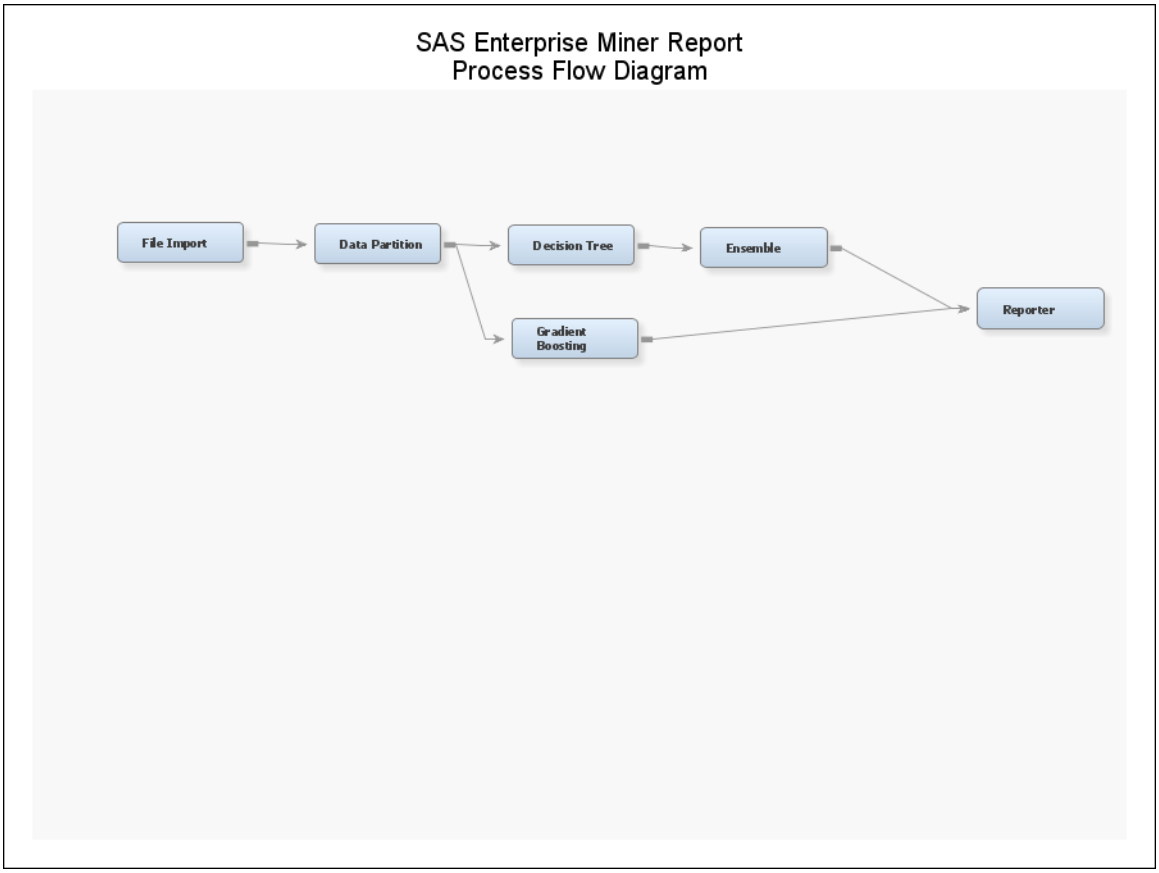
SAS Enterprise Miner Report

User = mac
Date = 14:38:14 January 08
Project = zzt
Diagram = aa

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

Format = PDF
Style = LISTING



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	E:\um sem2\wqd7005\case study\shopping_behavior(4).csv		Password	NoPassword	
AdvancedAdvisor	N		ImportType	Local	LOCAL	Role	TRAIN	
Delimiter	,		MaxCols	10000		SkipRows	0	
FileType	csv	XLS	MaxRows	1000000		Summarize	N	

