

## The CONTENTS Procedure

<b>Data Set Name</b>	WORK.LOAN_PREDICTION	<b>Observations</b>	614
<b>Member Type</b>	DATA	<b>Variables</b>	13
<b>Engine</b>	V9	<b>Indexes</b>	0
<b>Created</b>	12/15/2023 00:51:54	<b>Observation Length</b>	80
<b>Last Modified</b>	12/15/2023 00:51:54	<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>	1
<b>First Data Page</b>	1
<b>Max Obs per Page</b>	1635
<b>Obs in First Data Page</b>	614
<b>Number of Data Set Repairs</b>	0
<b>Filename</b>	/saswork/SAS_work4414000032CA_odaws02-apse1-2.oda.sas.com/SAS_work8494000032CA_odaws02-apse1-2.oda.sas.com/loan_prediction.sas7bdat
<b>Release Created</b>	9.0401M7
<b>Host Created</b>	Linux
<b>Inode Number</b>	134341619
<b>Access Permission</b>	rw-r--r--
<b>Owner Name</b>	u63491025
<b>File Size</b>	256KB
<b>File Size (bytes)</b>	262144

## Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat
7	CANDIDATE_INCOME	Num	8	8.	8.
6	EMPLOYMENT	Char	3	\$3.	\$3.
4	FAMILY_MEMBERS	Char	2	\$2.	\$2.
2	GENDER	Char	6	\$6.	\$6.
8	GUARANTEE_INCOME	Num	8	8.	8.
9	LOAN_AMOUNT	Num	8	8.	8.
11	LOAN_APPROVAL_STATUS	Char	1	\$1.	\$1.
13	LOAN_DURATION	Char	3	\$3.	\$3.
12	LOAN_HISTORY	Char	1	\$1.	\$1.
10	LOAN_LOCATION	Char	7	\$7.	\$7.
3	MARITAL_STATUS	Char	11	\$11.	\$11.
5	QUALIFICATION	Char	14	\$14.	\$14.
1	SME_LOAN_ID_NO	Char	8	\$8.	\$8.

## The MEANS Procedure

Variable	N	N Miss	Mean	Median	Maximum	Minimum
CANDIDATE_INCOME	614	0	5403.46	3812.50	81000.00	150.00
GUARANTEE_INCOME	614	0	1621.25	1188.50	41667.00	0.00
LOAN_AMOUNT	592	22	146.41	128.00	700.00	9.00

## The FREQ Procedure

GENDER	Frequency	Percent
Female	112	18.64
Male	489	81.36
Frequency Missing = 13		

MARITAL_STATUS	Frequency	Percent
Married	398	65.14
Not Married	213	34.86
Frequency Missing = 3		

FAMILY_MEMBERS	Frequency	Percent
0	345	57.60
1	102	17.03
2	101	16.86
3+	51	8.51
Frequency Missing = 15		

QUALIFICATION	Frequency	Percent
Graduate	480	78.18
Under Graduate	134	21.82

EMPLOYMENT	Frequency	Percent
No	500	85.91
Yes	82	14.09
Frequency Missing = 32		

LOAN_LOCATION	Frequency	Percent
City	202	32.90
Town	233	37.95
Village	179	29.15

LOAN_HISTORY	Frequency	Percent
.	50	8.14
0	89	14.50
1	475	77.36

LOAN_DURATION	Frequency	Percent
.	14	2.28
12	1	0.16
36	2	0.33

LOAN_DURATION	Frequency	Percent
60	2	0.33
84	4	0.65
120	3	0.49
180	44	7.17
240	4	0.65
300	13	2.12
360	512	83.39
480	15	2.44

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**The FREQ Procedure**

LOAN_APPROVAL_STATUS	Frequency	Percent
N	192	31.27
Y	422	68.73

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**The MEANS Procedure**

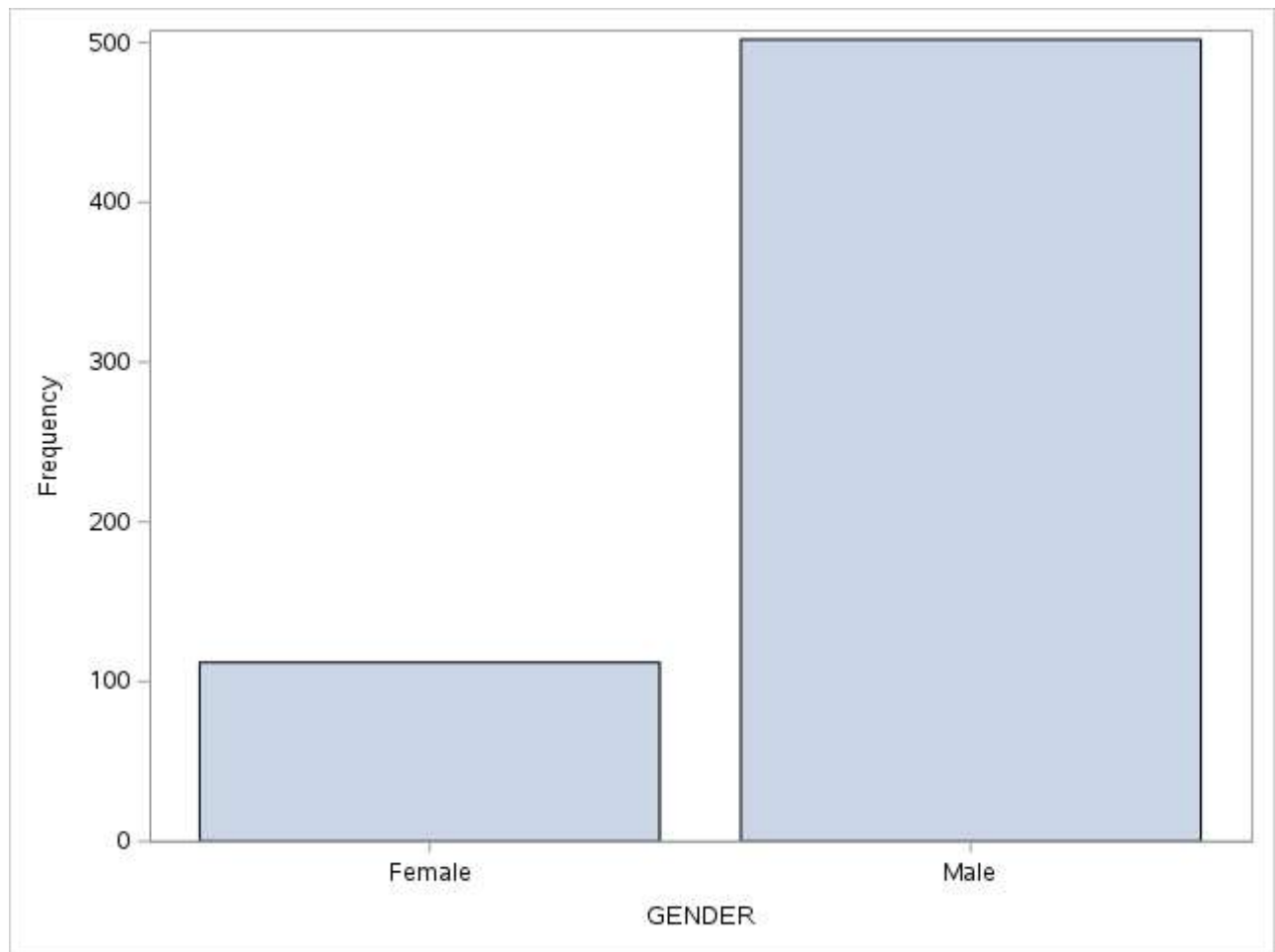
Analysis Variable : LOAN_AMOUNT	
N	N Miss
614	0

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**The FREQ Procedure**

GENDER	Frequency	Percent
Female	112	18.24
Male	502	81.76

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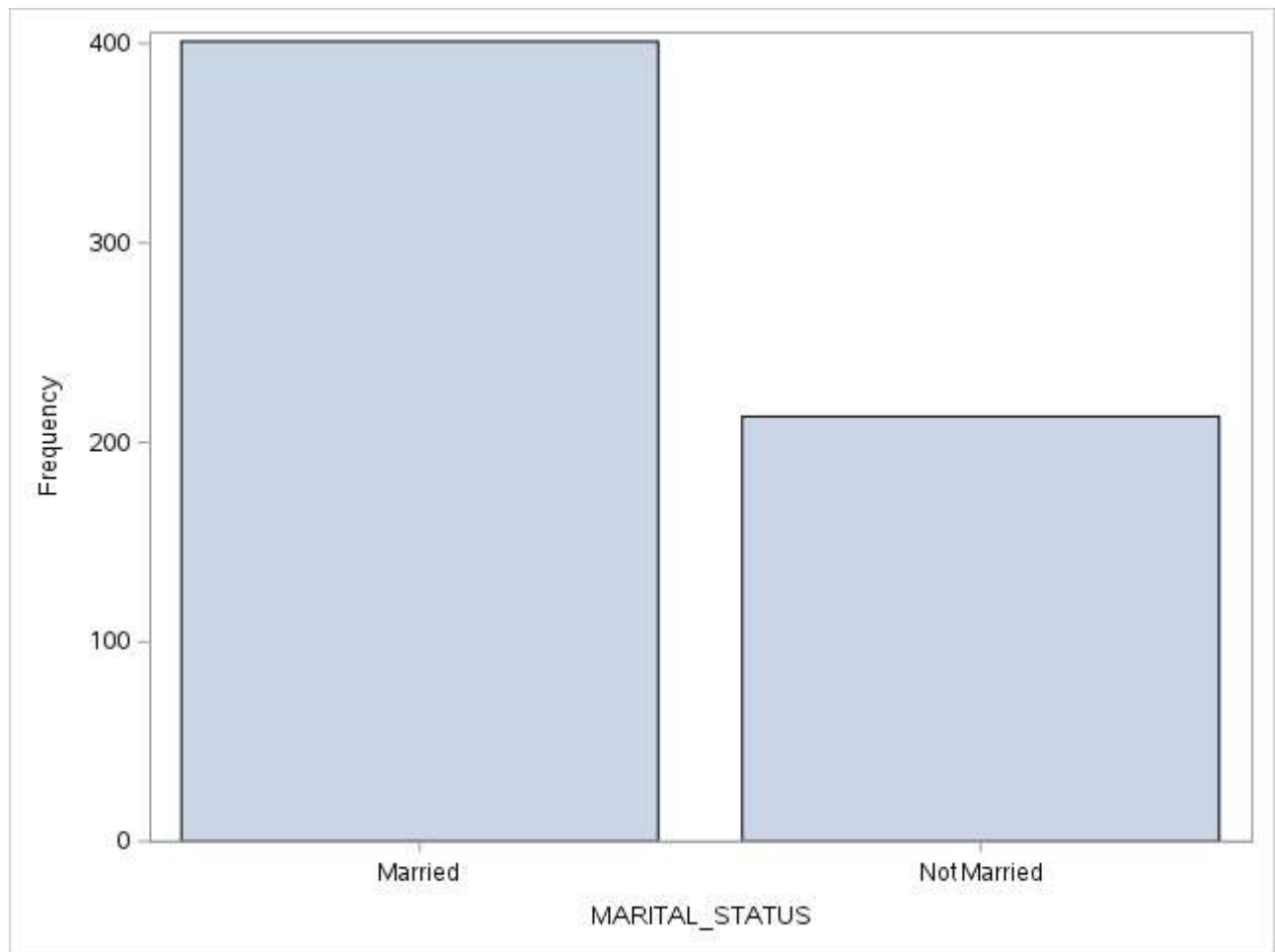


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**The FREQ Procedure**

MARITAL_STATUS	Frequency	Percent
Married	401	65.31
Not Married	213	34.69

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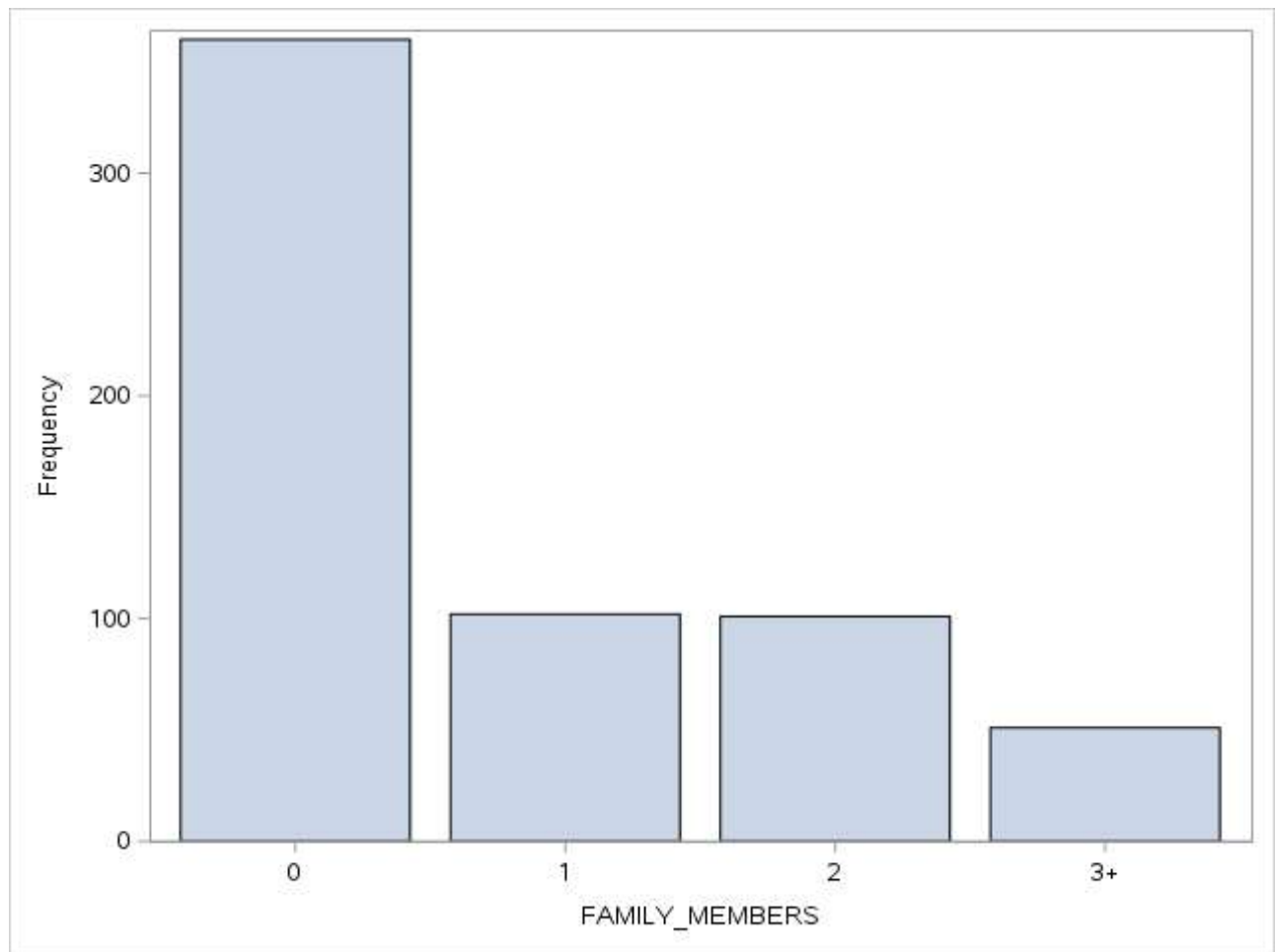


