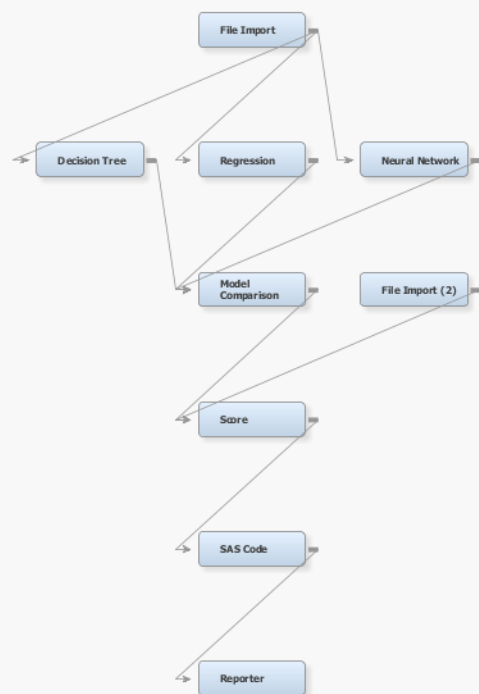# SAS Enterprise Miner Report

```
User      = jmmorr01
Date      = 12:27:21  October 29
Project   = CIS 445 Project 2
Diagram   = Diagram 1

Start Node = Report
Node label = Reporter
Nodes      = PATH
Showall    = N

Format    = PDF
Style     = LISTING
```


SAS Enterprise Miner Report
Process Flow Diagram

SAS Enterprise Miner Report

Node=File Import
Summary

Node id = FIMPORT
Node label = File Import
Meta path = FIMPORT
Notes =

Node=File Import
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	FileImport		GuessRows	500		NameRow	Y	
AccessTable	NoTableName		IFileName	J:\JMMORR01\CIS 445\Project 2\WidgBuyTrain.xlsx		Password	NoPassword	
AdvancedAdvisor	N		ImportType	Local	LOCAL	Role	TRAIN	
Delimiter	,		MaxCols	10000		SkipRows	0	
FileType	xlsx	XLS	MaxRows	1000000		Summarize	N	

Node=File Import
Data Attributes

Attribute	Value	Attribute	Value	Attribute	Value
Data Name	FIMPORT_DATA	Date Created	29Oct2018:11:21:18	Data Size	66560
Data Type	DATA	Date Modified	29Oct2018:11:21:18	Role	TRAIN
Data Label		Number Rows	20	Segment	
Engine	V9	Number Columns	7	Data Library	EMWS1

Node=File Import
Variables List

Name	Label	Role	Level	Type	Length	Format	Creator
Age	Age	INPUT	INTERVAL	N	8	BEST.	
Income	Income	INPUT	NOMINAL	C	4	$4.	
Residence	Residence	INPUT	NOMINAL	C	3	$3.	
WidgBuy	WidgBuy	TARGET	BINARY	C	3	$3.	
X2	X2	INPUT	INTERVAL	N	8	BEST.	
X4	X4	INPUT	INTERVAL	N	8	BEST.	
X5	X5	INPUT	INTERVAL	N	8	BEST.	

Node=File Import
Created Variables List

SAS Enterprise Miner Report

Node=Neural Network
Summary

Node id = Neural
Node label = Neural Network
Meta path = FIMPORT => Neural
Notes =

Node=Neural Network
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	NeuralNetwork		Hidden	1	3	Prelim	Y	
AbsConvValue	-1.34078E154	-7.237006E75	HiddenActivation	DEFAULT		PrelimMaxTime	1 HOUR	
AbsFTime	1		HiddenBias	Y		PrelimMaxiter	10	
AbsFValue	0		HiddenCombFunction	DEFAULT		PrelimOutest		
AbsGTime	1		HiddenUnits	N		PreliminaryRuns	5	
AbsGValue	0.00001		InitialDs			RandDist	NORMAL	
AbsXTime	1		InitialSeed	12345		RandLoc	0	
AbsXValue	1E-8		InputStandardization	STD		RandScale	0.1	
Accelerate	1.2		Learn	0.1		Residuals	Y	
AddHidden	Y		MaxLearn	50		Standardizations	N	
CodefileNoRes			MaxMomentum	1.75		SuppressOutput	N	
CodefileRes			Maxiter	50		TargetActivation	DEFAULT	
ConvDefaults	Y		Maxtime	4 HOURS		TargetBias	Y	
Decelerate	0.5		MinLearn	0.00001		TargetCombFunction	DEFAULT	
DirectConnection	N		ModelSelectionCriterion	PROFIT/LOSS		TargetError	DEFAULT	
FConvTime	1		Momentum	0		Tilt	0	
FConvValue	0		NetworkArchitecture	MLP		TrainCode		
GConvTime	1		Outest			TrainingTechnique	DEFAULT	
GConvValue	1E-6		Outfit			UseEstimates	N	

Node=Neural Network
Variable Summary

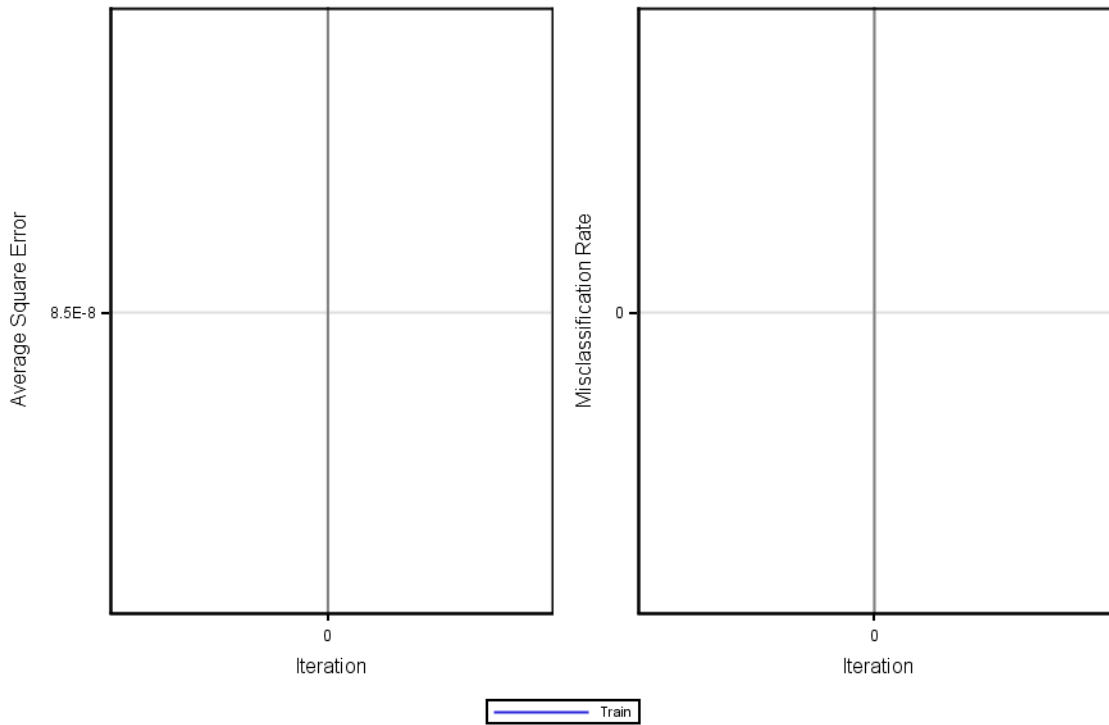| Role	Level	Frequency Count	Name
TARGET	BINARY	1	WidgBuy
INPUT	INTERVAL	4	Age X2 X4 X5
INPUT	NOMINAL	2	Income Residence

Node=Neural Network
Model Fit Statistics
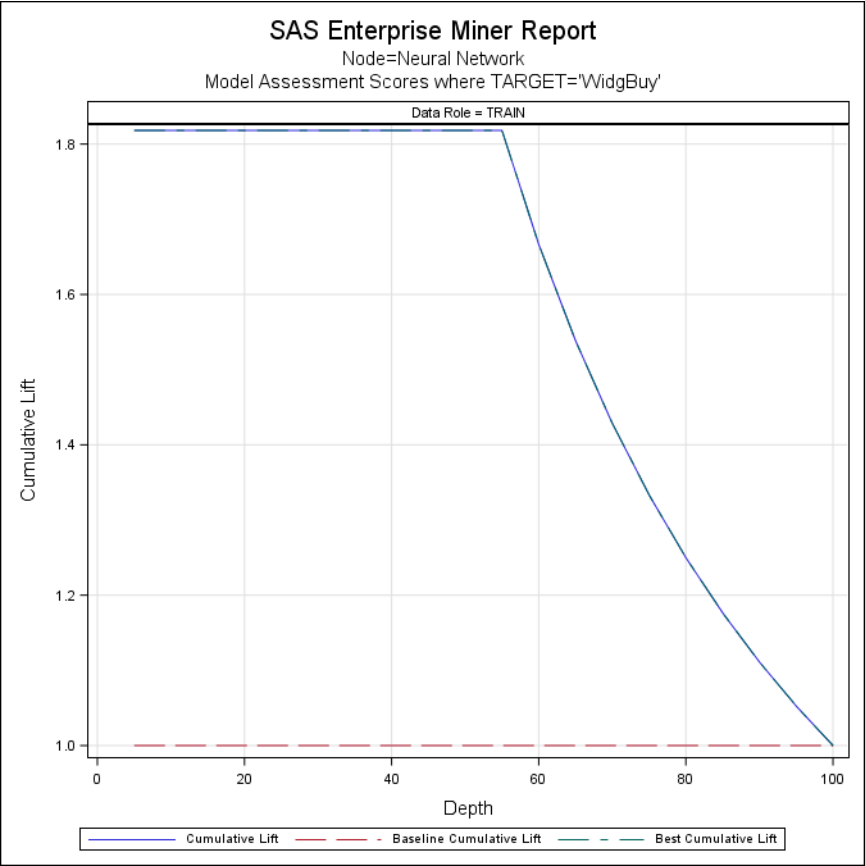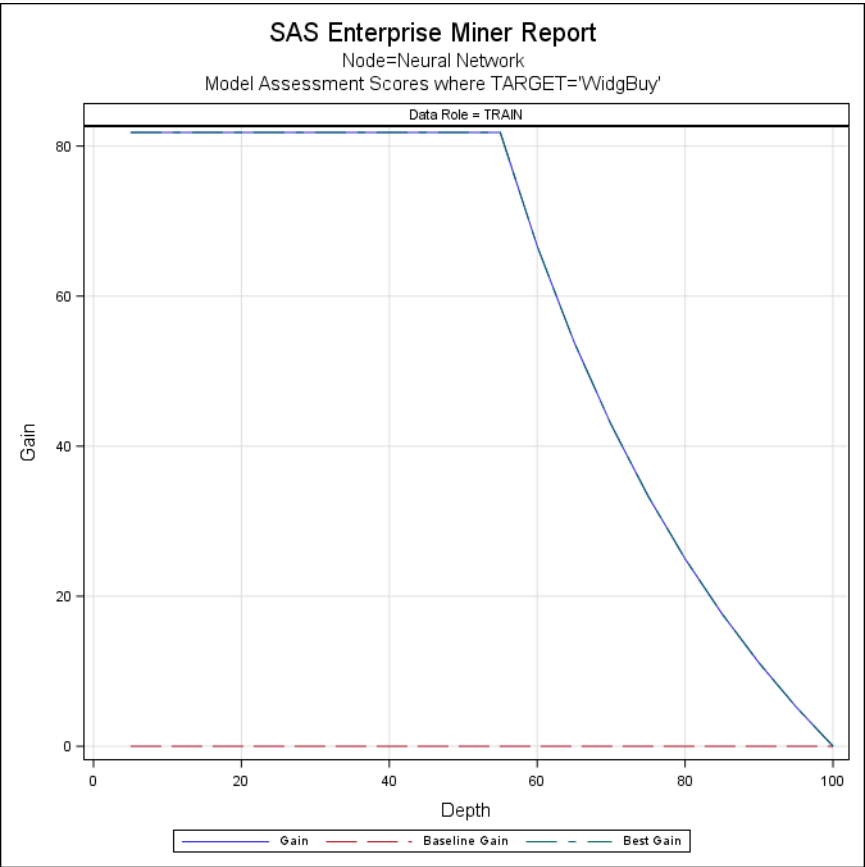
Target=WidgBuy Target Label=WidgBuy