Node=File Import
Data Attributes

Attribute	Value	Attribute	Value	Attribute	Value
Data Name	FIMPORT_DATA	Date Created	07Jan2023:17:30:26	Data Size	525312
Data Type	DATA	Date Modified	07Jan2023:17:30:26	Role	TRAIN
Data Label		Number Rows	3866	Segment	
Engine	V9	Number Columns	14	Data Library	EMWS1

Node=File Import
Variables List

Name	Label	Role	Level	Type	Length	Format	Creator
Age		INPUT	INTERVAL	N	8	BEST12.0	
Category		INPUT	NOMINAL	C	11	$11.	
Churn		TARGET	BINARY	N	8	BEST12.0	
Customer_ID	Customer ID	ID	NOMINAL	N	8	BEST12.0	
Discount_Applied	Discount Applied	INPUT	NOMINAL	C	3	$3.	
Gender		INPUT	NOMINAL	C	4	$4.	
Location		INPUT	NOMINAL	C	14	$14.	
Payment_Method	Payment Method	INPUT	NOMINAL	C	13	$13.	
Previous_Purchases	Previous Purchases	INPUT	NOMINAL	N	8	BEST12.0	
Purchase_Amount__USD_	Purchase Amount (USD)	INPUT	INTERVAL	N	8	BEST12.0	
Review_Rating	Review Rating	INPUT	INTERVAL	N	8	BEST12.0	
Season		INPUT	NOMINAL	C	6	$6.	
Shipping_Type	Shipping Type	INPUT	NOMINAL	C	14	$14.	
Subscription_Status	Subscription Status	INPUT	NOMINAL	C	3	$3.	

Node=File Import
Created Variables List

SAS Enterprise Miner Report

Node=Data Partition
Summary

Node id = Part
Node label = Data Partition
Meta path = FIMPORT => Part
Notes =

Node=Data Partition
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Partition		Method	DEFAULT		TestPct	0	30
ClassDistribution	Y		OutputType	DATA		TrainPct	60	40
IntervalDistribution	Y		RandomSeed	12345		ValidatePct	40	30

Node=Data Partition
Variable Summary

Role	Level	Frequency Count	Name
TARGET	BINARY	1	Churn
INPUT	INTERVAL	3	Age Purchase_Amount__USD_ Review_Rating
INPUT	NOMINAL	9	Category Discount_Applied Gender Location Payment_Method Previous_Purchases Season Shipping_Type Subscription_Status
ID	NOMINAL	1	Customer_ID