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The FREQ Procedure

FAMILY_MEMBERS	Frequency	Percent
0	360	58.63
1	102	16.61
2	101	16.45
3+	51	8.31

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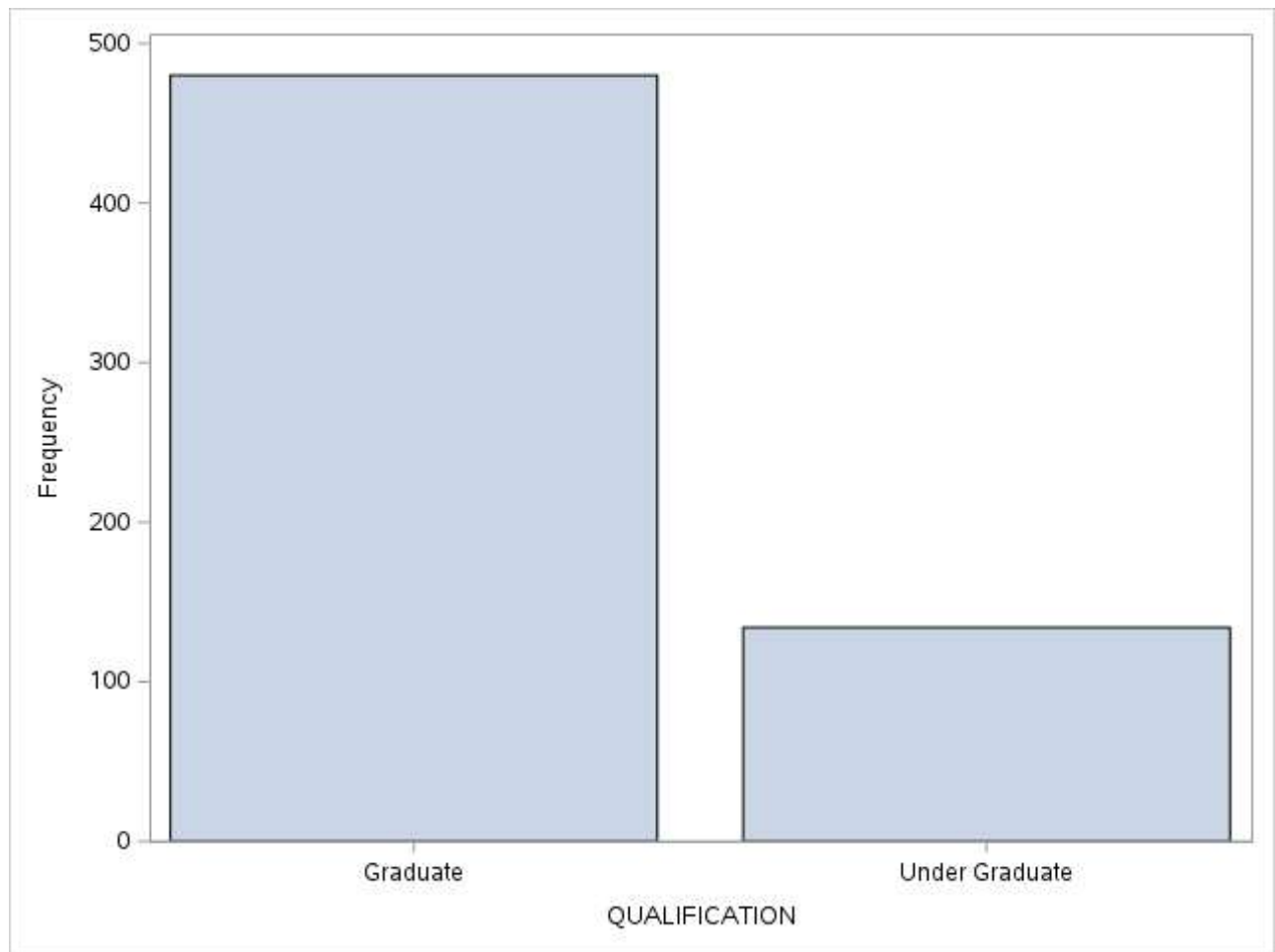


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The FREQ Procedure

QUALIFICATION	Frequency	Percent
Graduate	480	78.18
Under Graduate	134	21.82

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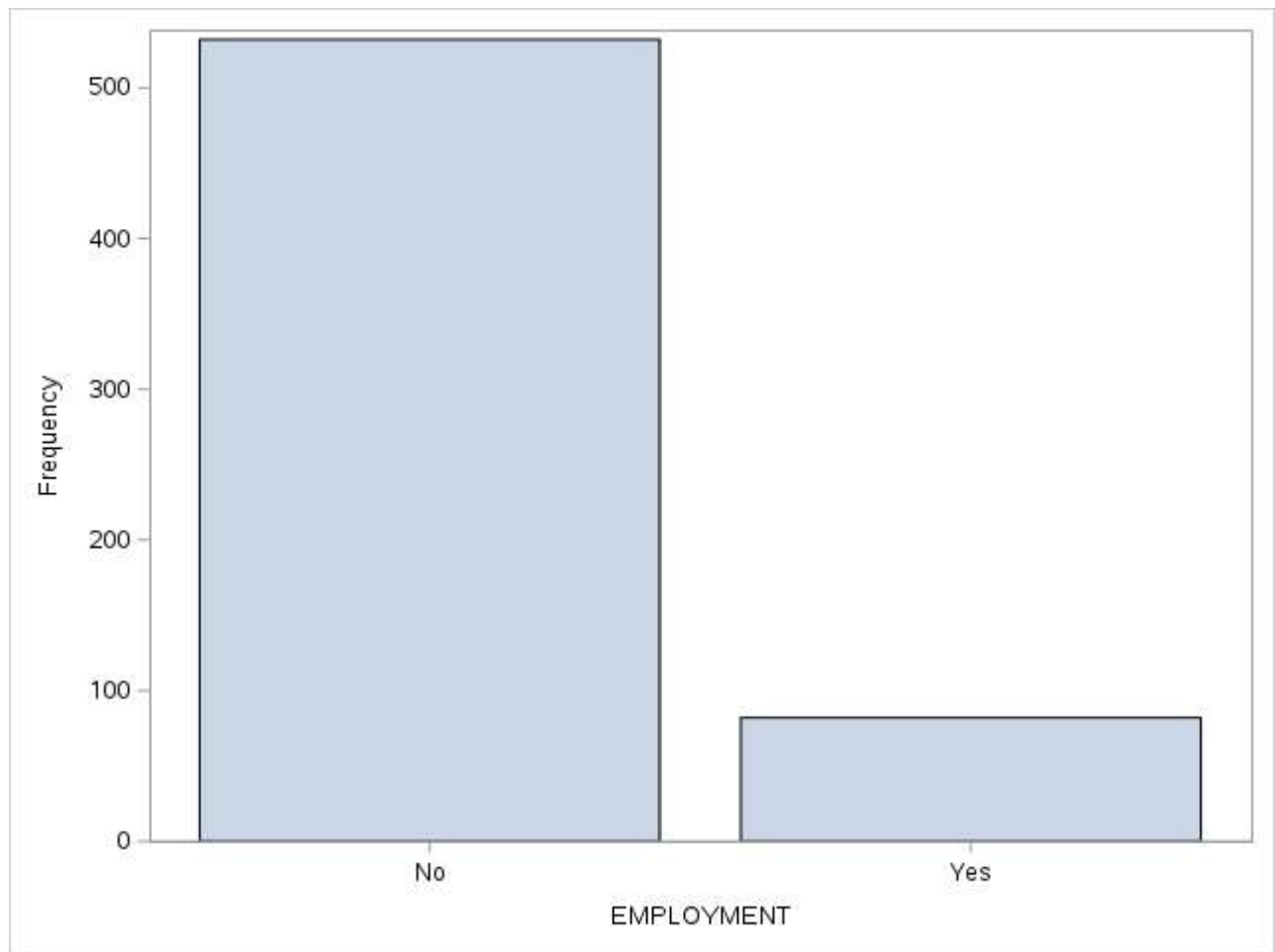


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The FREQ Procedure

EMPLOYMENT	Frequency	Percent
No	532	86.64
Yes	82	13.36

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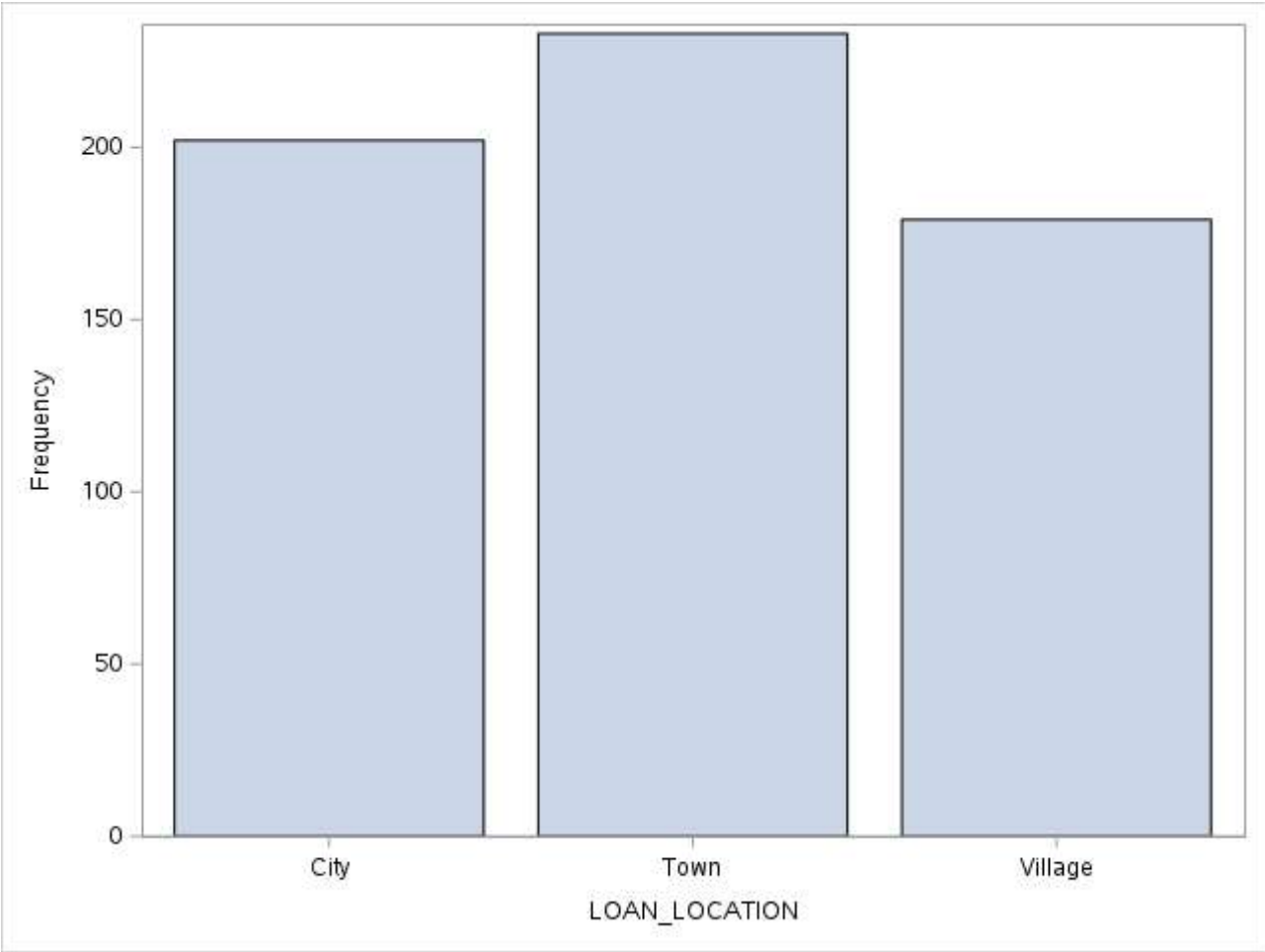