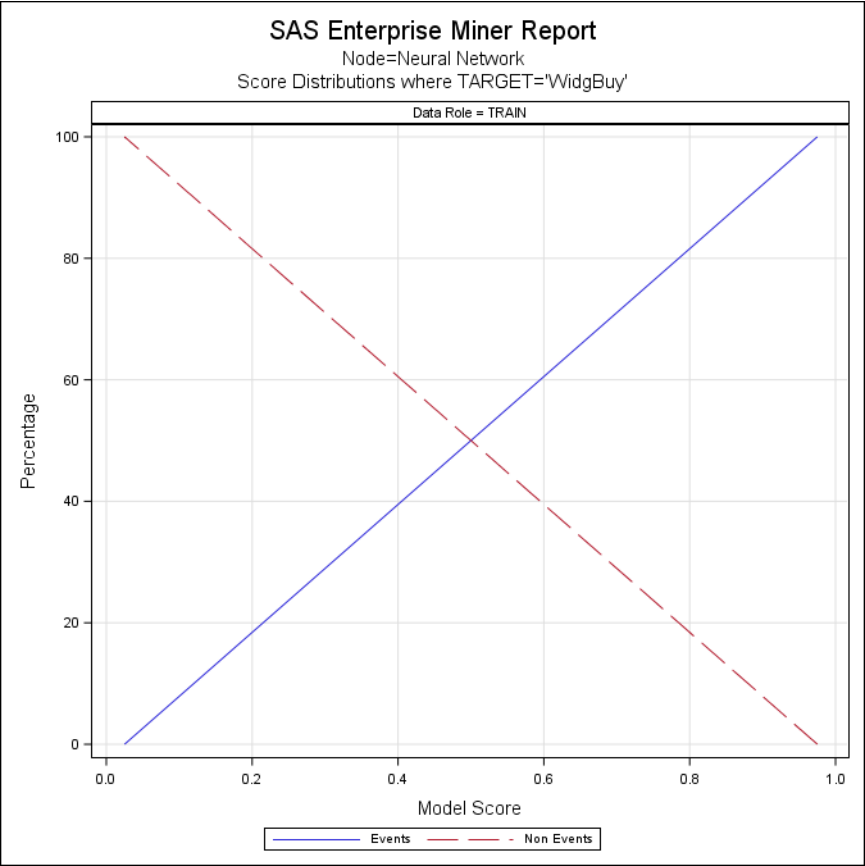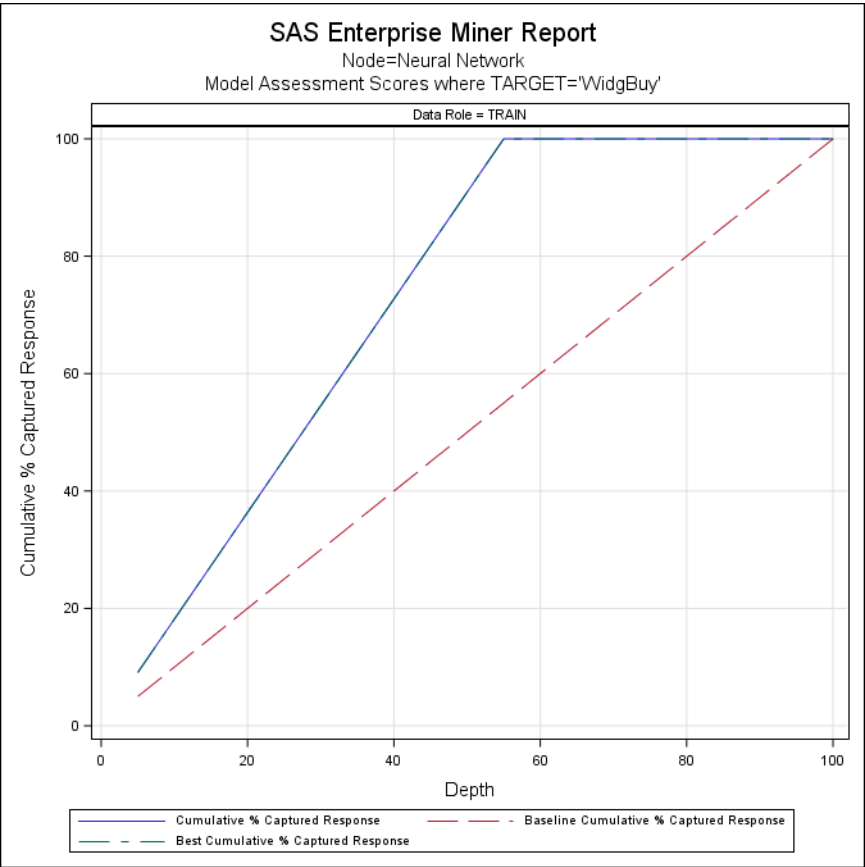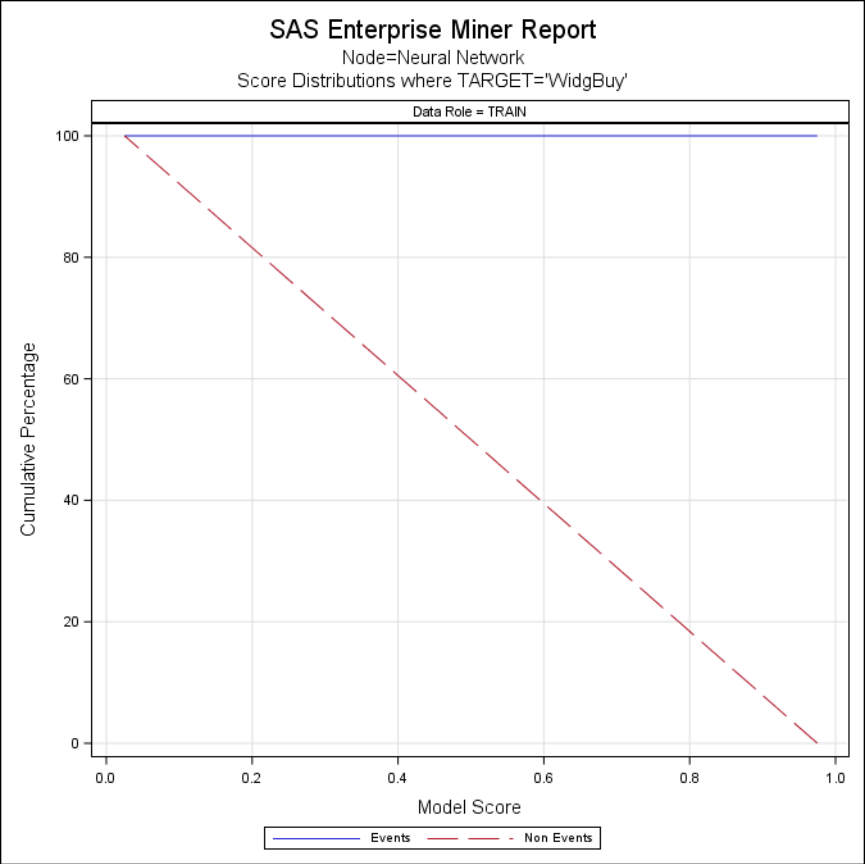| Label of Statistic	Train	Validation	Test
Total Degrees of Freedom	20.0000	.	.
Degrees of Freedom for Error	10.0000	.	.
Model Degrees of Freedom	10.0000	.	.
Number of Estimated Weights	10.0000	.	.
Akaike's Information Criterion	20.0107	.	.

Target=WidgBuy Target Label=WidgBuy

Label of Statistic	Train	Validation	Test
Schwarz's Bayesian Criterion	29.9680	.	.
Average Squared Error	0.0000	.	.
Maximum Absolute Error	0.0005	.	.
Divisor for ASE	40.0000	.	.
Sum of Frequencies	20.0000	.	.
Root Average Squared Error	0.0003	.	.
Sum of Squared Errors	0.0000	.	.
Sum of Case Weights Times Freq	40.0000	.	.
Final Prediction Error	0.0000	.	.
Mean Squared Error	0.0000	.	.
Root Final Prediction Error	0.0005	.	.
Root Mean Squared Error	0.0004	.	.
Average Error Function	0.0003	.	.
Error Function	0.0107	.	.
Misclassification Rate	0.0000	.	.
Number of Wrong Classifications	0.0000	.	.