SAS Enterprise Miner Report

Node=Decision Tree
Summary

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

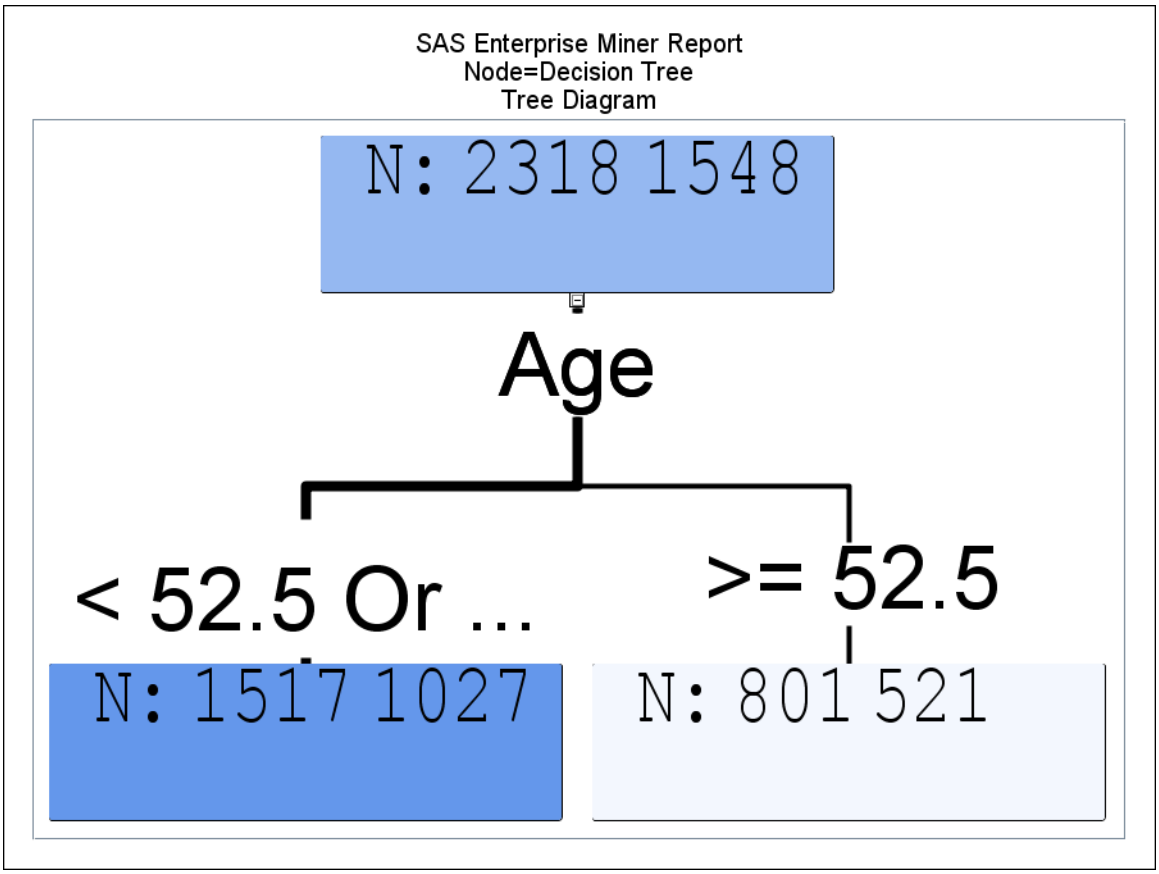
Node=Decision Tree
Variable Summary

Role	Level	Frequency Count	Name
TARGET	BINARY	1	Churn
INPUT	INTERVAL	3	Age Purchase_Amount__USD_ Review_Rating
INPUT	NOMINAL	9	Category Discount_Applied Gender Location Payment_Method Previous_Purchases Season Shipping_Type Subscription_Status
ID	INTERVAL	1	_dataobs_