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**The FREQ Procedure**

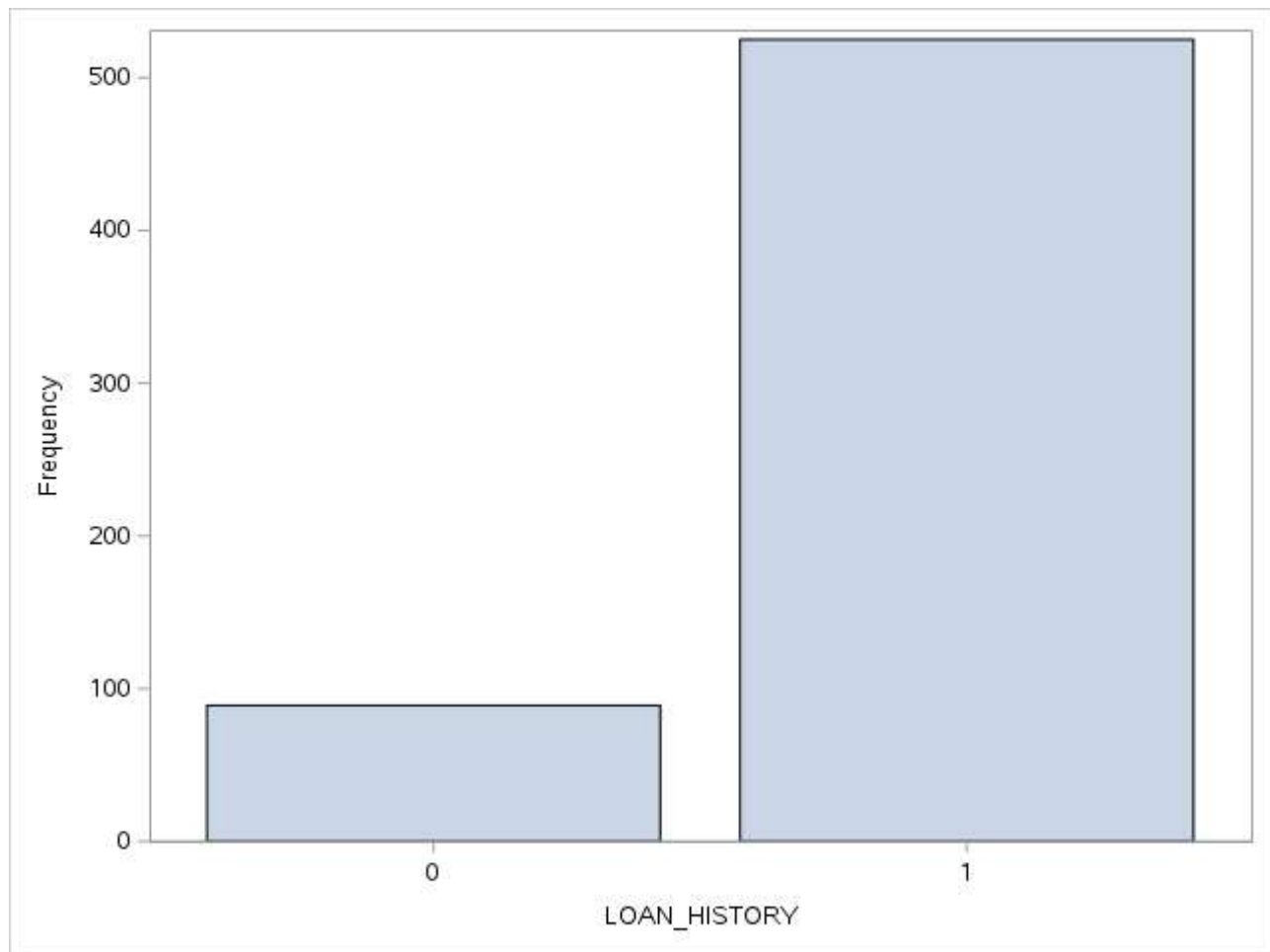
LOAN_LOCATION	Frequency	Percent
City	202	32.90
Town	233	37.95
Village	179	29.15





The FREQ Procedure

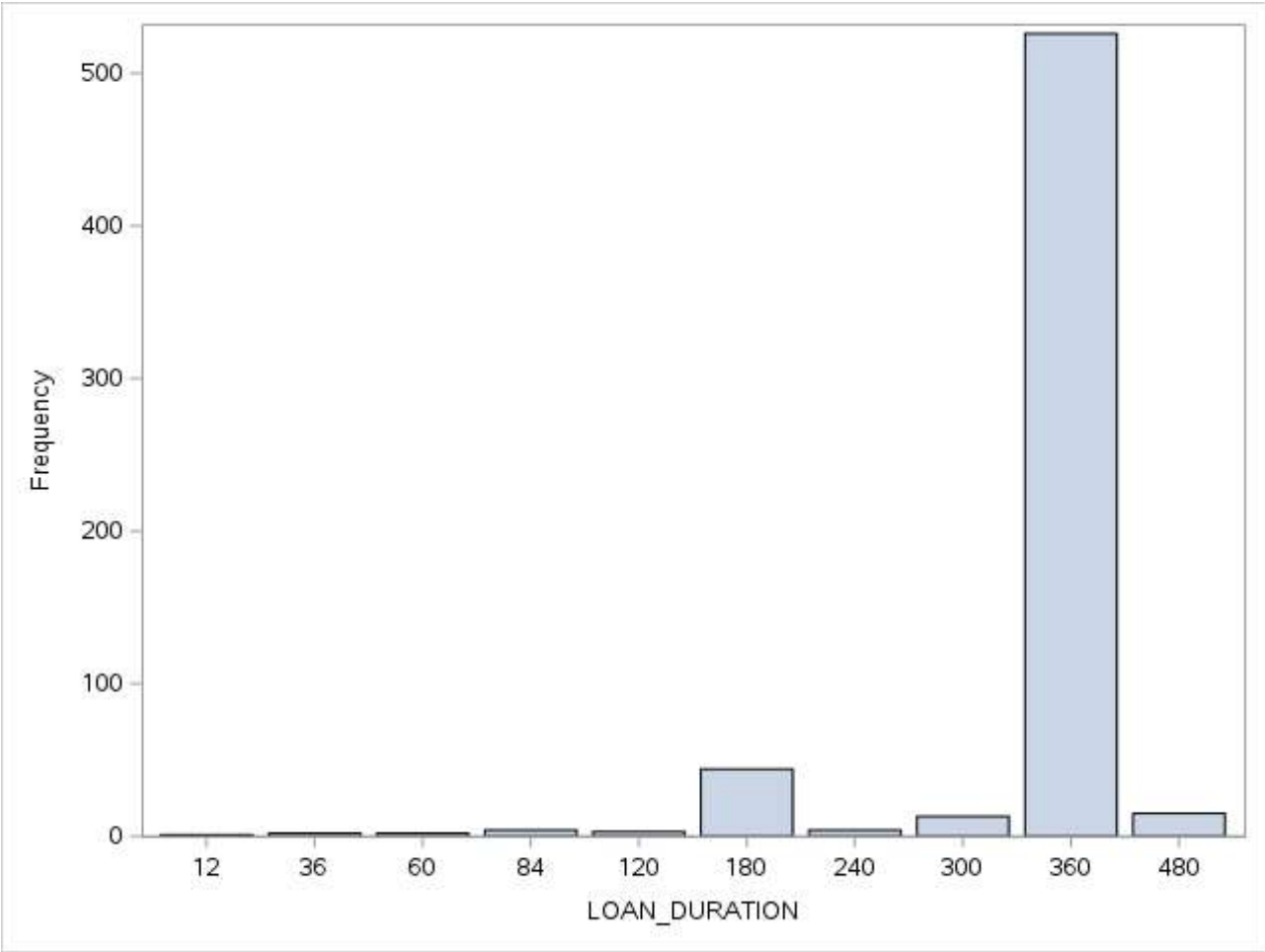
LOAN_HISTORY	Frequency	Percent
0	89	14.50
1	525	85.50



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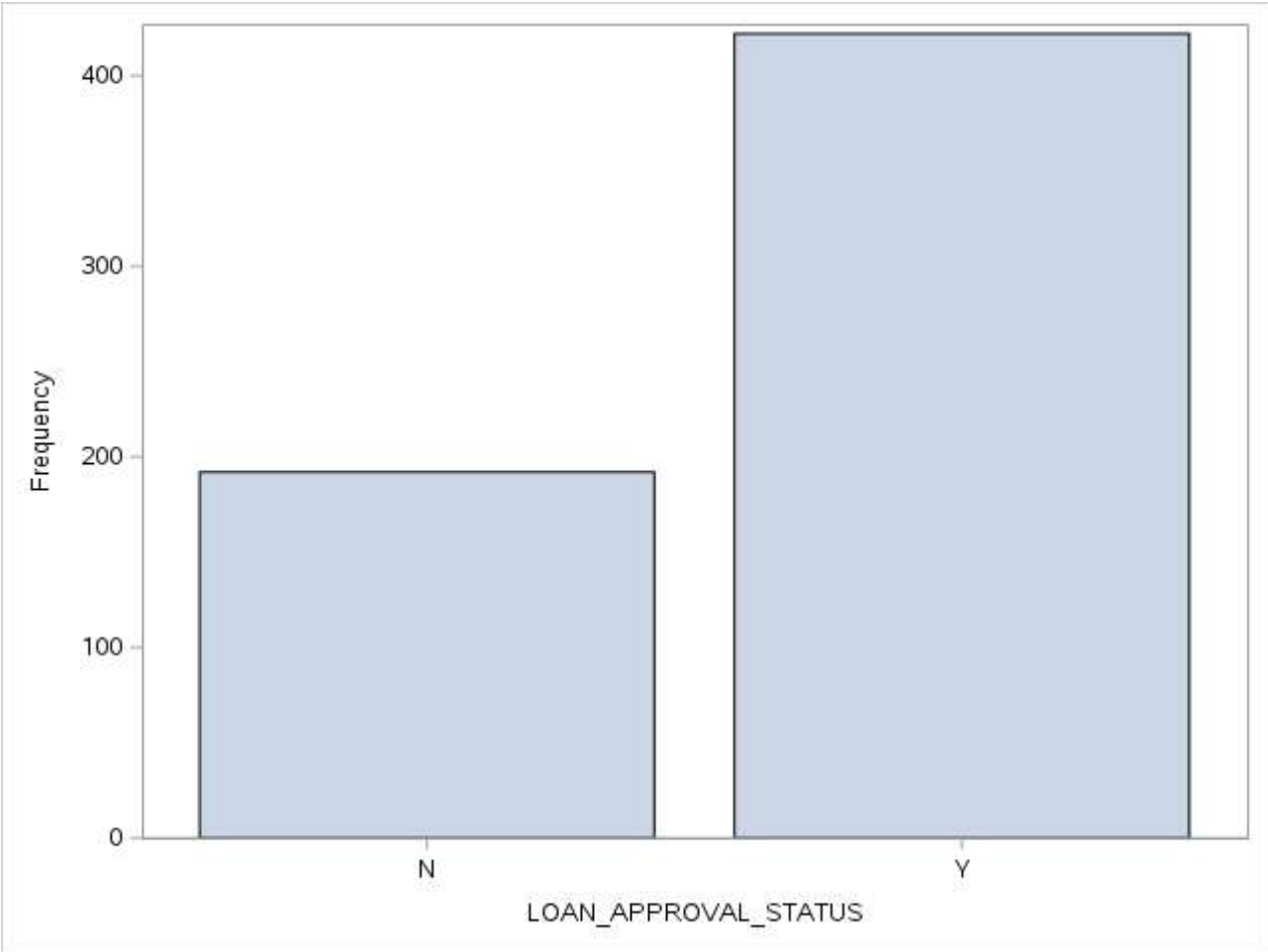
**The FREQ Procedure**

LOAN_DURATION	Frequency	Percent
12	1	0.16
36	2	0.33
60	2	0.33
84	4	0.65
120	3	0.49
180	44	7.17
240	4	0.65
300	13	2.12
360	526	85.67
480	15	2.44



