

The LOGISTIC Procedure

| Model Information | |
|---------------------------|----------------------|
| Data Set | LIBOCT34.TRAINING_DS |
| Response Variable | LOAN_APPROVAL_STATUS |
| Number of Response Levels | 2 |
| Model | binary logit |
| Optimization Technique | Fisher's scoring |

| | |
|-----------------------------|-----|
| Number of Observations Read | 614 |
| Number of Observations Used | 614 |

| Response Profile | | |
|------------------|----------------------|-----------------|
| Ordered Value | LOAN_APPROVAL_STATUS | Total Frequency |
| 1 | N | 192 |
| 2 | Y | 422 |

Probability modeled is LOAN_APPROVAL_STATUS='N'.

| Class Level Information | | | | |
|-------------------------|----------------|------------------|----|----|
| Class | Value | Design Variables | | |
| LOAN_HISTORY | 0 | 1 | | |
| | 1 | -1 | | |
| LOAN_LOCATION | City | 1 | 0 | |
| | Town | 0 | 1 | |
| | Village | -1 | -1 | |
| MARITAL_STATUS | Married | 1 | | |
| | Not Married | -1 | | |
| FAMILY_MEMBERS | 0 | 1 | 0 | 0 |
| | 1 | 0 | 1 | 0 |
| | 2 | 0 | 0 | 1 |
| | 3 | -1 | -1 | -1 |
| GENDER | Female | 1 | | |
| | Male | -1 | | |
| QUALIFICATION | Graduate | 1 | | |
| | Under Graduate | -1 | | |
| EMPLOYMENT | No | 1 | | |
| | Yes | -1 | | |

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

| Model Fit Statistics | | |
|----------------------|----------------|--------------------------|
| Criterion | Intercept Only | Intercept and Covariates |
| AIC | 764.891 | 587.154 |
| SC | 769.311 | 653.454 |
| -2 Log L | 762.891 | 557.154 |

| Testing Global Null Hypothesis: BETA=0 | | | |
|--|------------|----|------------|
| Test | Chi-Square | DF | Pr > ChiSq |
| Likelihood Ratio | 205.7373 | 14 | <.0001 |
| Score | 201.4692 | 14 | <.0001 |
| Wald | 103.0150 | 14 | <.0001 |

| Type 3 Analysis of Effects | | | |
|----------------------------|----|-----------------|------------|
| Effect | DF | Wald Chi-Square | Pr > ChiSq |
| LOAN_HISTORY | 1 | 87.4798 | <.0001 |
| LOAN_LOCATION | 2 | 12.0908 | 0.0024 |
| LOAN_AMOUNT | 1 | 1.4294 | 0.2319 |
| LOAN_DURATION | 1 | 0.5322 | 0.4657 |
| MARITAL_STATUS | 1 | 5.3173 | 0.0211 |
| FAMILY_MEMBERS | 3 | 4.3866 | 0.2226 |
| GENDER | 1 | 0.0100 | 0.9204 |
| QUALIFICATION | 1 | 2.4952 | 0.1142 |
| EMPLOYMENT | 1 | 0.0060 | 0.9384 |
| CANDIDATE_INCOME | 1 | 0.2268 | 0.6339 |
| GUARANTEE_INCOME | 1 | 2.2688 | 0.1320 |

| Analysis of Maximum Likelihood Estimates | | | | | | |
|--|---------|----|----------|----------------|-----------------|------------|
| Parameter | | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
| Intercept | | 1 | 0.0495 | 0.6972 | 0.0050 | 0.9434 |
| LOAN_HISTORY | 0 | 1 | 1.9696 | 0.2106 | 87.4798 | <.0001 |
| LOAN_LOCATION | City | 1 | 0.1559 | 0.1519 | 1.0538 | 0.3046 |
| LOAN_LOCATION | Town | 1 | -0.5313 | 0.1575 | 11.3806 | 0.0007 |
| LOAN_AMOUNT | | 1 | 0.00191 | 0.00160 | 1.4294 | 0.2319 |
| LOAN_DURATION | | 1 | 0.00134 | 0.00184 | 0.5322 | 0.4657 |
| MARITAL_STATUS | Married | 1 | -0.2915 | 0.1264 | 5.3173 | 0.0211 |

| Analysis of Maximum Likelihood Estimates | | | | | | |
|--|----------|----|----------|----------------|-----------------|------------|
| Parameter | | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
| FAMILY_MEMBERS | 0 | 1 | -0.0394 | 0.1863 | 0.0447 | 0.8326 |
| FAMILY_MEMBERS | 1 | 1 | 0.4319 | 0.2258 | 3.6572 | 0.0558 |
| FAMILY_MEMBERS | 2 | 1 | -0.3310 | 0.2538 | 1.6998 | 0.1923 |
| GENDER | Female | 1 | -0.0149 | 0.1495 | 0.0100 | 0.9204 |
| QUALIFICATION | Graduate | 1 | -0.2052 | 0.1299 | 2.4952 | 0.1142 |
| EMPLOYMENT | No | 1 | -0.0123 | 0.1586 | 0.0060 | 0.9384 |
| CANDIDATE_INCOME | | 1 | -0.00001 | 0.000024 | 0.2268 | 0.6339 |
| GUARANTEE_INCOME | | 1 | 0.000053 | 0.000035 | 2.2688 | 0.1320 |

| Odds Ratio Estimates | | | |
|--|----------------|----------------------------|---------|
| Effect | Point Estimate | 95% Wald Confidence Limits | |
| LOAN_HISTORY 0 vs 1 | 51.378 | 22.505 | 117.295 |
| LOAN_LOCATION City vs Village | 0.803 | 0.483 | 1.336 |
| LOAN_LOCATION Town vs Village | 0.404 | 0.238 | 0.685 |
| LOAN_AMOUNT | 1.002 | 0.999 | 1.005 |
| LOAN_DURATION | 1.001 | 0.998 | 1.005 |
| MARITAL_STATUS Married vs Not Married | 0.558 | 0.340 | 0.916 |
| FAMILY_MEMBERS 0 vs 3 | 1.022 | 0.444 | 2.357 |
| FAMILY_MEMBERS 1 vs 3 | 1.638 | 0.660 | 4.066 |
| FAMILY_MEMBERS 2 vs 3 | 0.764 | 0.293 | 1.989 |
| GENDER Female vs Male | 0.971 | 0.540 | 1.744 |
| QUALIFICATION Graduate vs Under Graduate | 0.663 | 0.399 | 1.104 |
| EMPLOYMENT No vs Yes | 0.976 | 0.524 | 1.817 |
| CANDIDATE_INCOME | 1.000 | 1.000 | 1.000 |
| GUARANTEE_INCOME | 1.000 | 1.000 | 1.000 |

| Association of Predicted Probabilities and Observed Responses | | | |
|---|-------|-----------|-------|
| Percent Concordant | 79.4 | Somers' D | 0.589 |
| Percent Discordant | 20.6 | Gamma | 0.589 |
| Percent Tied | 0.0 | Tau-a | 0.254 |
| Pairs | 81024 | c | 0.794 |