR_BALAN*12_MONTH_C	1	12	0.2547	0.6138	
13	LOAN_PURPOSE	1	11	1.8936	0.1688	LOAN_PURPOSE
14	NO_OWNERS	1	10	1.6014	0.2057	NO_OWNERS
15	PRIMARY_CUSTOMER_AGE	1	9	1.3698	0.2419	PRIMARY_CUSTOMER_AGE
16	EUR_BALANCE	1	8	2.2857	0.1306	EUR_BALANCE
17	ORIGINAL_BALANCE	1	7	1.1944	0.2744	ORIGINAL_BALANCE

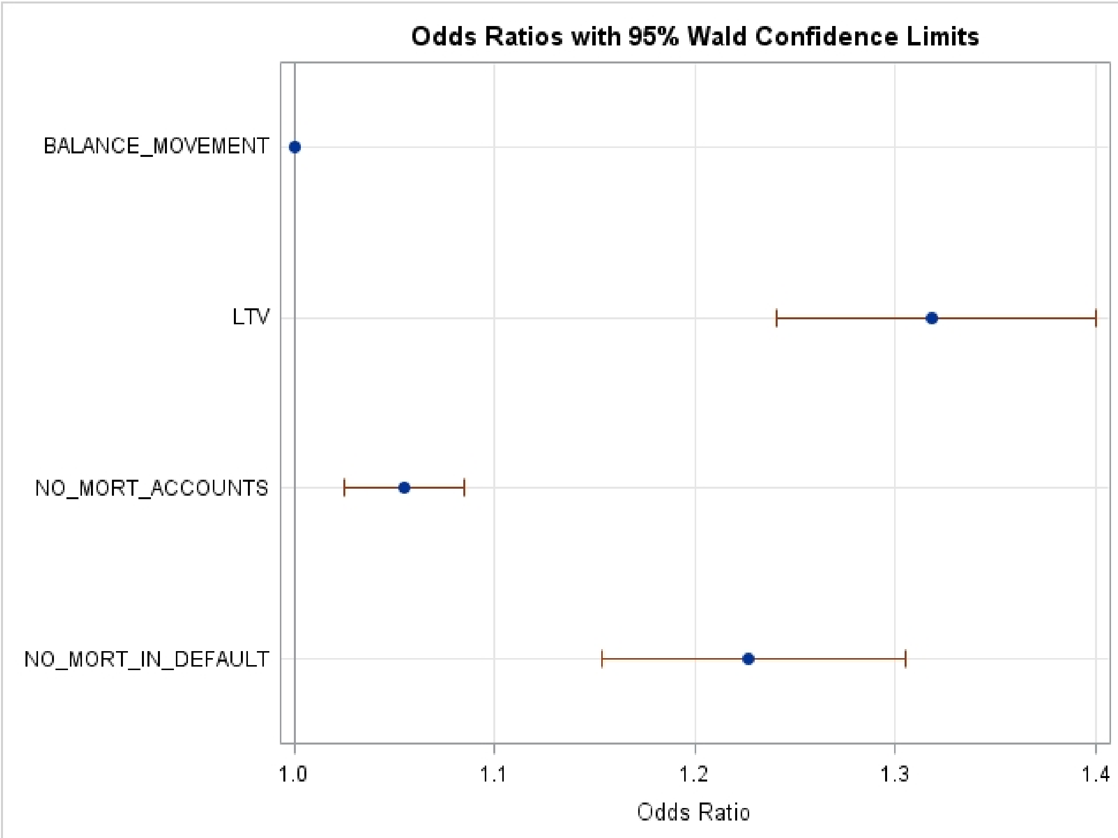
Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
AVERAGE_MONTHS_IN_AR	1	10787.6209	<.0001
BALANCE_MOVEMENT	1	8.5135	0.0035
LTV	1	80.4870	<.0001
NO_MORT_ACCOUNTS	1	13.2794	0.0003
NO_MORT_IN_DEFAULT	1	41.7648	<.0001
12_MONTH_CASHFLOW	1	2.6154	0.1058
AVERAGE_M*12_MONTH_C	1	5.4436	0.0196

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-9.4529	0.0746	16072.1032	<.0001
AVERAGE_MONTHS_IN_AR	1	3.8207	0.0368	10787.6209	<.0001
BALANCE_MOVEMENT	1	5.25E-6	1.799E-6	8.5135	0.0035
LTV	1	0.2760	0.0308	80.4870	<.0001
NO_MORT_ACCOUNTS	1	0.0531	0.0146	13.2794	0.0003
NO_MORT_IN_DEFAULT	1	0.2044	0.0316	41.7648	<.0001
12_MONTH_CASHFLOW	1	-8.59E-7	5.315E-7	2.6154	0.1058
AVERAGE_M*12_MONTH_C	1	2.929E-6	1.255E-6	5.4436	0.0196

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
BALANCE_MOVEMENT	1.000	1.000	1.000
LTV	1.318	1.241	1.400
NO_MORT_ACCOUNTS	1.055	1.025	1.085
NO_MORT_IN_DEFAULT	1.227	1.153	1.305

Logistic Regression Results

The LOGISTIC Procedure



Association of Predicted Probabilities and Observed Responses			
Percent Concordant	99.0	Somers' D	0.979
Percent Discordant	1.0	Gamma	0.979
Percent Tied	0.0	Tau-a	0.002
Pairs	3407076148	c	0.990

Logistic Regression Results

The LOGISTIC Procedure