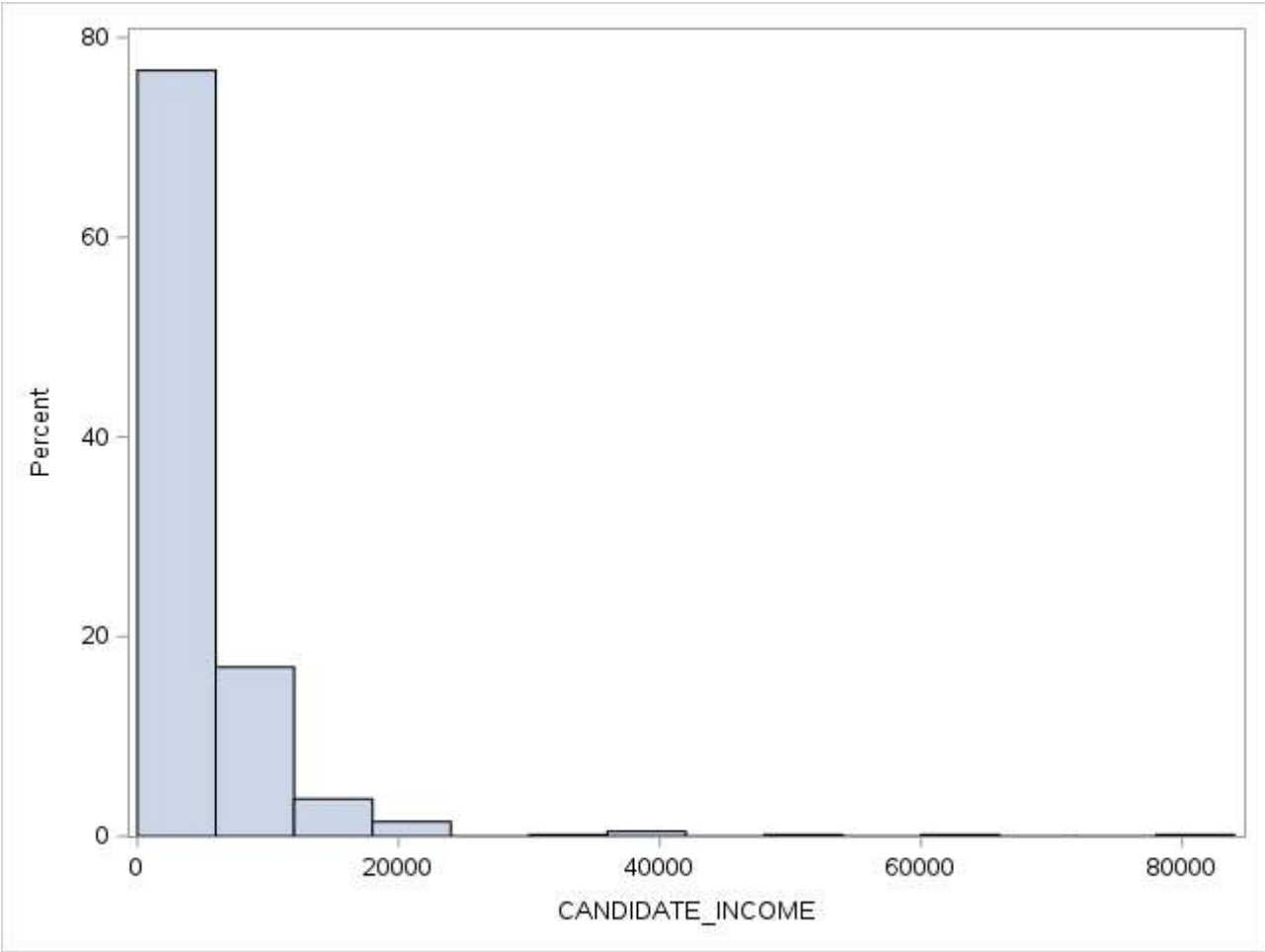
The FREQ Procedure

LOAN_APPROVAL_STATUS	Frequency	Percent
N	192	31.27
Y	422	68.73



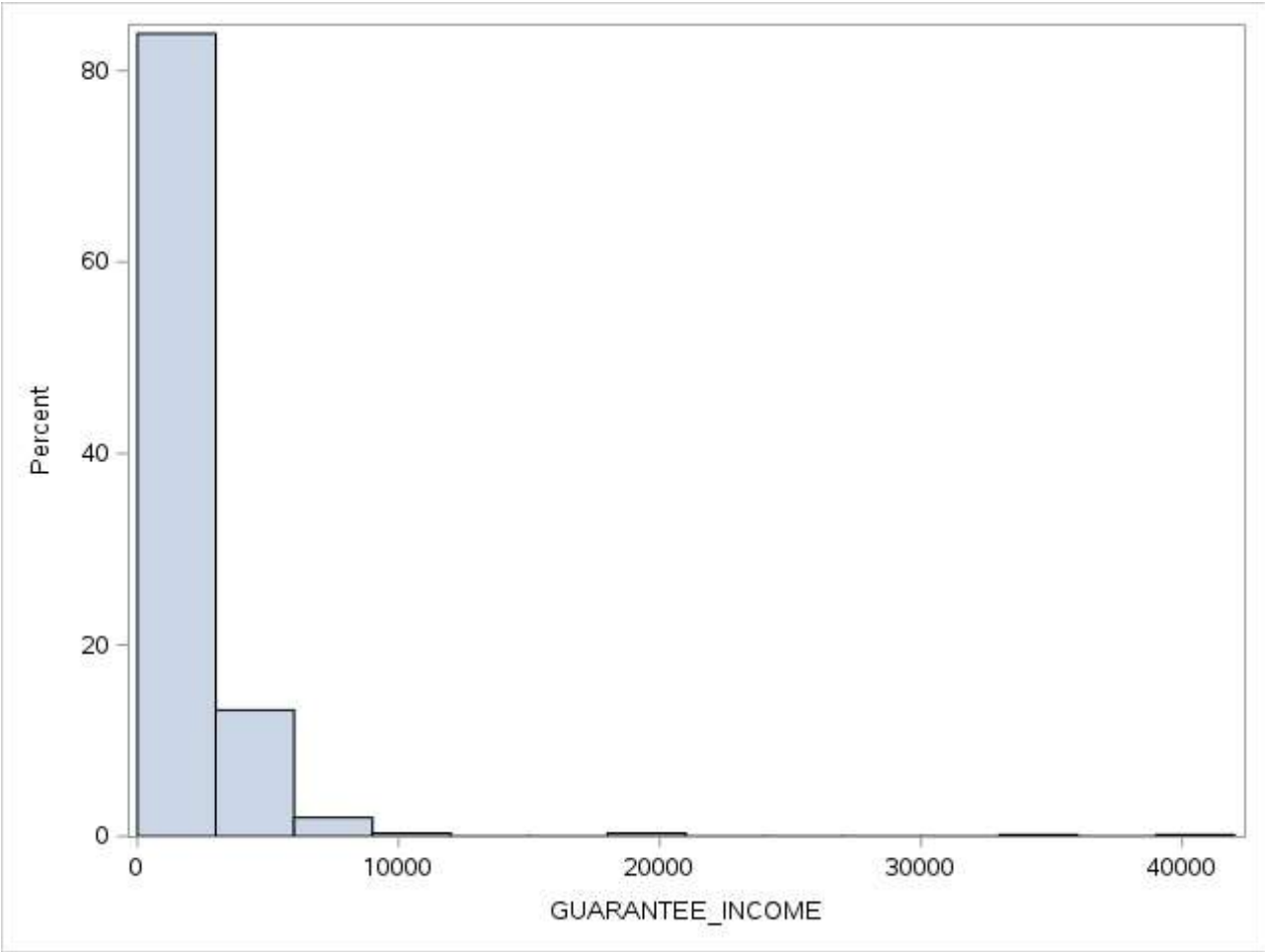
The MEANS Procedure

Analysis Variable : CANDIDATE_INCOME				
N	Mean	Std Dev	Minimum	Maximum
614	5403.46	6109.04	150.00	81000.00



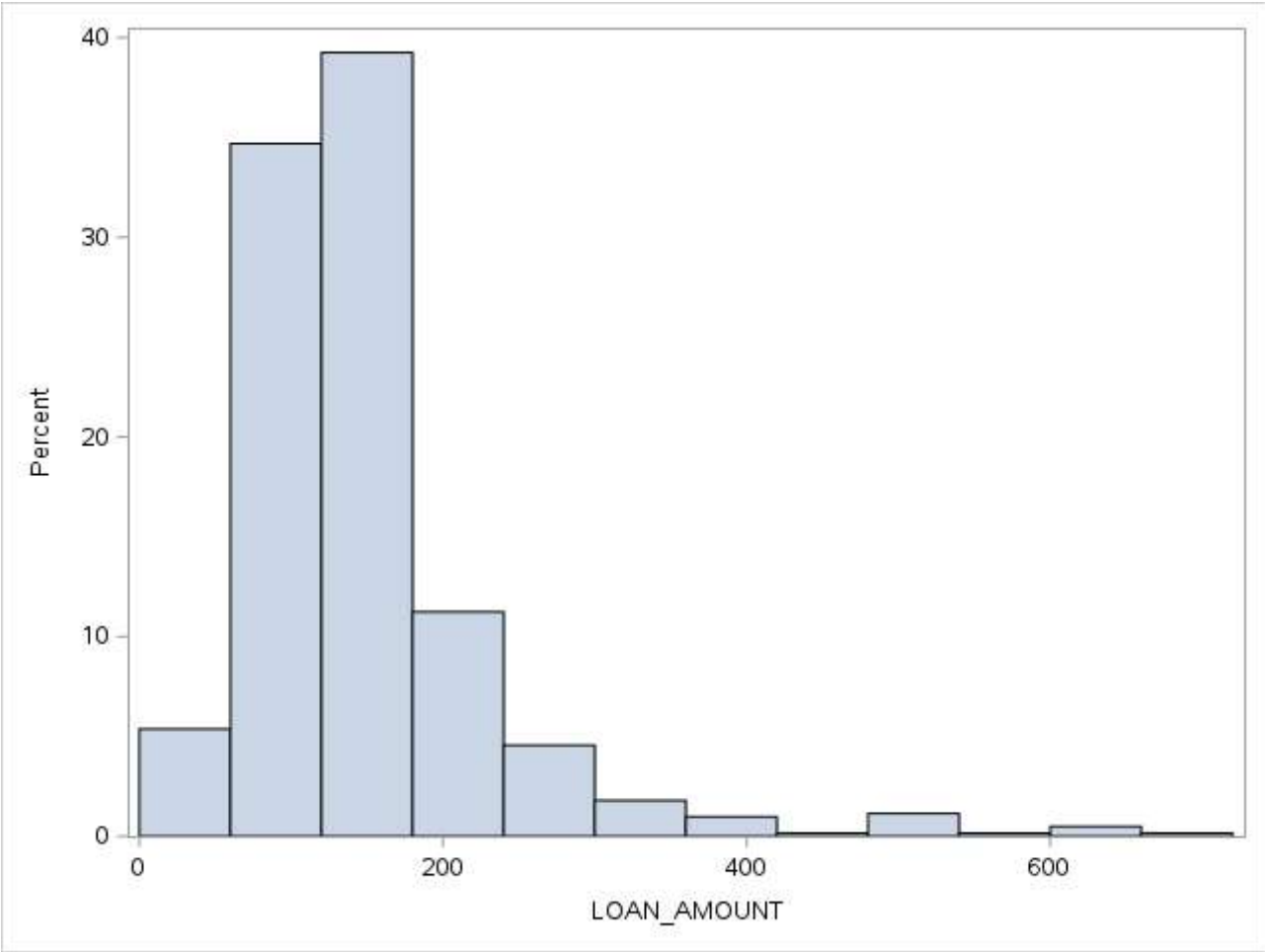
The MEANS Procedure

Analysis Variable : GUARANTEE_INCOME				
N	Mean	Std Dev	Minimum	Maximum
614	1621.25	2926.25	0.00	41667.00



The MEANS Procedure

Analysis Variable : LOAN_AMOUNT				
N	Mean	Std Dev	Minimum	Maximum
614	146.41	84.04	9.00	700.00



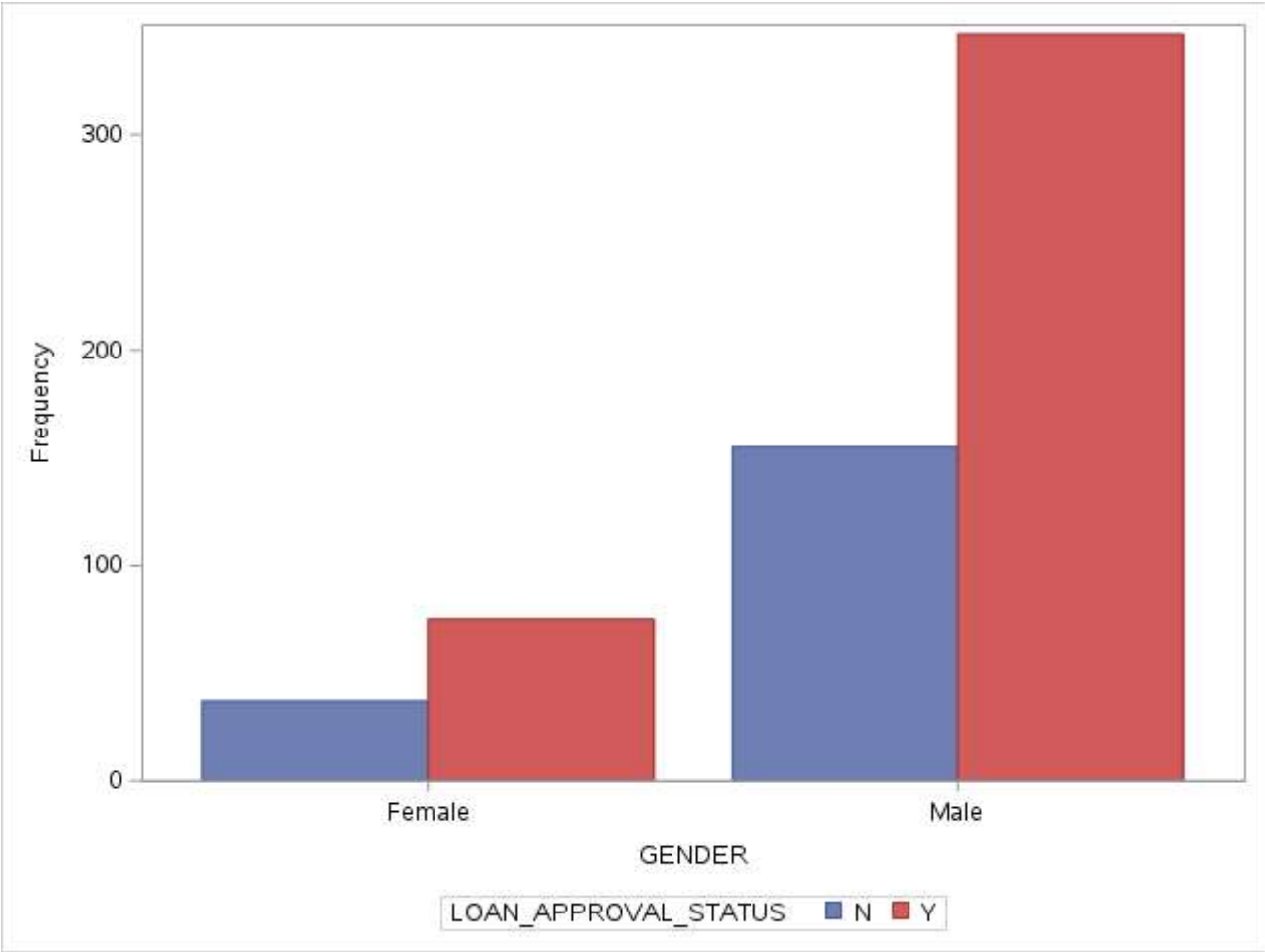
The CORR Procedure

3 With Variables:	CANDIDATE_INCOME GUARANTEE_INCOME LOAN_AMOUNT
3 Variables:	CANDIDATE_INCOME GUARANTEE_INCOME LOAN_AMOUNT

Pearson Correlation Coefficients, N = 614			
	CANDIDATE_INCOME	GUARANTEE_INCOME	LOAN_AMOUNT
CANDIDATE_INCOME	1.00000	-0.11660	0.56562
GUARANTEE_INCOME	-0.11660	1.00000	0.18783
LOAN_AMOUNT	0.56562	0.18783	1.00000

The FREQ Procedure

Frequency Row Pct	Table of GENDER by LOAN_APPROVAL_STATUS			
	GENDER	LOAN_APPROVAL_STATUS		
		N	Y	Total
	Female	37 33.04	75 66.96	112
	Male	155 30.88	347 69.12	502
	Total	192	422	614