SAS Enterprise Miner Report
Node=Neural Network
Model Iteration Plots

SAS Enterprise Miner Report
Node=Neural Network
Model Assessment Scores where TARGET='WidgBuy'
Data Role = TRAIN

SAS Enterprise Miner Report
Node=Neural Network
Score Distributions where TARGET='WidgBuy'
Data Role = TRAIN

SAS Enterprise Miner Report
Node=Neural Network
Score Distributions where TARGET='WidgBuy'

Node=Neural Network
Score Distributions

Target Variable=WidgBuy Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.95-1.00	11	100	0	100	0
0.00-0.05	0	0	100	100	100

SAS Enterprise Miner Report

Node=Decision Tree
Summary

Node id = Tree
Node label = Decision Tree
Meta path = FIMPORT => Tree
Notes =

Node=Decision Tree
Properties

| Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	DecisionTree		Kass	Y		Pred	N	
AVG	Y		KassApply	BEFORE		Predict	Y	
AssessMeasure	PROFIT/LOSS		LeafSize	5		ProfitLoss	NONE	
AssessPercentage	0.25		Leafid	Y		RASE	N	
CV	N		Maxbranch	2		SampleMethod	RANDOM	
CVNIter	10		Maxdepth	6		SampleSeed	12345	
CVRepeat	1		MinCatSize	5		SampleSize	10000	
CVSeed	12345		MissingValue	USEINSEARCH		ShowNodeId	Y	
ClassColorBy	PERCENTCORRECT		NSubtree	1		ShowValid	Y	
Count	Y		NodeRole	SEGMENT		SigLevel	0.2	
CreateSample	DEFAULT		NodeSample	20000		SplitPrecision	4	
Criterion	DEFAULT		NominalCriterion	ENTROPY	PROBCHISQ	Splitsize	.	
Depth	Y		Nrules	5		Subtree	ASSESSMENT	
Dummy	N		Nsurrs	0		Target	ALL	
Exhaustive	5000		NumInputs	1		ToolType	MODEL	
Freeze	N		NumSingleImp	5		TrainMode	BATCH	
ImportModel	N		ObsImportance	N		UseDecision	N	
ImportedTreeData			OrdinalCriterion	ENTROPY		UseMultipleTarget	N	
Inputs	N		PercentCorrect	N		UsePriors	N	
IntColorBy	AVG		Performance	DISK		UseVarOnce	N	
IntervalCriterion	PROBF		Precision	4		VarSelection	Y	

Node=Decision Tree
Variable Summary

Role	Level	Frequency Count	Name
TARGET	BINARY	1	WidgBuy
INPUT	INTERVAL	4	Age X2 X4 X5
INPUT	NOMINAL	2	Income Residence

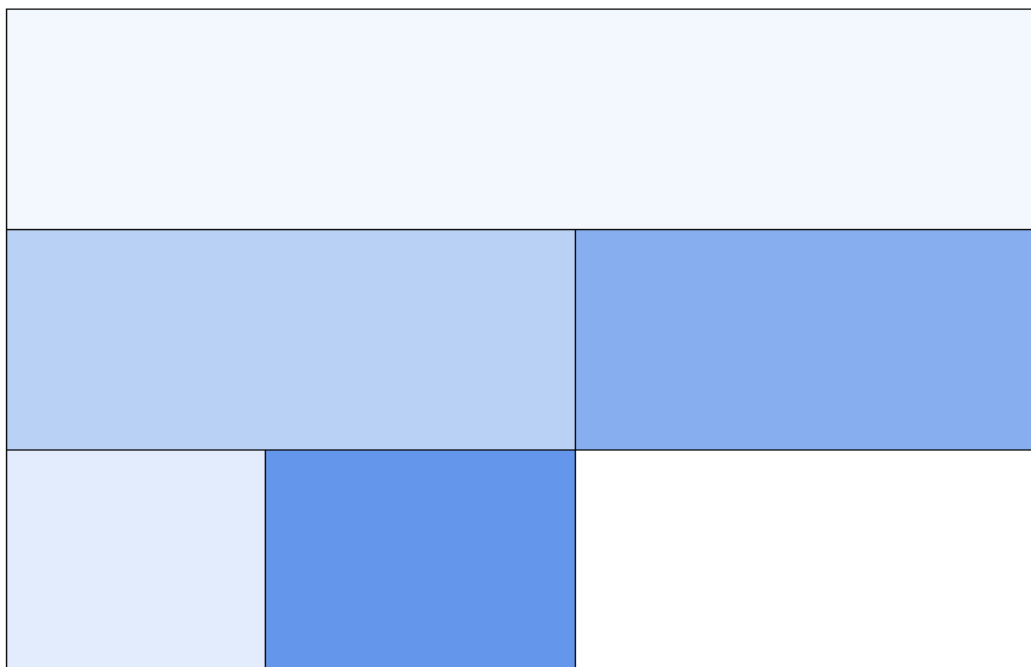## Node=Decision Tree
Model Fit Statistics

Target=WidgBuy Target Label=WidgBuy

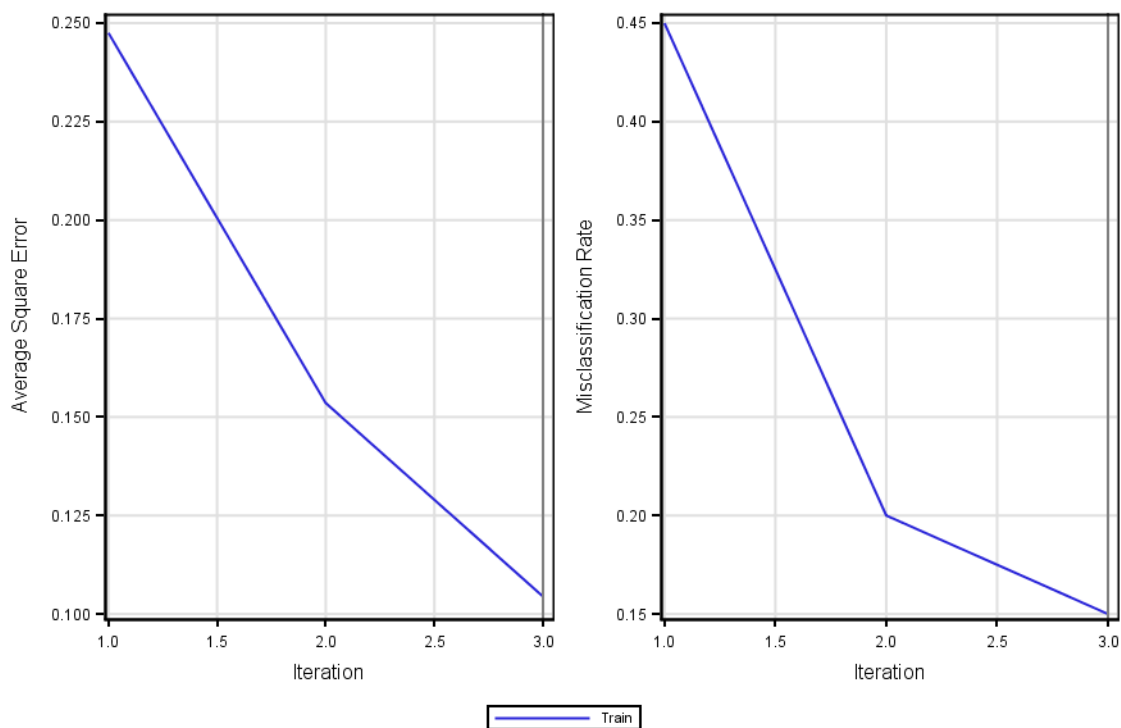| Label of Statistic	Train	Validation	Test
Sum of Frequencies	20.0000	.	.
Misclassification Rate	0.1500	.	.
Maximum Absolute Error	0.8889	.	.
Sum of Squared Errors	4.1778	.	.
Average Squared Error	0.1044	.	.
Root Average Squared Error	0.3232	.	.
Divisor for ASE	40.0000	.	.
Total Degrees of Freedom	20.0000	.	.