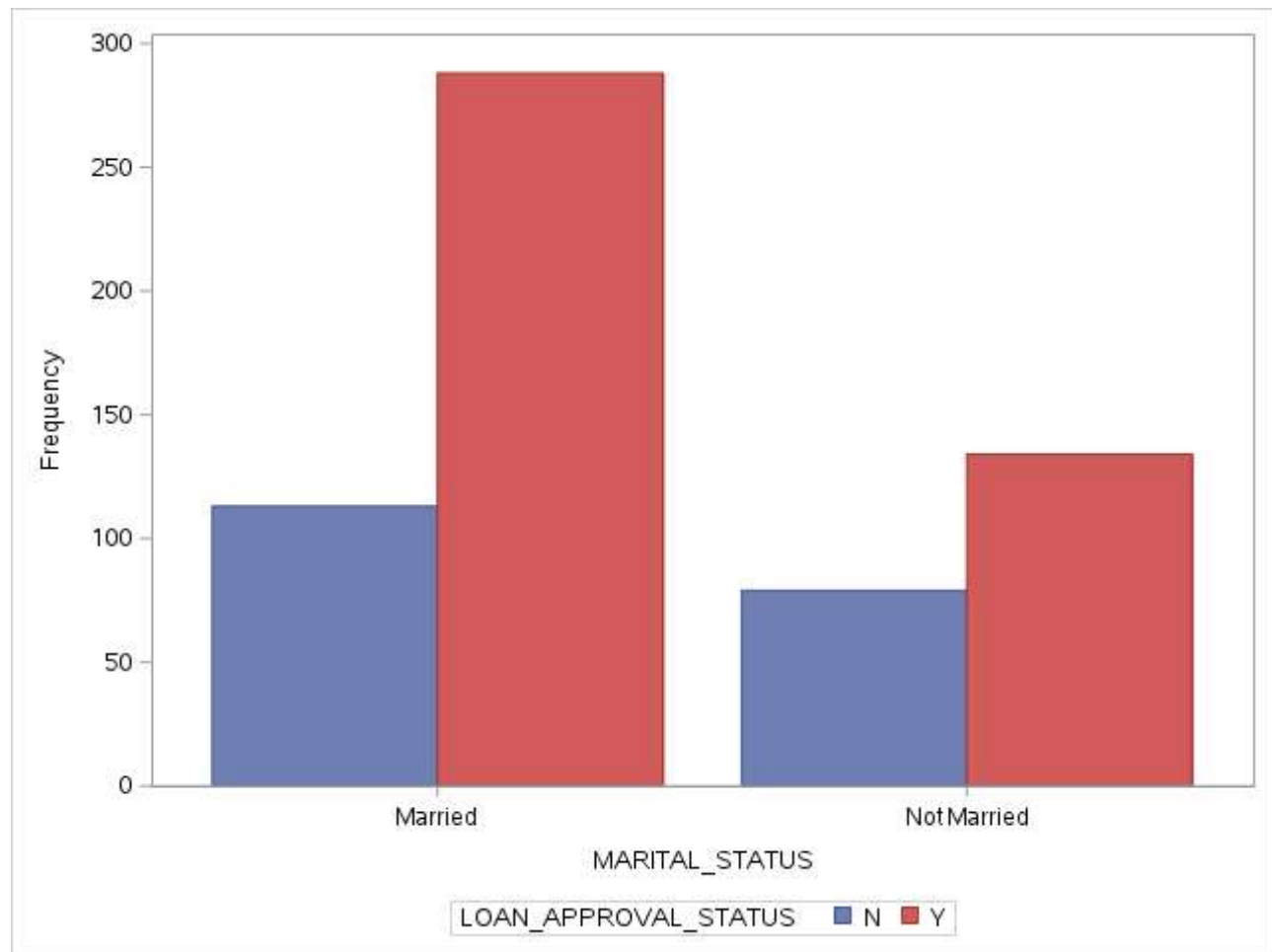


The FREQ Procedure

Frequency  
Row Pct

Table of MARITAL_STATUS by LOAN_APPROVAL_STATUS			
MARITAL_STATUS	LOAN_APPROVAL_STATUS		
	N	Y	Total
Married	113 28.18	288 71.82	401
Not Married	79 37.09	134 62.91	213
Total	192	422	614

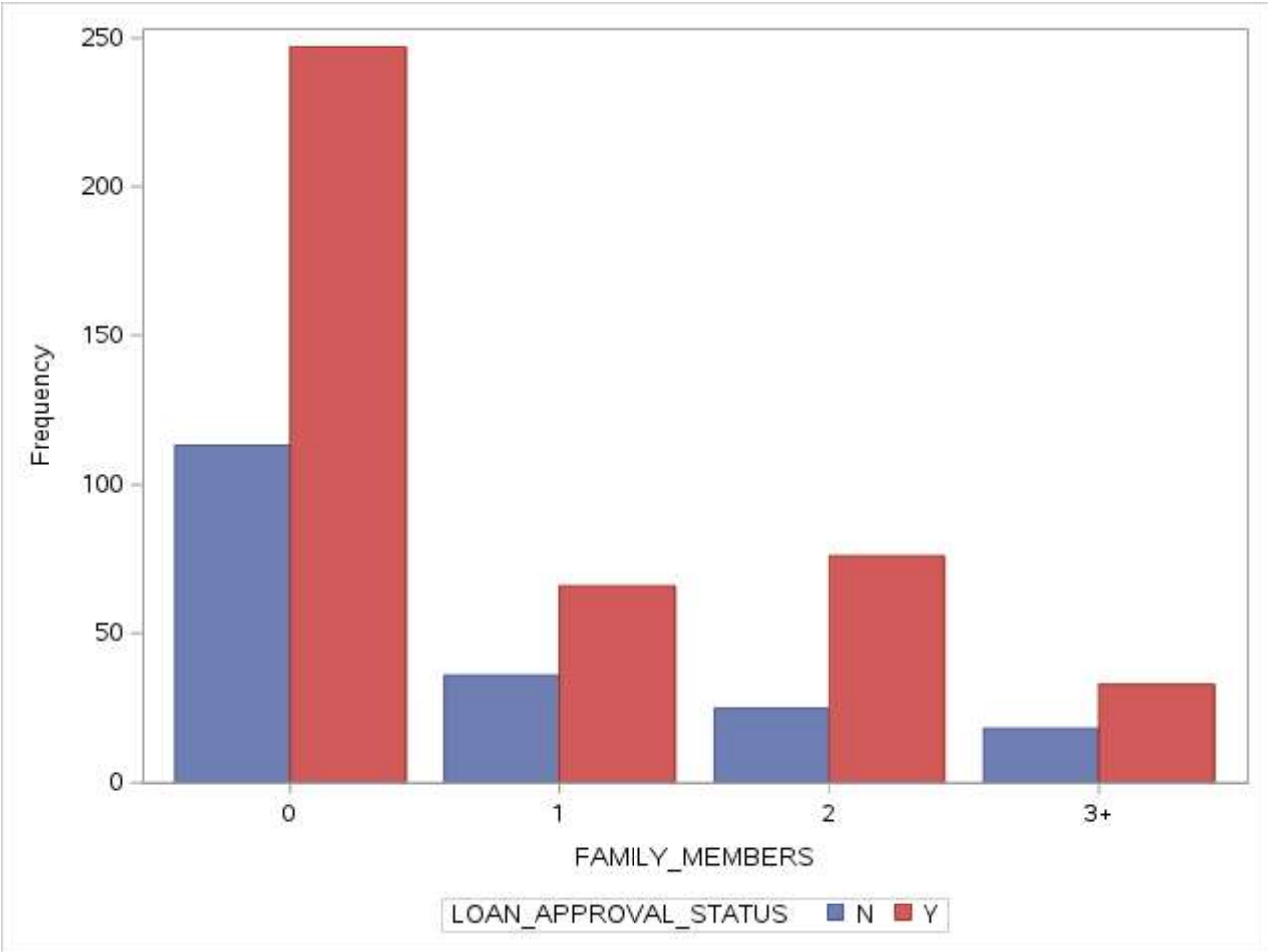





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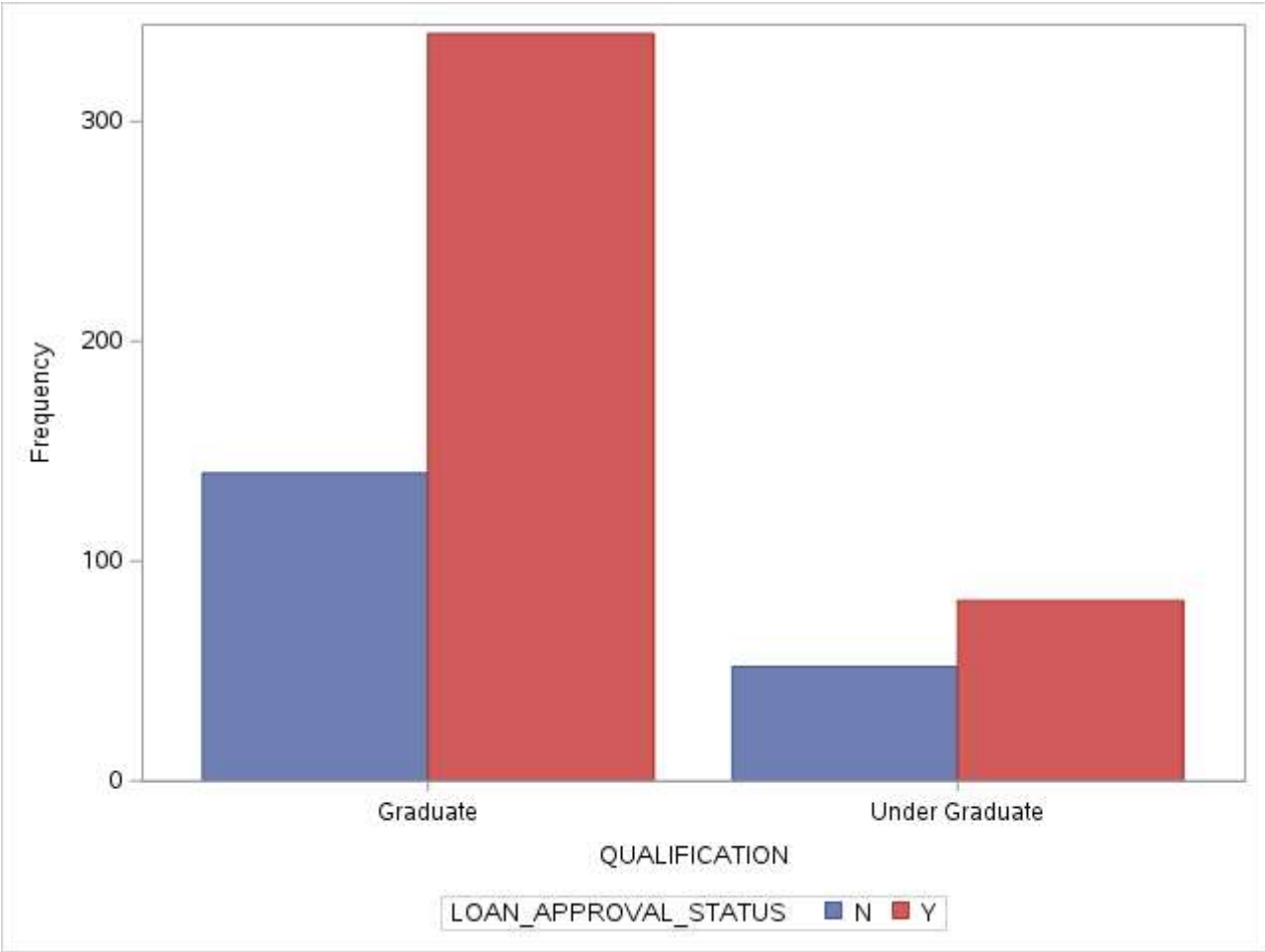
The FREQ Procedure

Frequency Row Pct	Table of FAMILY_MEMBERS by LOAN_APPROVAL_STATUS			
	FAMILY_MEMBERS	LOAN_APPROVAL_STATUS		
		N	Y	Total
	0	113 31.39	247 68.61	360
	1	36 35.29	66 64.71	102
	2	25 24.75	76 75.25	101
	3+	18 35.29	33 64.71	51
	Total	192	422	614