SAS Enterprise Miner Report
Node=Decision Tree
Tree Diagram

N : 20

Income

HIGH Or Missing   LOW

N : 11   N : 9
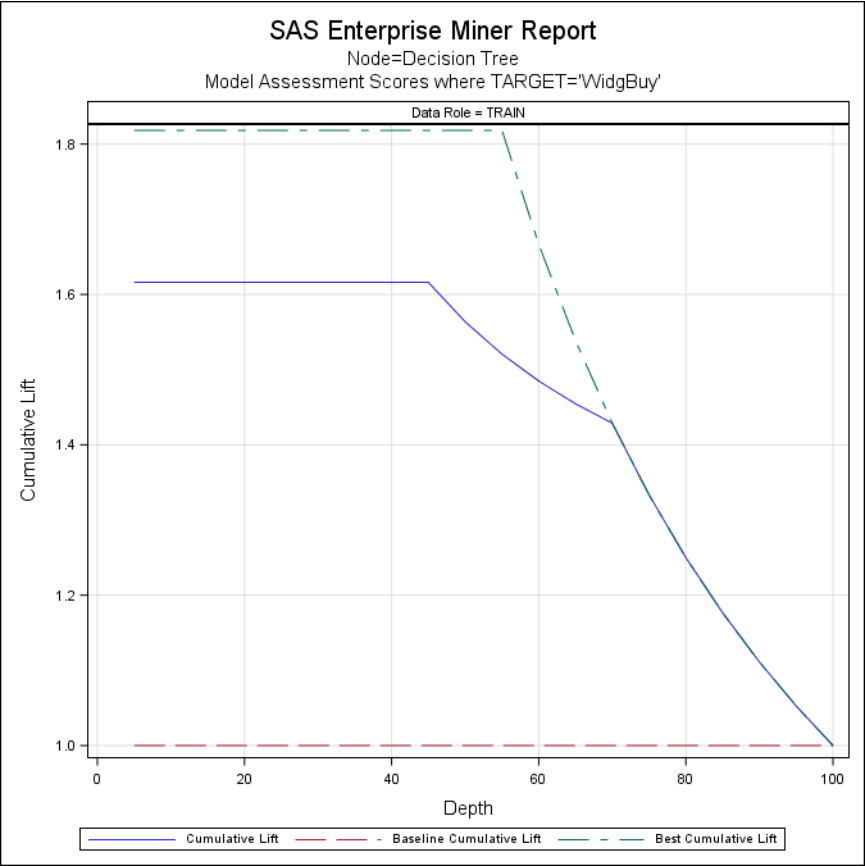
Age

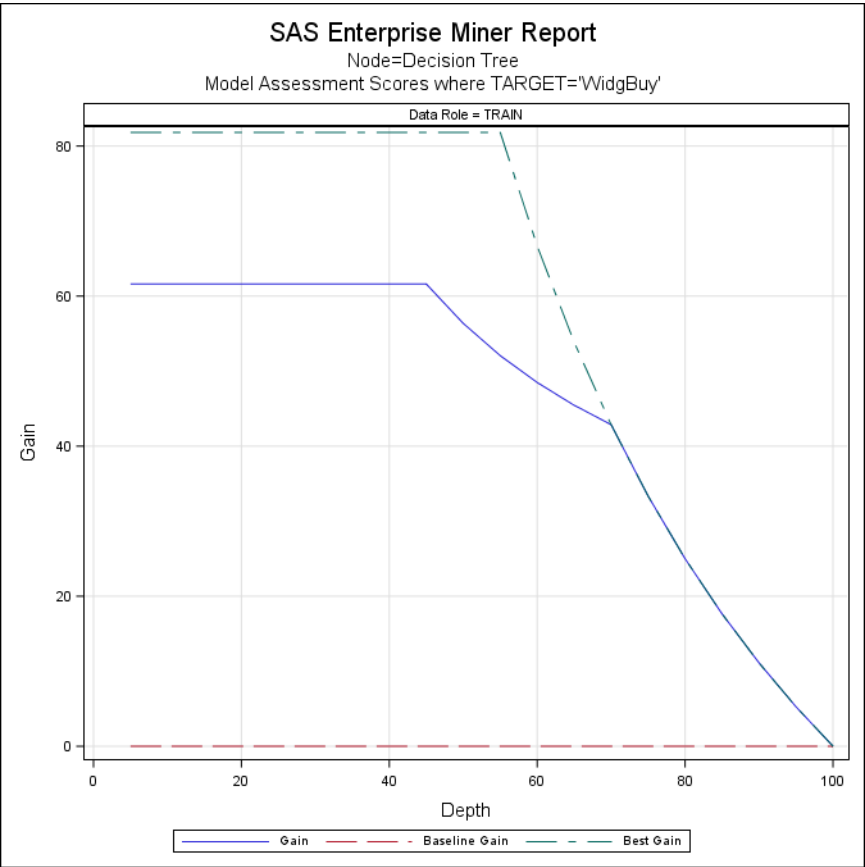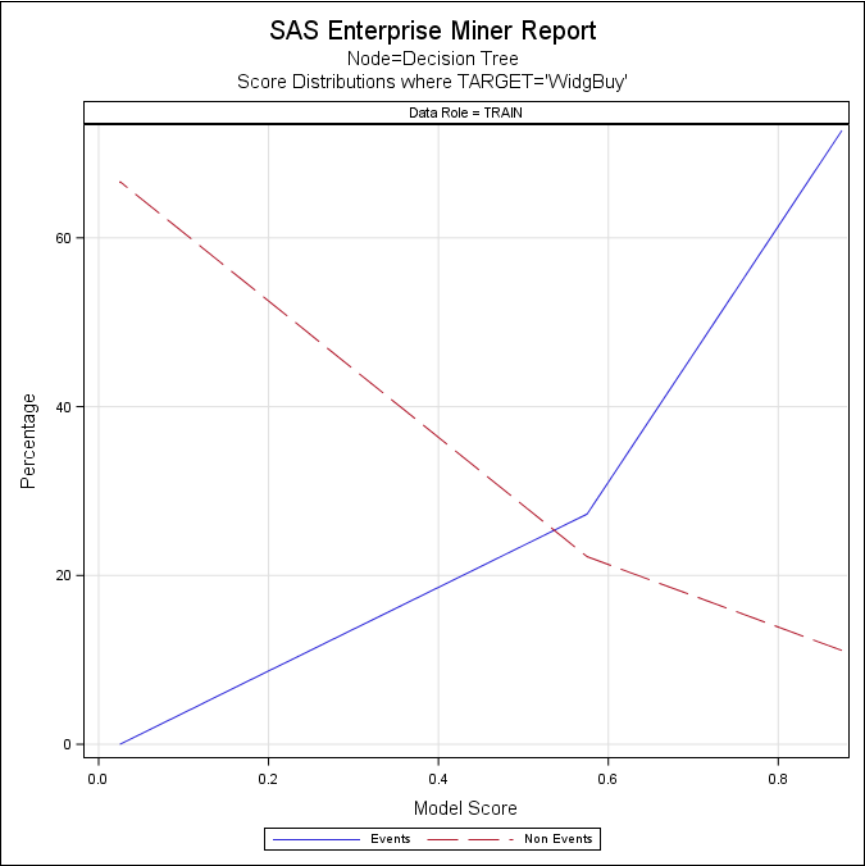< 30.5   >= 30.5 Or Missing

N : 5   N : 6
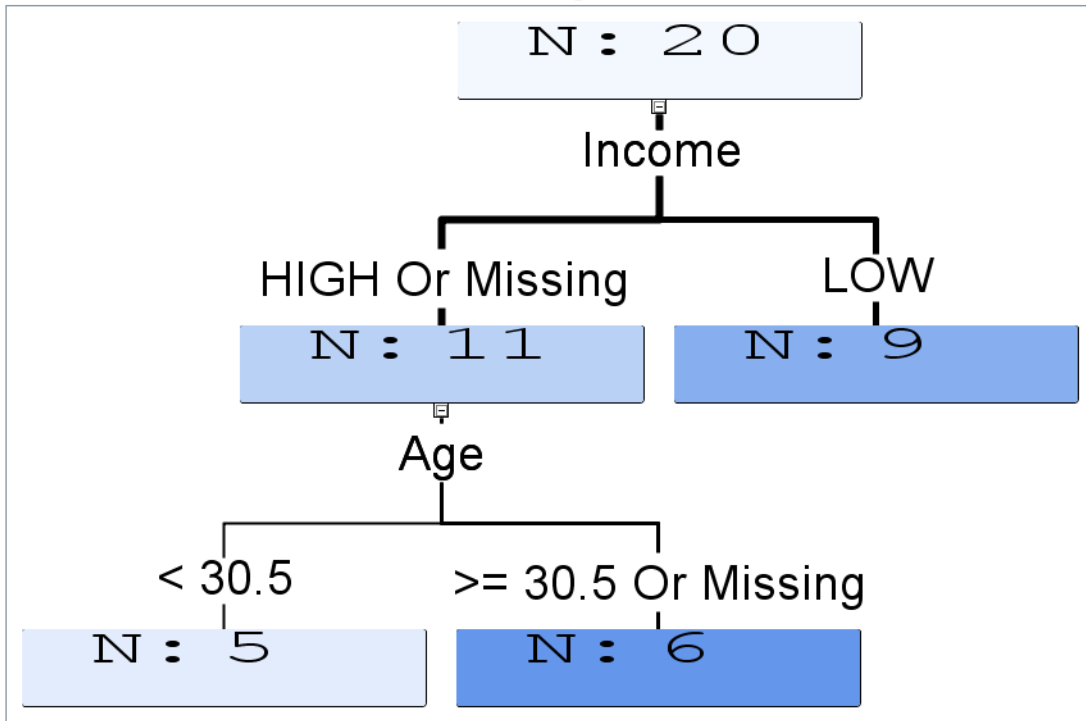
SAS Enterprise Miner Report
Node=Decision Tree
Treemap

SAS Enterprise Miner Report
Node=Decision Tree
Model Iteration Plots
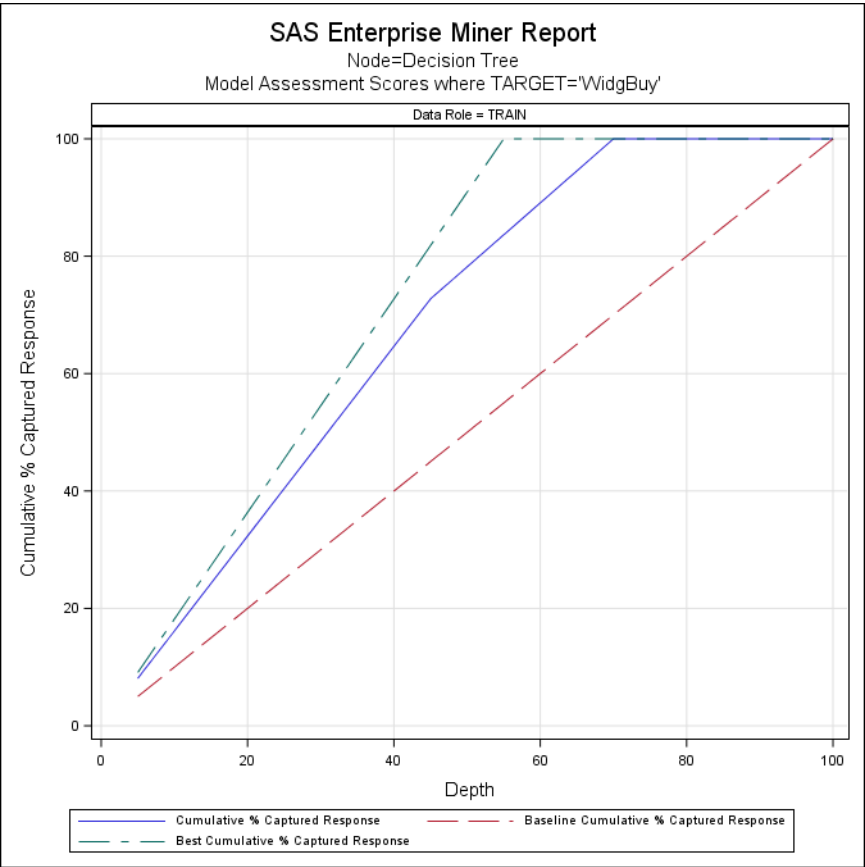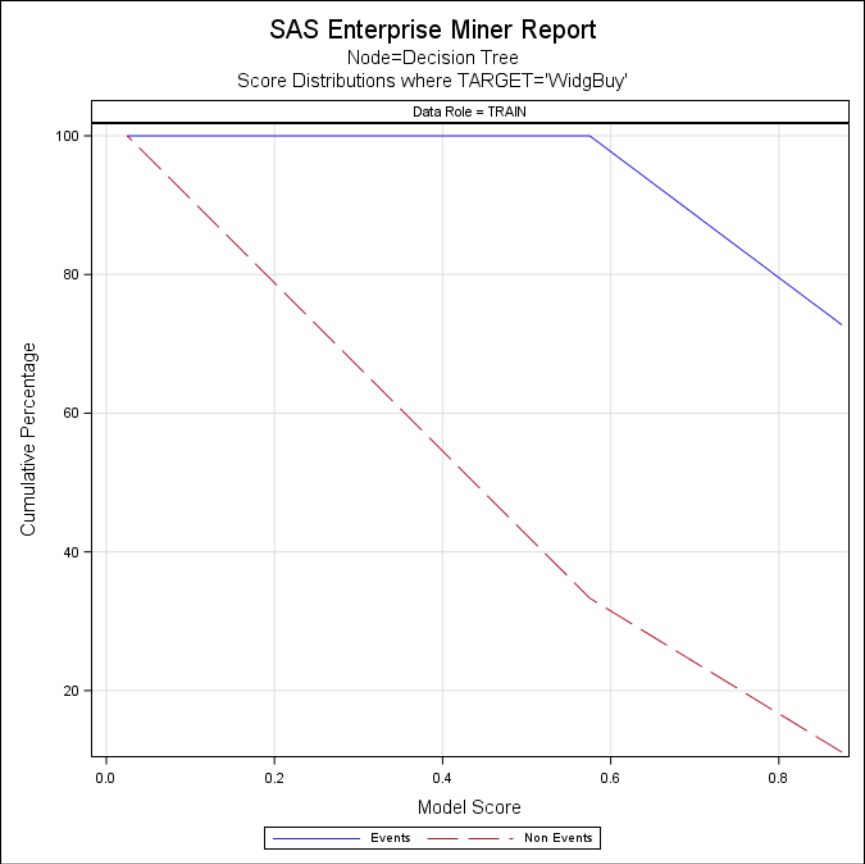
Train

SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Decision Tree
Score Distributions where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Decision Tree
Score Distributions where TARGET='WidgBuy'

Node=Decision Tree
Score Distributions

Target Variable=WidgBuy Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.85-0.90	8	72.7273	11.1111	72.727	11.111
0.55-0.60	3	27.2727	22.2222	100.000	33.333
0.00-0.05	0	0.0000	66.6667	100.000	100.000

SAS Enterprise Miner Report

Node=Regression
Summary

Node id = Reg
Node label = Regression
Meta path = FIMPORT => Reg
Notes =

Node=Regression
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Regression		Force	0		PolynomialDegree	2	
AbsConvValue	-1.34078E154	-7.237006E75	GConvTimes	1		PrintDesignMatrix	N	
AbsFTime	1		GConvValue	1E-6		Rule	NONE	
AbsFValue	0		Hierarchy	CLASS		SASSPDS	N	
AbsGTime	1		InputCoding	DEVIATION		SelectionCriterion	DEFAULT	
AbsGValue	0.00001		Interactions			SelectionDefault	Y	
AbsXTime	1		LinkFunction	LOGIT		Sequential	N	
AbsXValue	1E-8		MainEffect	Y		Simple	N	
CIParm	N		MaxCPUTime	1 HOUR		SIEntry	0.05	
ConvDefaults	Y		MaxFunctionCalls	.		SIStay	0.05	
CorB	N		MaxIterations	.		Start	0	
CovB	N		MaxStep	.		StepOutput	N	
Covout	N		MinResourceUse	N		Stop	0	
Details	N		ModelDefaults	Y		SuppressIntercept	N	
Error	LOGISTIC		ModelSelection	NONE		SuppressOutput	N	
ExcludedVariable	REJECT		OptimizationTechnique	DEFAULT		Terms	N	
FConvTimes	1		Performance	N		TwoFactor	N	
FConvValue	0		Polynomial	N				

Node=Regression
Variable Summary

Role	Level	Frequency Count	Name
TARGET	BINARY	1	WidgBuy
INPUT	INTERVAL	4	Age X2 X4 X5
INPUT	NOMINAL	2	Income Residence

## Node=Regression
Model Fit Statistics
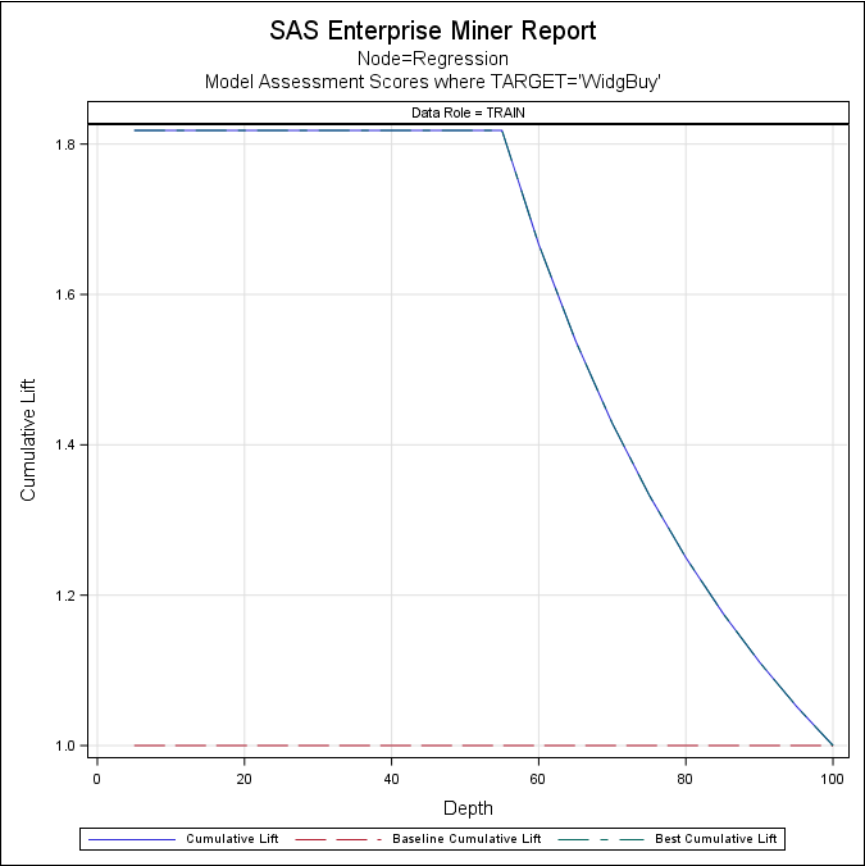
Target=WidgBuy Target Label=WidgBuy

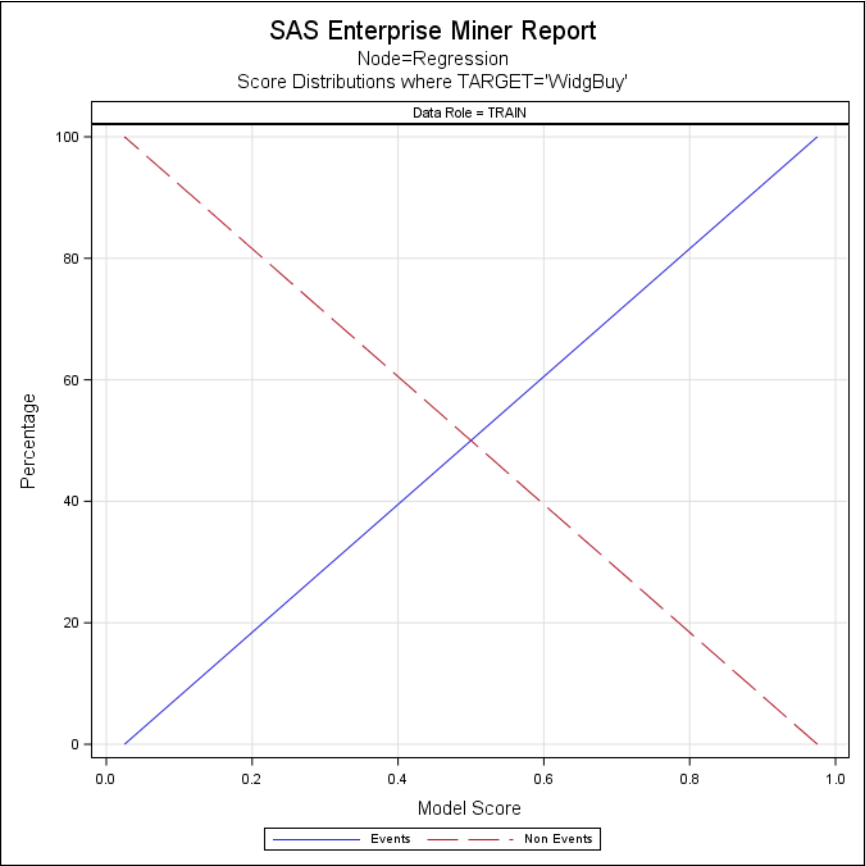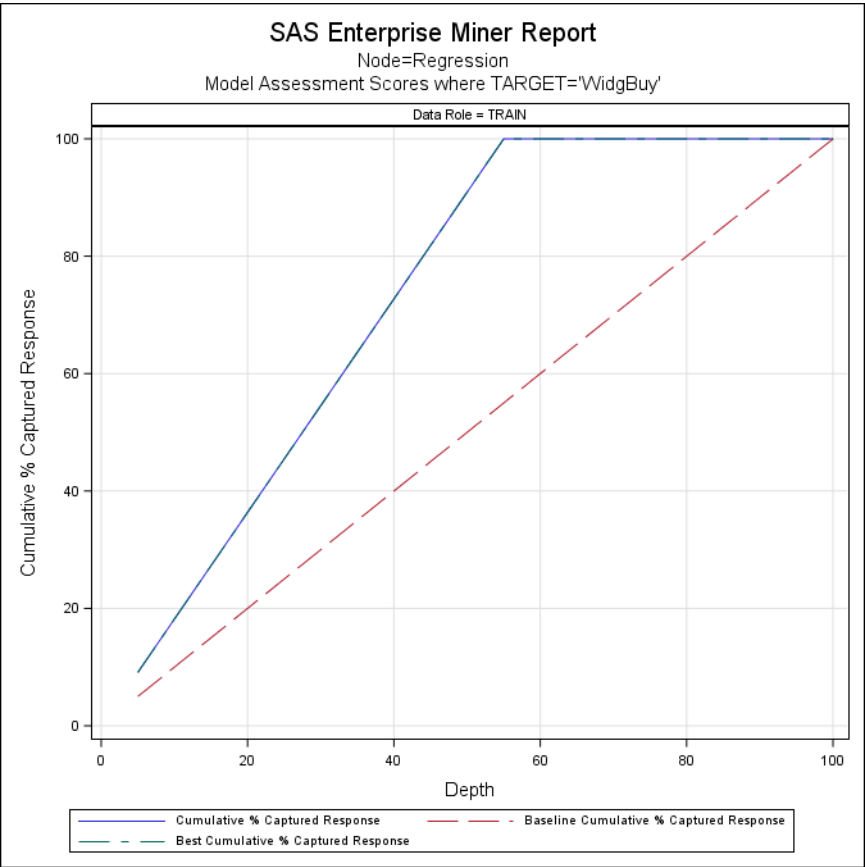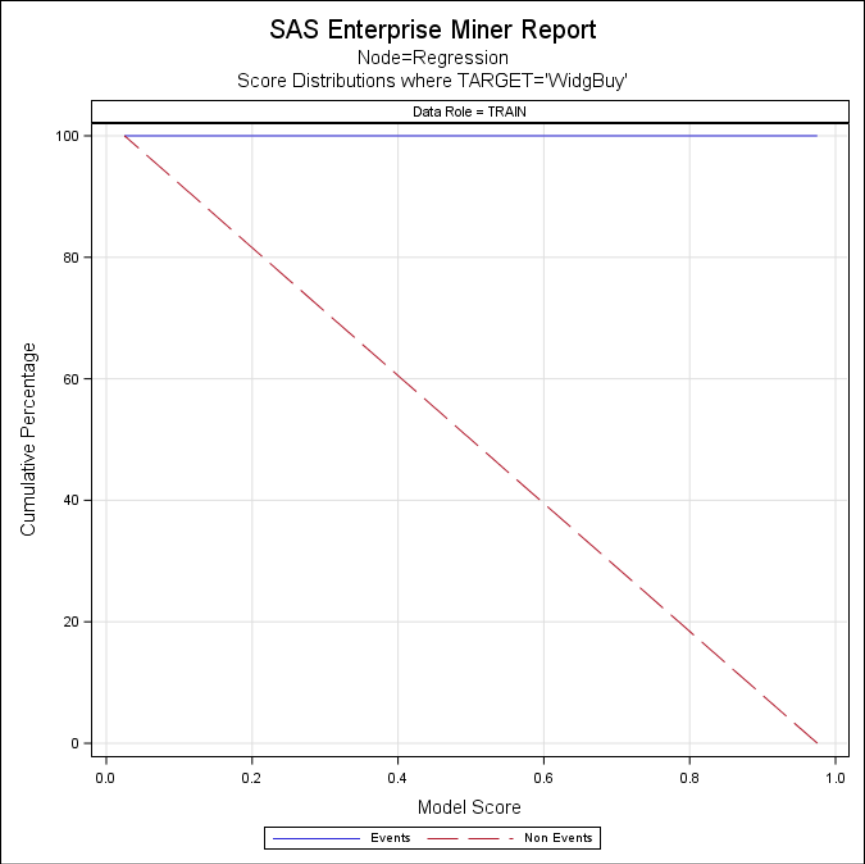| Label of Statistic	Train	Validation	Test
Akaike's Information Criterion	16.0123	.	.
Average Squared Error	0.0000	.	.
Average Error Function	0.0003	.	.
Degrees of Freedom for Error	12.0000	.	.
Model Degrees of Freedom	8.0000	.	.
Total Degrees of Freedom	20.0000	.	.

Target=WidgBuy Target Label=WidgBuy

Label of Statistic	Train	Validation	Test
Divisor for ASE	40.0000	.	.
Error Function	0.0123	.	.
Final Prediction Error	0.0000	.	.
Maximum Absolute Error	0.0013	.	.
Mean Square Error	0.0000	.	.
Sum of Frequencies	20.0000	.	.
Number of Estimate Weights	8.0000	.	.
Root Average Sum of Squares	0.0005	.	.
Root Final Prediction Error	0.0008	.	.
Root Mean Squared Error	0.0007	.	.
Schwarz's Bayesian Criterion	23.9781	.	.
Sum of Squared Errors	0.0000	.	.
Sum of Case Weights Times Freq	40.0000	.	.
Misclassification Rate	0.0000	.	.

SAS Enterprise Miner Report
Node=Regression
Regression Model Effects
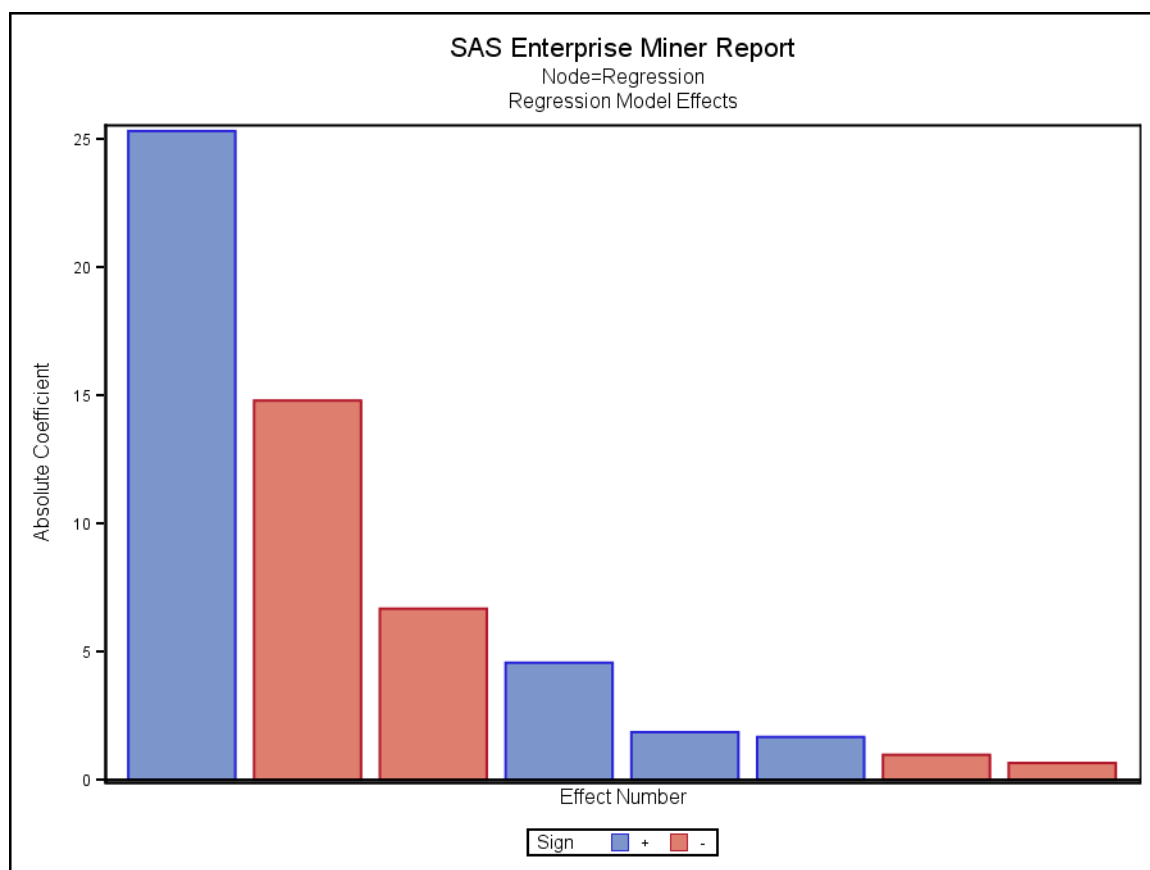
Effect Number	Variable	Level	Coefficient	T-value	P Value	Effect Number	Variable	Level	Coefficient	T-value	P Value
1	Intercept	YES	25.3156	0.16328	0.87030	5	Residence	LA	1.85572	0.04329	0.96547
2	Residence	CHI	-14.7970	-0.29893	0.76499	6	X4		1.66886	0.01638	0.98693
3	Income	HIGH	-6.6741	-0.25573	0.79816	7	Age		-0.97247	-0.16754	0.86694
4	X2		4.5656	0.11708	0.90680	8	X5		-0.65338	-0.06078	0.95154

SAS Enterprise Miner Report
Node=Regression
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Regression
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Regression
Model Assessment Scores where TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Regression
Score Distributions where TARGET='WidgBuy'

Node=Regression
Score Distributions

Target Variable=WidgBuy Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.95-1.00	11	100	0	100	0
0.00-0.05	0	0	100	100	100

SAS Enterprise Miner Report

Node=File Import (2)
Summary

Node id = FIMPORT2
Node label = File Import (2)
Meta path = FIMPORT2
Notes =

Node=File Import (2)
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	FileImport		GuessRows	500		NameRow	Y	
AccessTable	NoTableName		IFileName	J:\JMMORR01\CIS 445\Project 2\WidgBuyScore.xlsx		Password	NoPassword	
AdvancedAdvisor	N		ImportType	Local	LOCAL	Role	SCORE	TRAIN
Delimiter	,		MaxCols	10000		SkipRows	0	
FileType	xlsx	XLS	MaxRows	1000000		Summarize	N	

Node=File Import (2)
Data Attributes

Attribute	Value	Attribute	Value	Attribute	Value
Data Name	FIMPORT2_DATA	Date Created	29Oct2018:11:59:35	Data Size	66560
Data Type	DATA	Date Modified	29Oct2018:11:59:35	Role	TRAIN
Data Label		Number Rows	9	Segment	
Engine	V9	Number Columns	6	Data Library	EMWS1

Node=File Import (2)
Variables List

Name	Label	Role	Level	Type	Length	Format	Creator
Age	Age	INPUT	INTERVAL	N	8	BEST.	
Income	Income	INPUT	NOMINAL	C	4	$4.	
Residence	Residence	INPUT	NOMINAL	C	3	$3.	
X2	X2	INPUT	INTERVAL	N	8	BEST.	
X4	X4	INPUT	INTERVAL	N	8	BEST.	
X5	X5	INPUT	INTERVAL	N	8	BEST.	