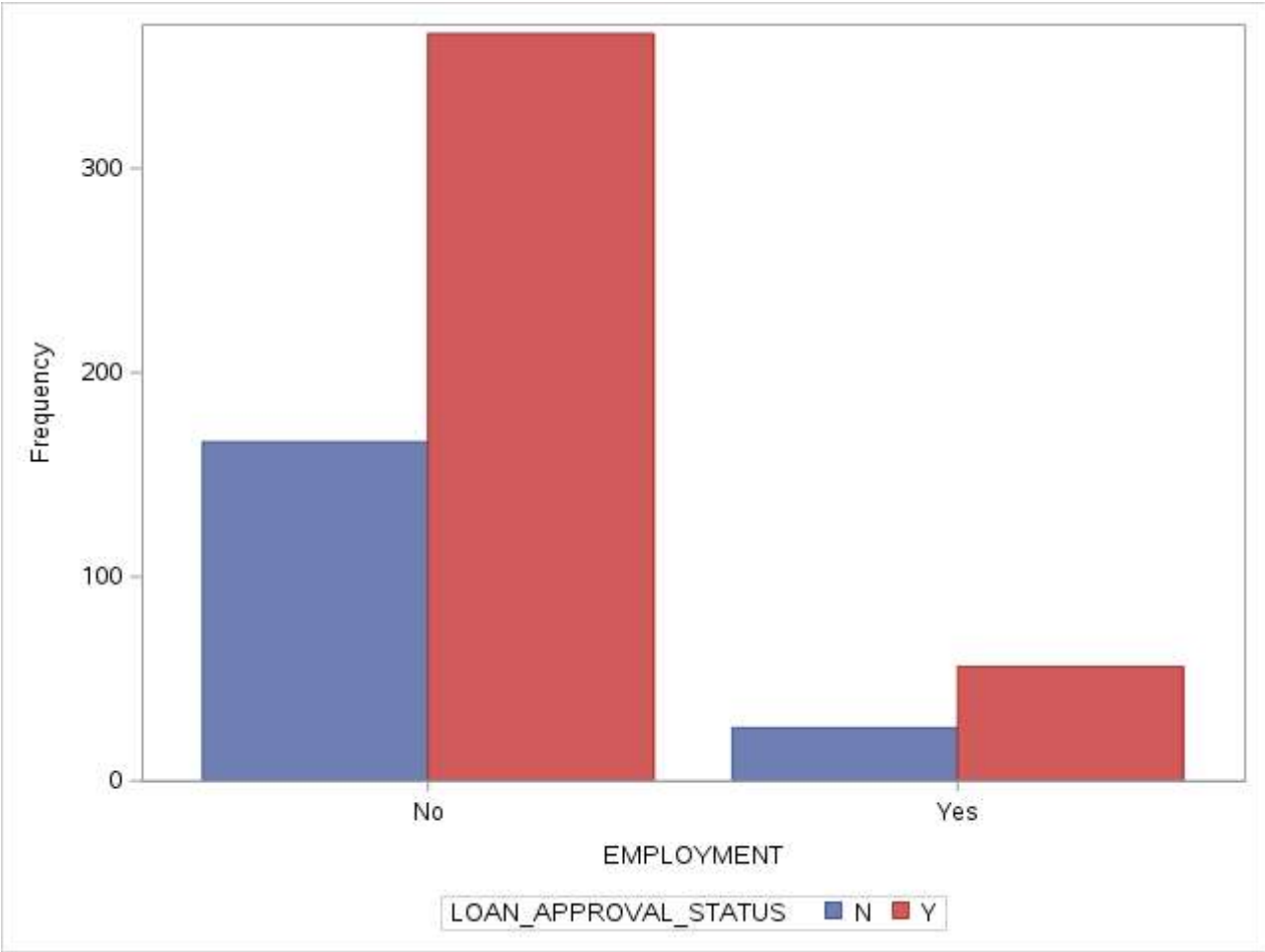
The FREQ Procedure

Frequency Row Pct	Table of QUALIFICATION by LOAN_APPROVAL_STATUS			
	QUALIFICATION	LOAN_APPROVAL_STATUS		
		N	Y	Total
	Graduate	140 29.17	340 70.83	480
	Under Graduate	52 38.81	82 61.19	134
	Total	192	422	614



The FREQ Procedure

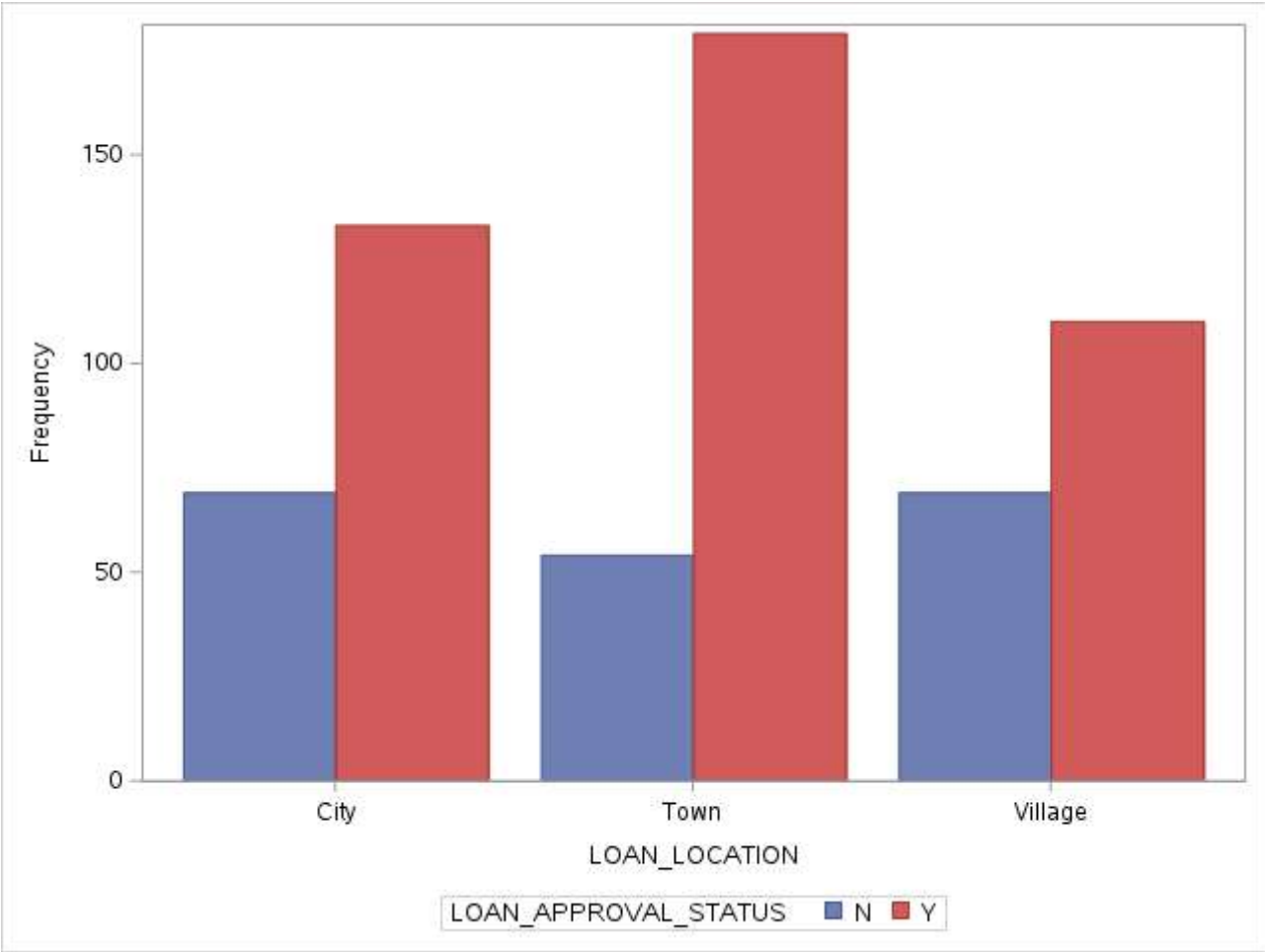
Frequency Row Pct	Table of EMPLOYMENT by LOAN_APPROVAL_STATUS			
	EMPLOYMENT	LOAN_APPROVAL_STATUS		
		N	Y	Total
	No	166 31.20	366 68.80	532
	Yes	26 31.71	56 68.29	82
	Total	192	422	614



The FREQ Procedure

Frequency  
Row Pct

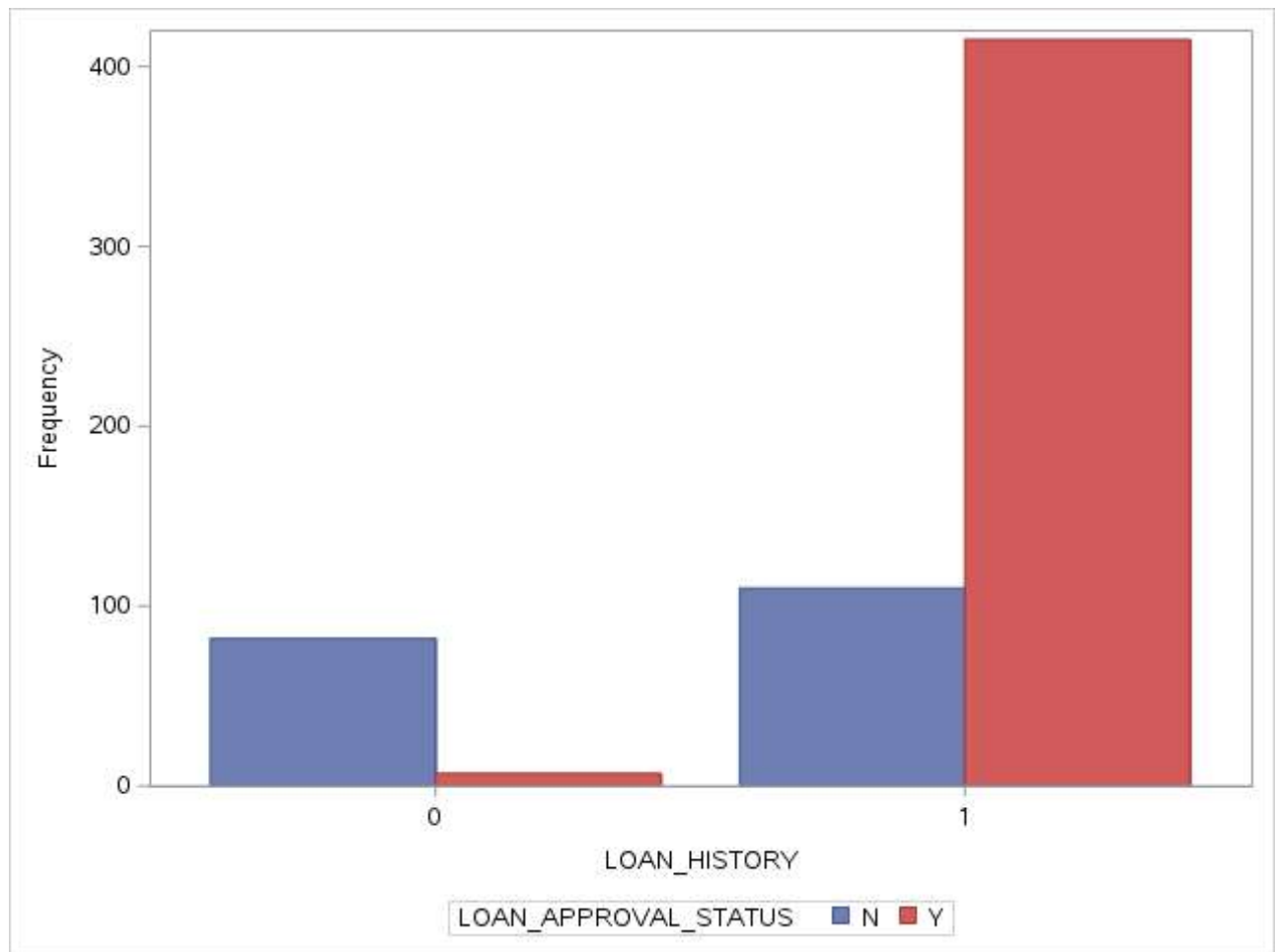
Table of LOAN_LOCATION by LOAN_APPROVAL_STATUS			
LOAN_LOCATION	LOAN_APPROVAL_STATUS		
	N	Y	Total
City	69 34.16	133 65.84	202
Town	54 23.18	179 76.82	233
Village	69 38.55	110 61.45	179
Total	192	422	614



The FREQ Procedure

Frequency  
Row Pct

Table of LOAN_HISTORY by LOAN_APPROVAL_STATUS			
LOAN_HISTORY	LOAN_APPROVAL_STATUS		
	N	Y	Total
0	82 92.13	7 7.87	89
1	110 20.95	415 79.05	525
Total	192	422	614