Node=File Import (2)
Created Variables List

SAS Enterprise Miner Report

**Node=Model Comparison
Summary**

Node id = MdlComp
Node label = Model Comparison
Meta path = FIMPORT => Neural => MdlComp
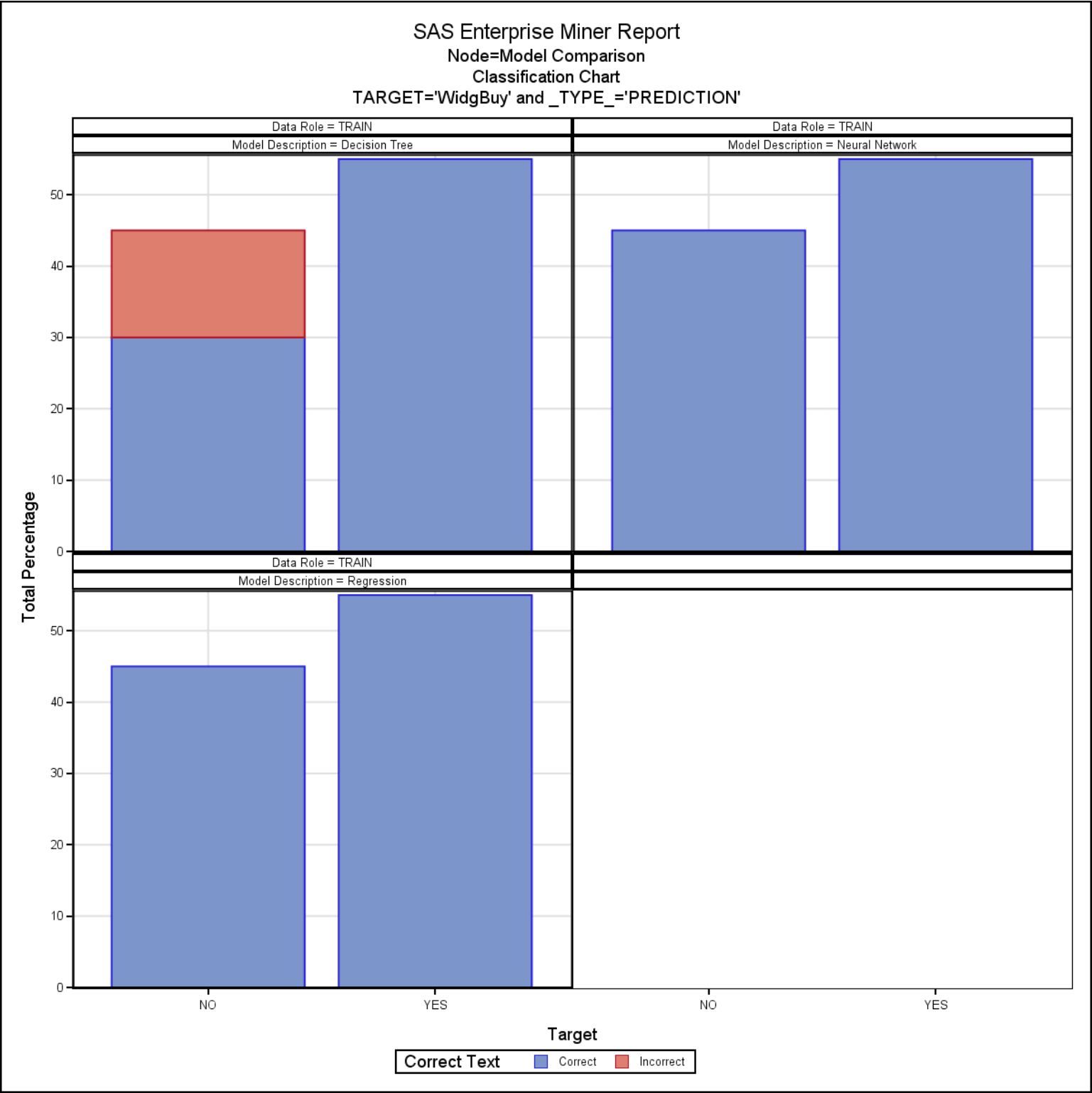Notes =

**Node=Model Comparison
Properties**

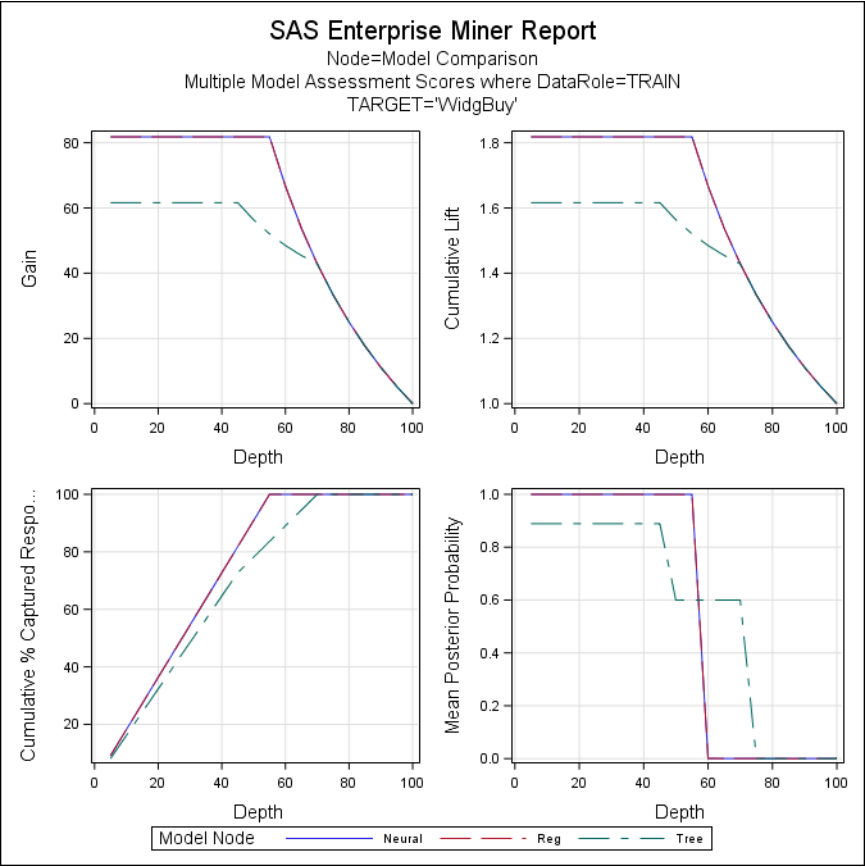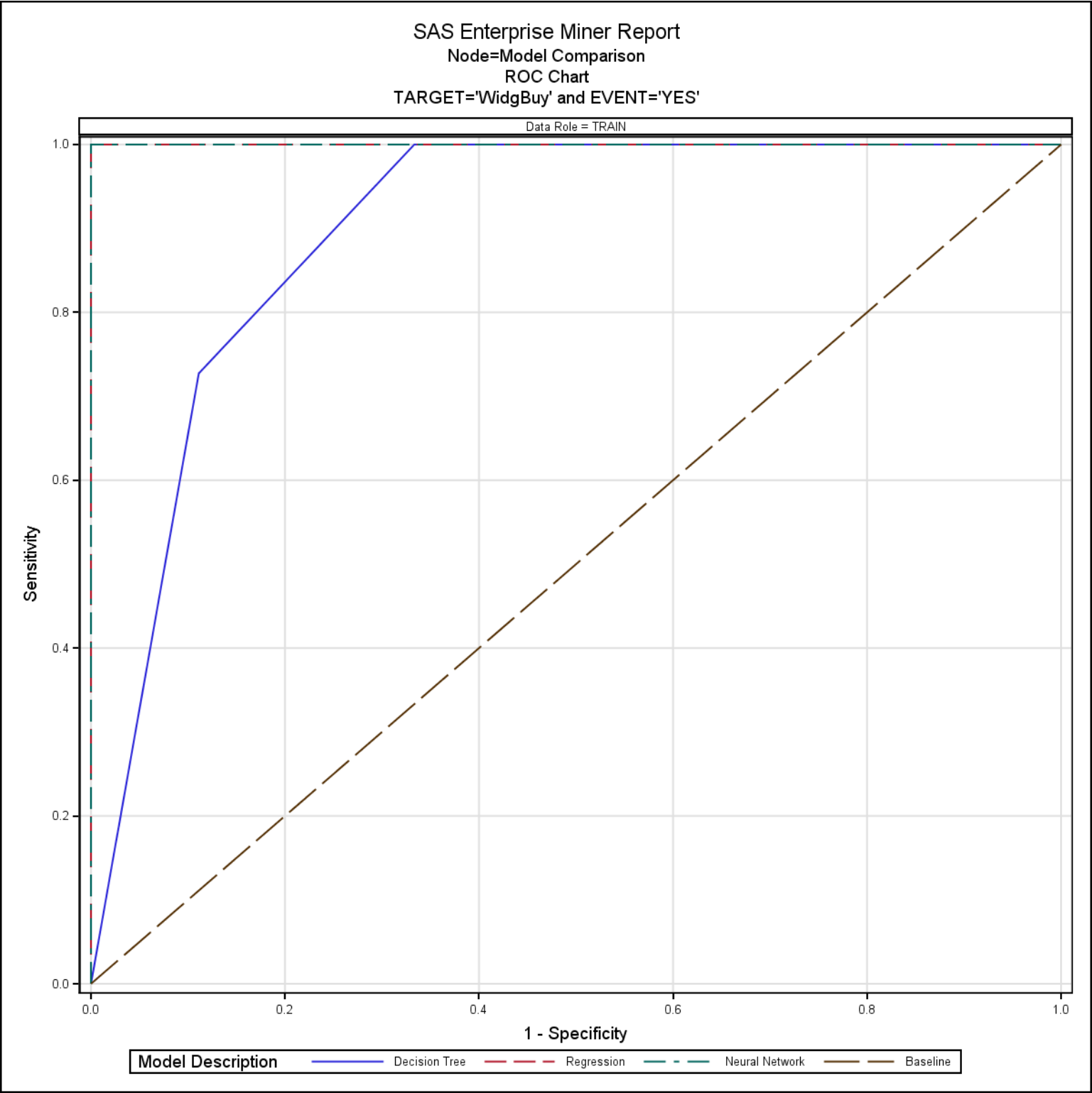| Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	ModelCompare		NormalizeReportingVariables	Y		ScoreDistBin	20	
AssessAllTargetLevels	N		NumberOfReportedLevels	1E-6		SelectionCriteria	DEFAULT	
DecileBin	20		NumberofBins	20		SelectionData	DEFAULT	
HPCriteria	DEFAULT		ProfitEpsilon	1E-6		SelectionDepth	10	
LiftEpsilon	1E-6		RecomputeAssess	N		SelectionTable	TRAIN	TABLE
ModelCriteria	Train: Misclassification Rate		RocChart	Y		StatisticUsed	_MISC_	
ModelDescription	Neural Network		RocEpsilon	0.01		TargetLabel	WidgBuy	
ModelId	Neural		RoiEpsilon	1E-6		TargetName	WidgBuy	

**Node=Model Comparison
Variable Summary**

Role	Level	Frequency Count	Name
TARGET	BINARY	1	WidgBuy

**Node=Model Comparison
Fit Statistics Table**

Selected Model	Predecessor Node	Model Node	Model Description	Target Variable	Target Label	Selection Criterion: Train: Misclassification Rate	Train: Average Squared Error	Train: Misclassification Rate	Train: Kolmogorov-Smirnov Statistic	Train: Roc Index	Train: Gini Coefficient
Y	Neural	Neural	Neural Network	WidgBuy	WidgBuy	0.00	0.00000	0.00	1.000	1.000	1.000
	Reg	Reg	Regression	WidgBuy	WidgBuy	0.00	0.00000	0.00	1.000	1.000	1.000
	Tree	Tree	Decision Tree	WidgBuy	WidgBuy	0.15	0.10444	0.15	0.667	0.899	0.798

SAS Enterprise Miner Report
Node=Model Comparison
Classification Chart
TARGET='WidgBuy' and _TYPE_='PREDICTION'