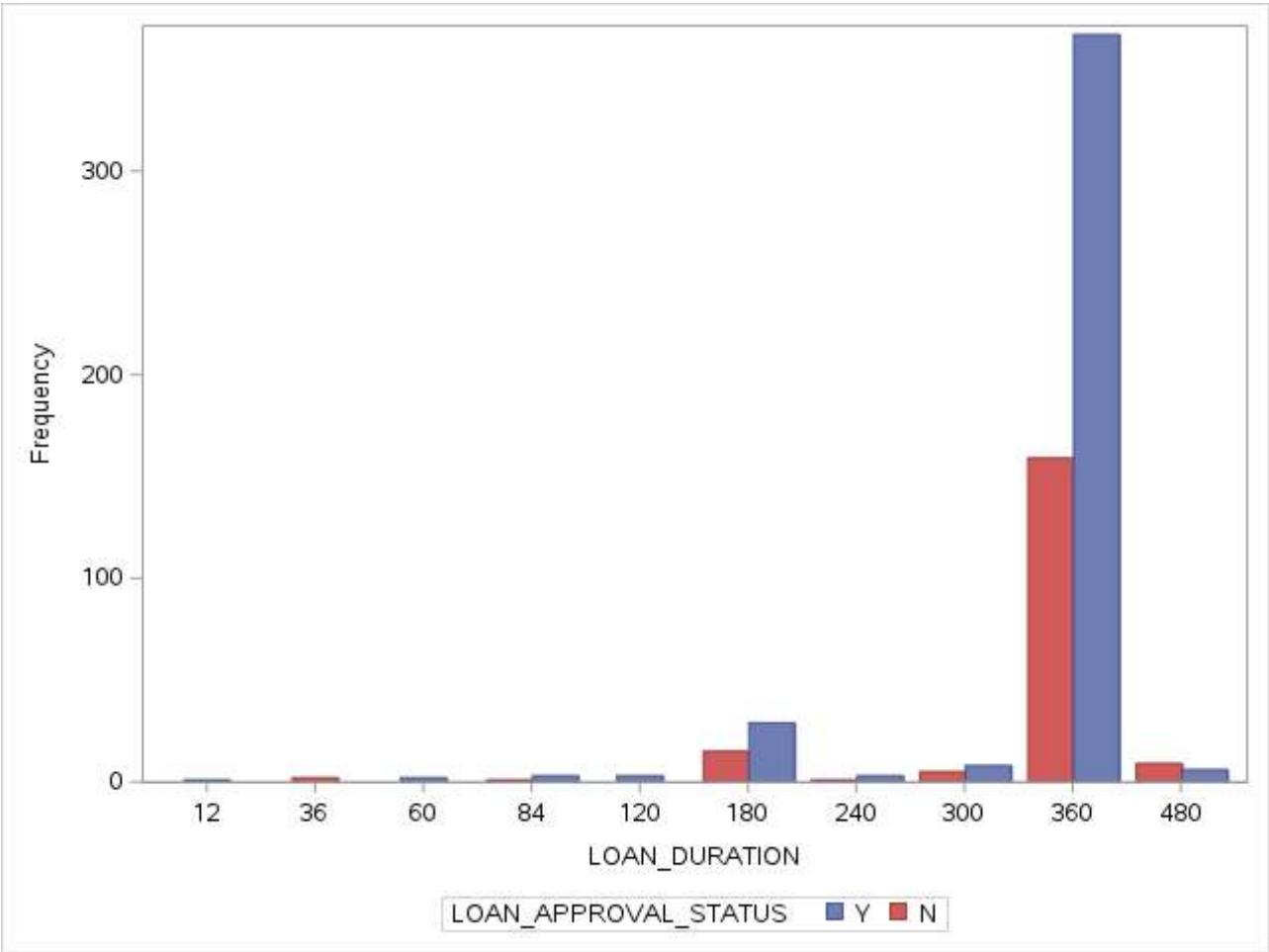


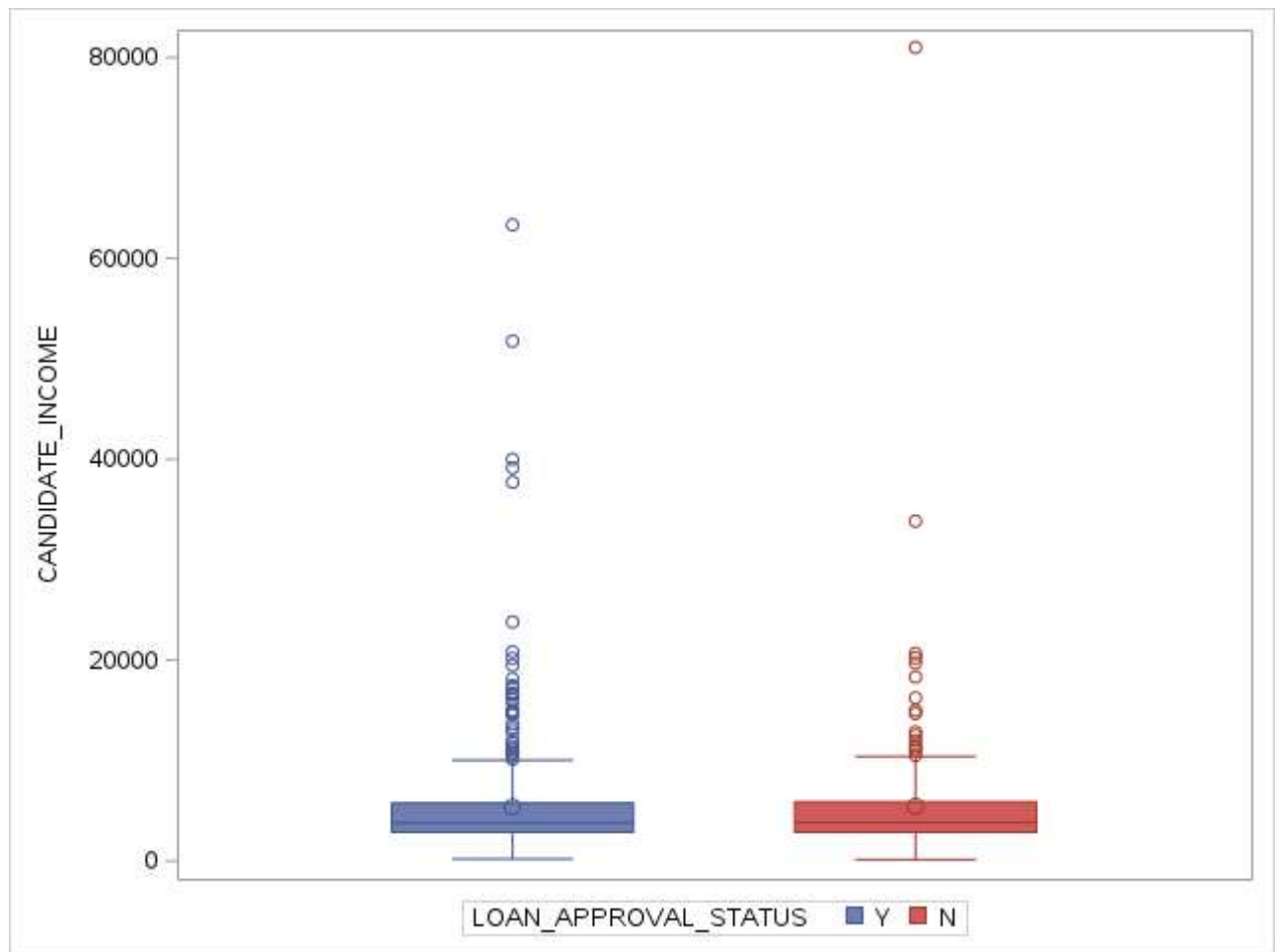
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The FREQ Procedure

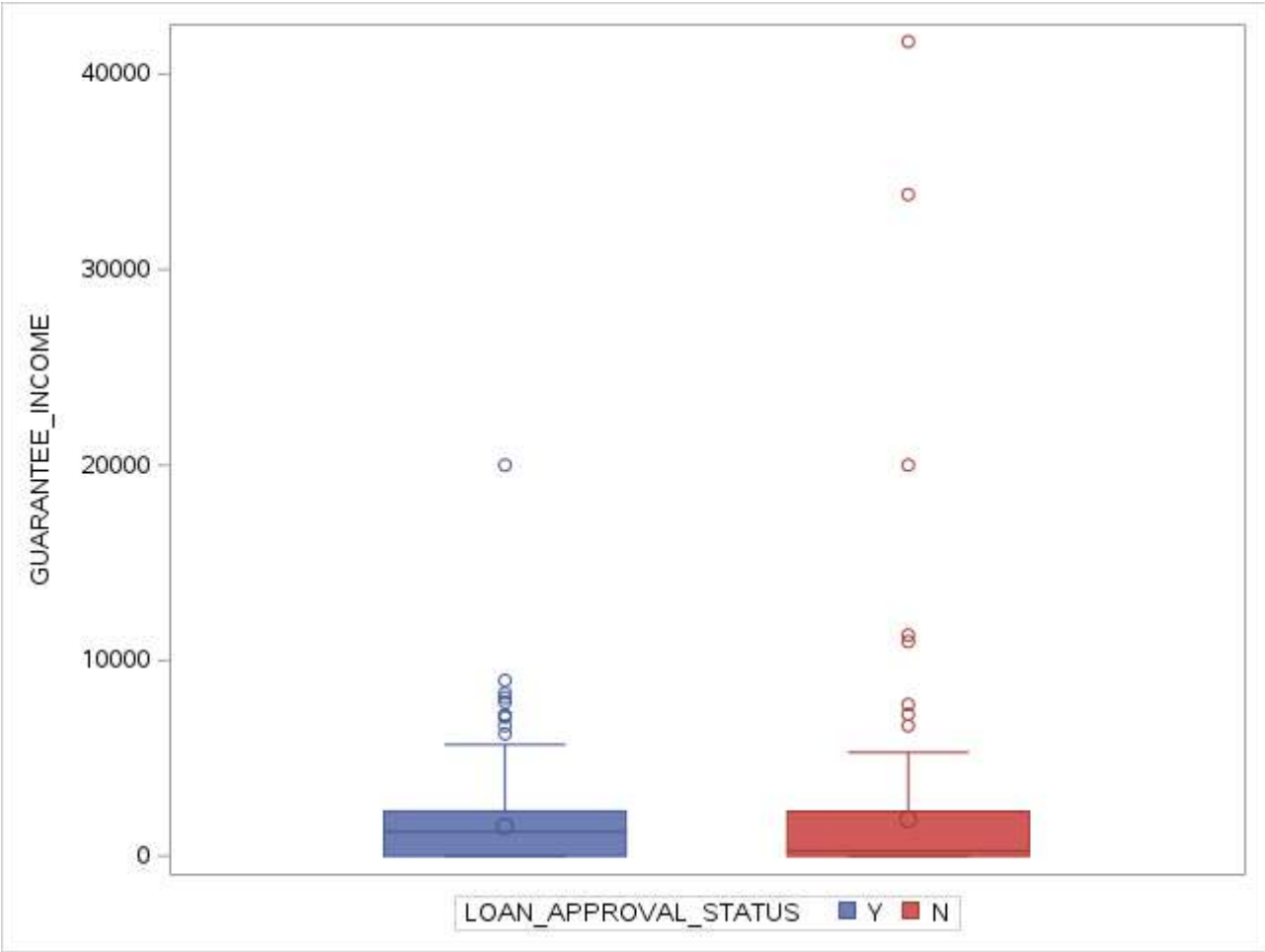
Frequency  
Row Pct

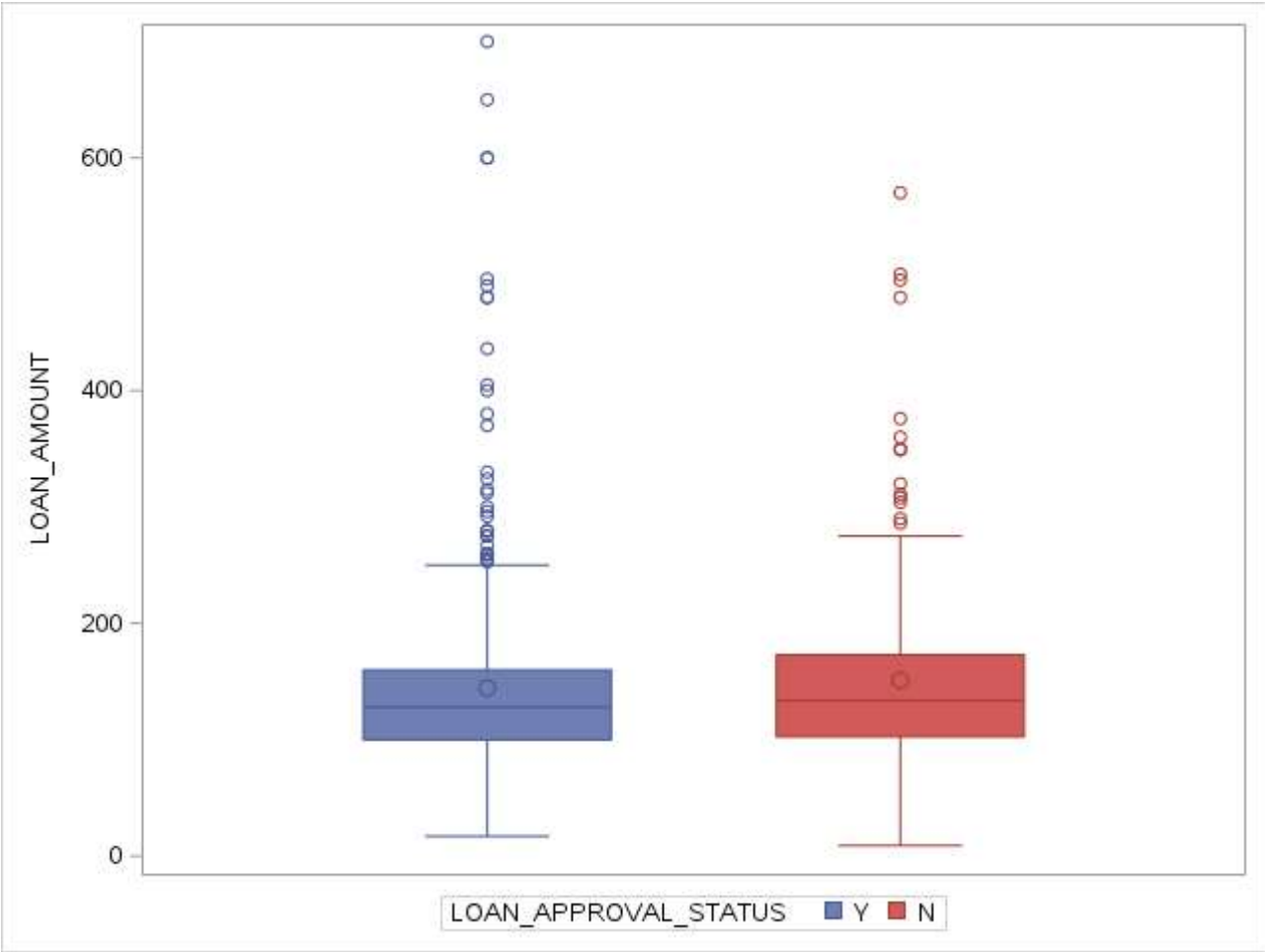
Table of LOAN_DURATION by LOAN_APPROVAL_STATUS			
LOAN_DURATION	LOAN_APPROVAL_STATUS		
	N	Y	Total
12	0 0.00	1 100.00	1
36	2 100.00	0 0.00	2
60	0 0.00	2 100.00	2
84	1 25.00	3 75.00	4
120	0 0.00	3 100.00	3
180	15 34.09	29 65.91	44
240	1 25.00	3 75.00	4
300	5 38.46	8 61.54	13
360	159 30.23	367 69.77	526
480	9 60.00	6 40.00	15
Total	192	422	614

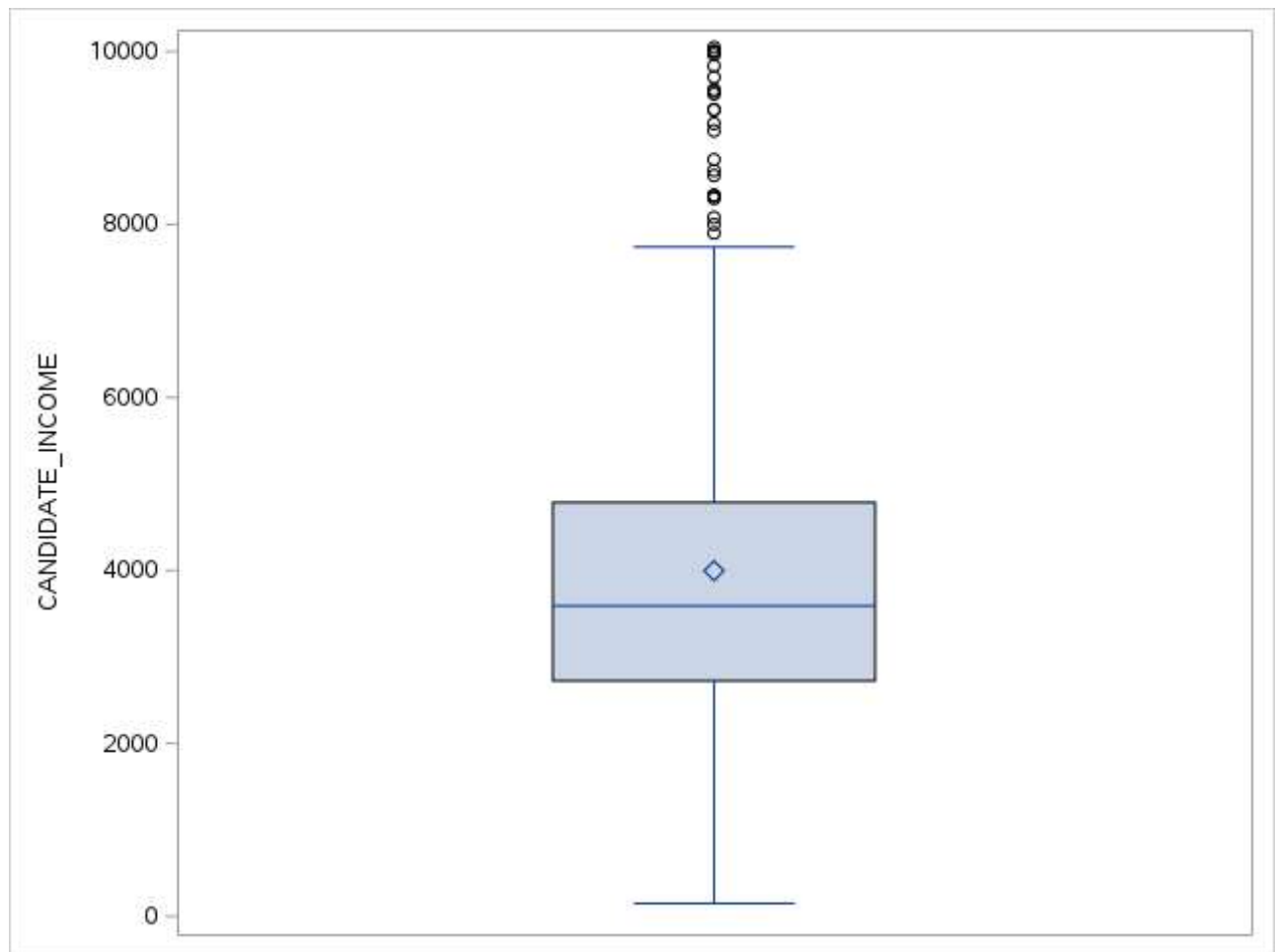


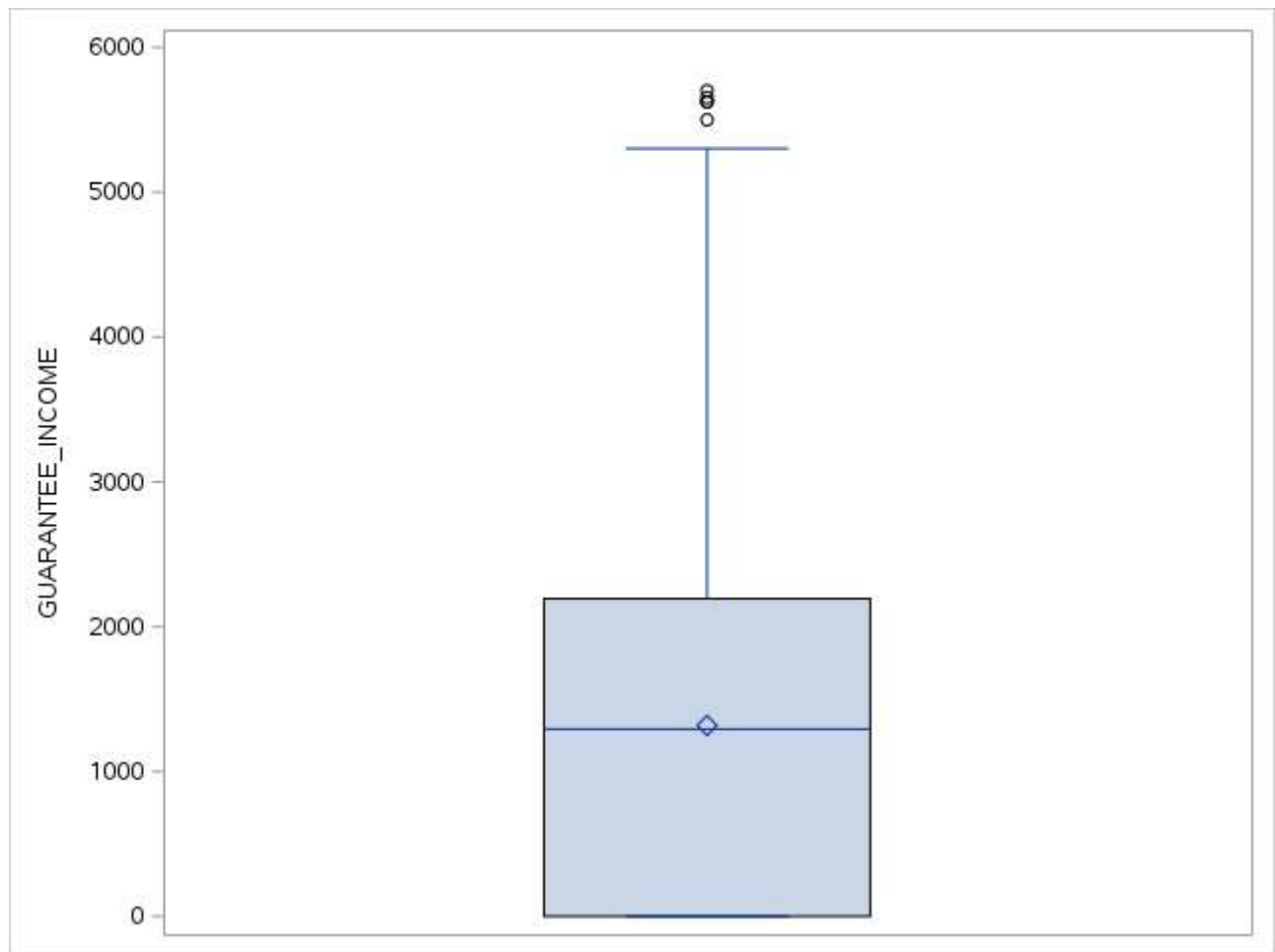


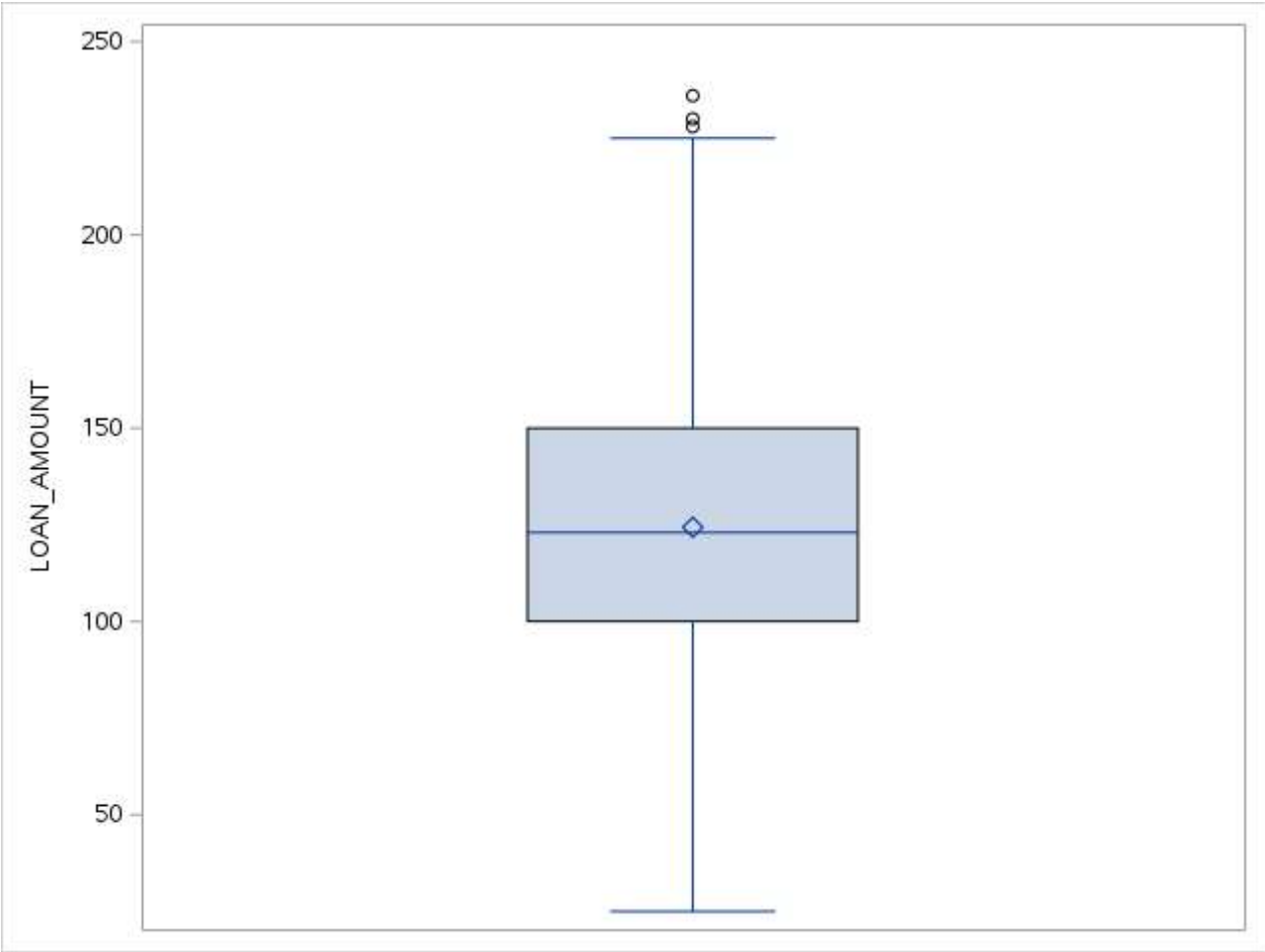












The LOGISTIC Procedure

Model Information	
Data Set	PROJECT.LOAN_PREDICTION
Response Variable	LOAN_APPROVAL_STATUS
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	520
Number of Observations Used	520

Response Profile		
Ordered Value	LOAN_APPROVAL_STATUS	Total Frequency
1	N	158
2	Y	362

Probability modeled is LOAN\_APPROVAL\_STATUS='N'.

Class Level Information				
Class	Value	Design Variables		
GENDER	Female	1		
	Male	-1		
MARITAL_STATUS	Married	1		

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

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	640.652	470.924
SC	644.905	530.477
-2 Log L	638.652	442.924

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	195.7279	13	<.0001
Score	190.1572	13	<.0001
Wald	89.6888	13	<.0001

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
GENDER	1	0.4910	0.4835
MARITAL_STATUS	1	2.5075	0.1133
FAMILY_MEMBERS	3	2.8423	0.4166
QUALIFICATION	1	3.1193	0.0774
EMPLOYMENT	1	0.5715	0.4497
LOAN_LOCATION	2	12.2552	0.0022
LOAN_HISTORY	1	74.5090	<.0001
CANDIDATE_INCOME	1	1.5693	0.2103
GUARANTEE_INCOME	1	3.3233	0.0683
LOAN_AMOUNT	1	4.1909	0.0406

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	0.7517	0.5302	2.0096	0.1563
GENDER	Female	1	0.1161	0.1656	0.4910	0.4835

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
MARITAL_STATUS	Married	1	-0.2338	0.1476	2.5075	0.1133
FAMILY_MEMBERS	0	1	-0.1347	0.2155	0.3906	0.5320
FAMILY_MEMBERS	1	1	0.3723	0.2550	2.1322	0.1442
FAMILY_MEMBERS	2	1	-0.2210	0.2798	0.6240	0.4296
QUALIFICATION	Graduate	1	-0.2423	0.1372	3.1193	0.0774
EMPLOYMENT	No	1	-0.1391	0.1840	0.5715	0.4497
LOAN_LOCATION	City	1	0.2017	0.1739	1.3454	0.2461
LOAN_LOCATION	Town	1	-0.6200	0.1816	11.6546	0.0006
LOAN_HISTORY	0	1	2.1276	0.2465	74.5090	<.0001
CANDIDATE_INCOME		1	-0.00011	0.000089	1.5693	0.2103
GUARANTEE_INCOME		1	-0.00021	0.000116	3.3233	0.0683
LOAN_AMOUNT		1	0.00835	0.00408	4.1909	0.0406

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
GENDER Female vs Male	1.261	0.659	2.414
MARITAL_STATUS Married vs Not Married	0.627	0.351	1.118
FAMILY_MEMBERS 0 vs 3+	0.889	0.331	2.389
FAMILY_MEMBERS 1 vs 3+	1.475	0.512	4.251
FAMILY_MEMBERS 2 vs 3+	0.815	0.274	2.421
QUALIFICATION Graduate vs Under Graduate	0.616	0.360	1.055
EMPLOYMENT No vs Yes	0.757	0.368	1.558
LOAN_LOCATION City vs Village	0.805	0.452	1.434
LOAN_LOCATION Town vs Village	0.354	0.194	0.648
LOAN_HISTORY 0 vs 1	70.470	26.816	185.188
CANDIDATE_INCOME	1.000	1.000	1.000
GUARANTEE_INCOME	1.000	1.000	1.000
LOAN_AMOUNT	1.008	1.000	1.016

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	82.1	Somers' D	0.641
Percent Discordant	17.9	Gamma	0.641
Percent Tied	0.0	Tau-a	0.272
Pairs	57196	c	0.821