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SAS Enterprise Miner Report
Node=Model Comparison
Multiple Model Assessment Scores where DataRole=TRAIN
TARGET='WidgBuy'

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SAS Enterprise Miner Report
Node=Model Comparison
Multiple Model Assessment Scores where DataRole=TRAIN
TARGET='WidgBuy'

SAS Enterprise Miner Report
Node=Model Comparison
ROC Chart
TARGET='WidgBuy' and EVENT='YES'

SAS Enterprise Miner Report

Node=Score
Summary

Node id = Score
Node label = Score
Meta path = FIMPORT => Neural => MdlComp => Score
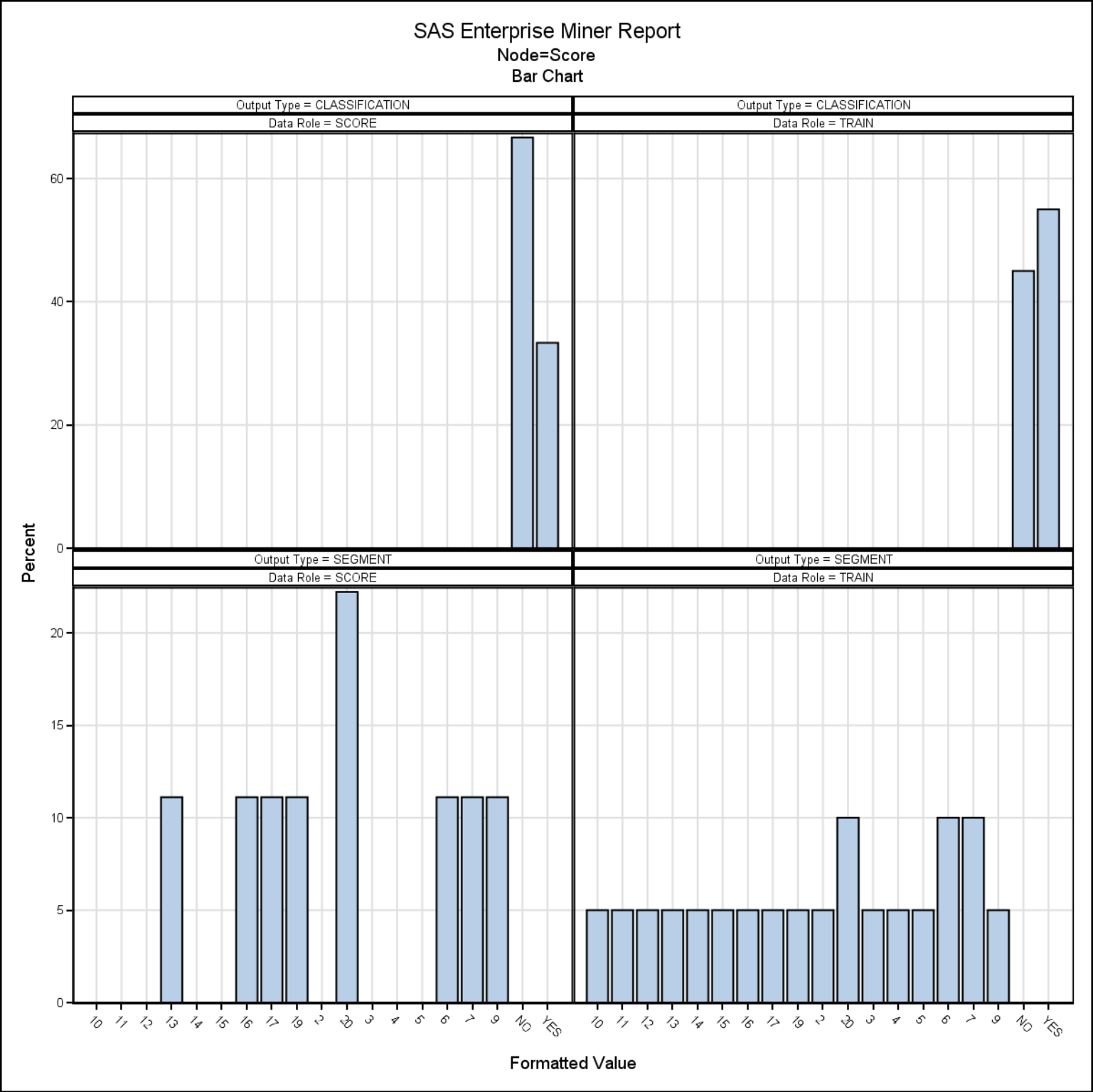Notes =

Node=Score
Properties

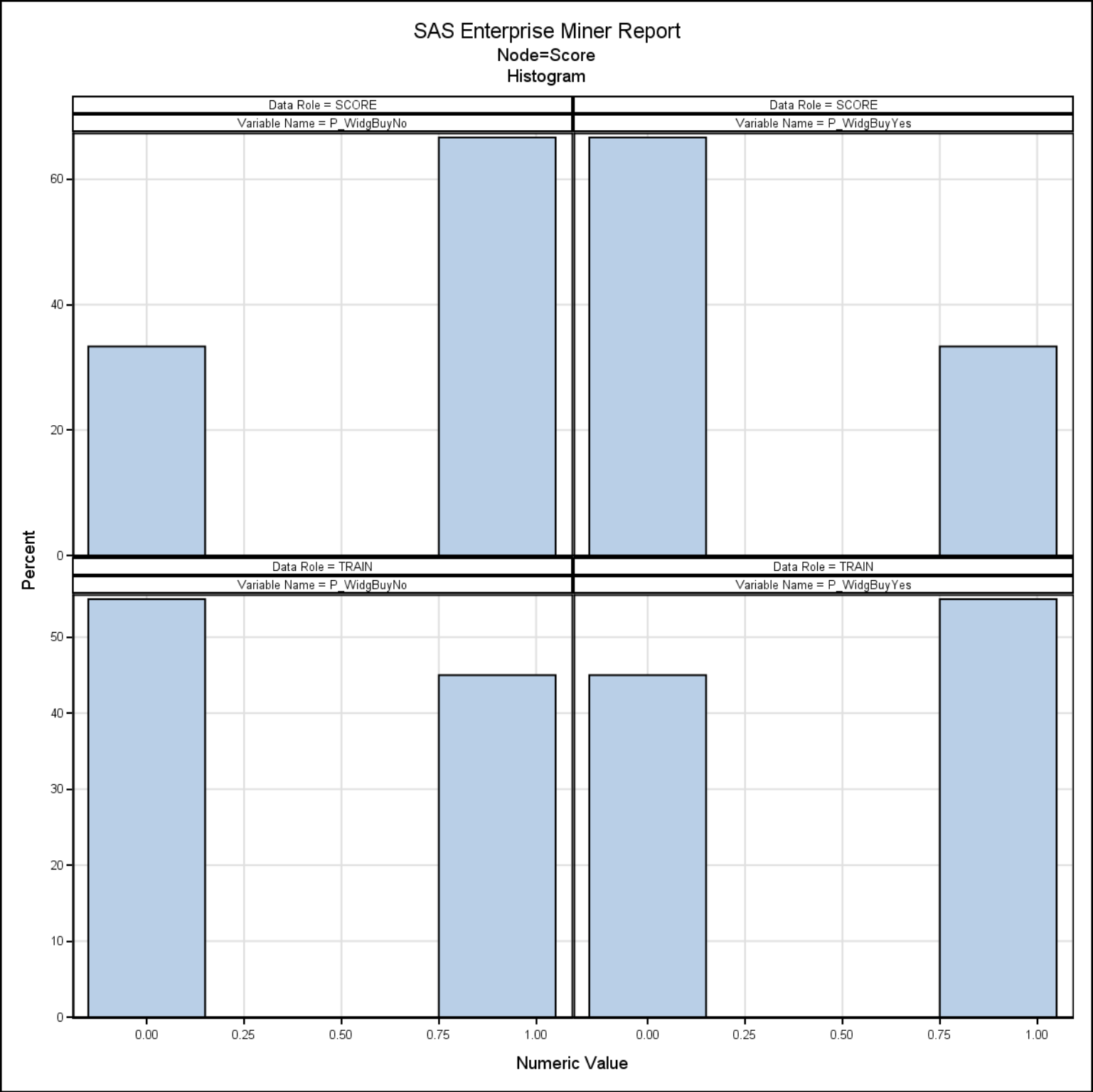| Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Score		HideInput	Y		JScore	N	
CScore	N		HideOther	Y		OptimizedCode	Y	
FixedOutputNames	Y		HidePredict	Y		OutputType	VIEW	
GraphReports	Y		HideRejected	Y		PackageName	DEFAULT	
HideAssess	Y		HideResidual	Y		PreferenceName		
HideClassification	Y		HideTarget	Y		ScoreTest	N	
HideFreq	Y		HideVariables	N		ScoreValidate	N	

Node=Score
Variable Summary

Role	Level	Frequency Count	Name
TARGET	BINARY	1	WidgBuy
SEGMENT	NOMINAL	1	b_WidgBuy

Node=Score
Output Variables

Variable Name	Creator	Variable Label	Function	Type
EM_CLASSIFICATION	Score	Prediction for WidgBuy	CLASSIFICATION	C
EM_EVENTPROBABILITY	Score	Probability for level YES of WidgBuy	PREDICT	N
EM_PROBABILITY	Score	Probability of Classification	PREDICT	N
EM_SEGMENT	Score	Segment	TRANSFORM	N
I_WidgBuy	Neural	Into: WidgBuy	CLASSIFICATION	C
P_WidgBuyNo	Neural	Predicted: WidgBuy=No	PREDICT	N
P_WidgBuyYes	Neural	Predicted: WidgBuy=Yes	PREDICT	N
U_WidgBuy	Neural	Unnormalized Into: WidgBuy	CLASSIFICATION	C
WARN	Neural	Warnings	ASSESS	C
b_WidgBuy	MdlComp		TRANSFORM	N

SAS Enterprise Miner Report
Node=Score
Bar Chart

SAS Enterprise Miner Report
Node=Score
Histogram

SAS Enterprise Miner Report

Node=SAS Code
Summary

Node id = EMCODE
Node label = SAS Code
Meta path = FIMPORT => Neural => MdlComp => Score => EMCODE
Notes =

Node=SAS Code
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	SASCode		PublishCode	PUBLISH		ToolType	UTILITY	
MetaAdvisor	BASIC		ScoreCodeFormat	DATASTEP		UsePriors	Y	

Node=SAS Code
Variable Summary

Role	Level	Frequency Count	Name
INPUT	INTERVAL	4	Age X2 X4 X5
INPUT	NOMINAL	2	Income Residence

End of Report