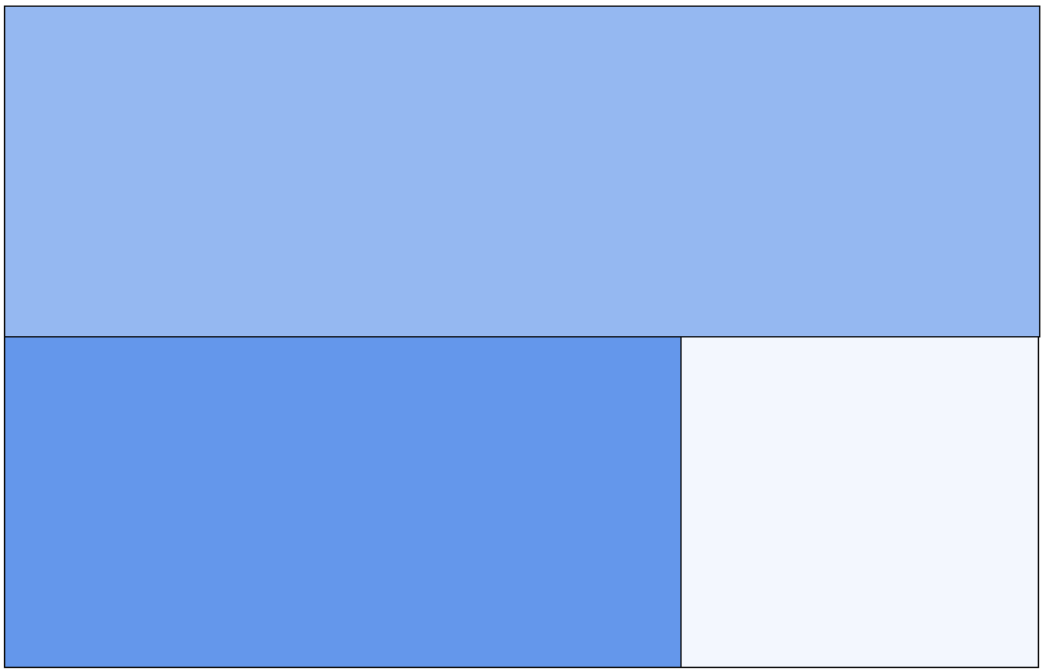
Node=Decision Tree
Model Fit Statistics

Target=Churn Target Label=' '

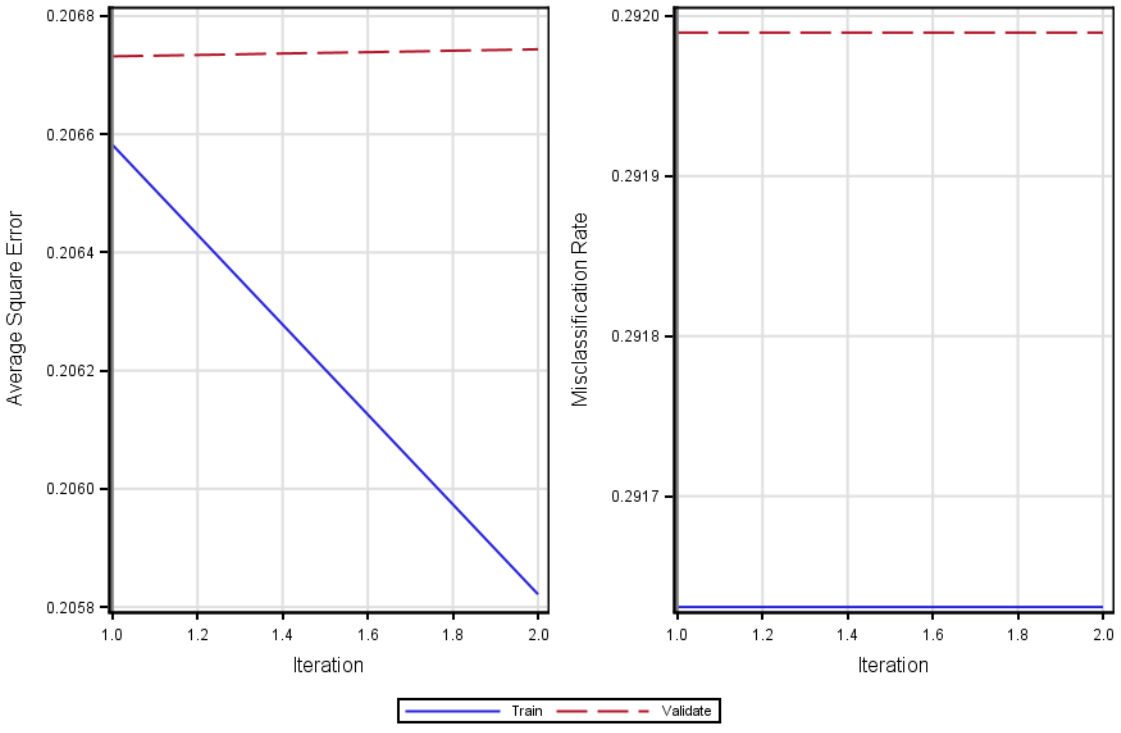
Label of Statistic	Train	Validation	Test
Sum of Frequencies	2318.00	1548.00	.
Misclassification Rate	0.29	0.29	.
Maximum Absolute Error	0.73	0.73	.
Sum of Squared Errors	954.19	640.08	.
Average Squared Error	0.21	0.21	.
Root Average Squared Error	0.45	0.45	.
Divisor for ASE	4636.00	3096.00	.
Total Degrees of Freedom	2318.00	.	.

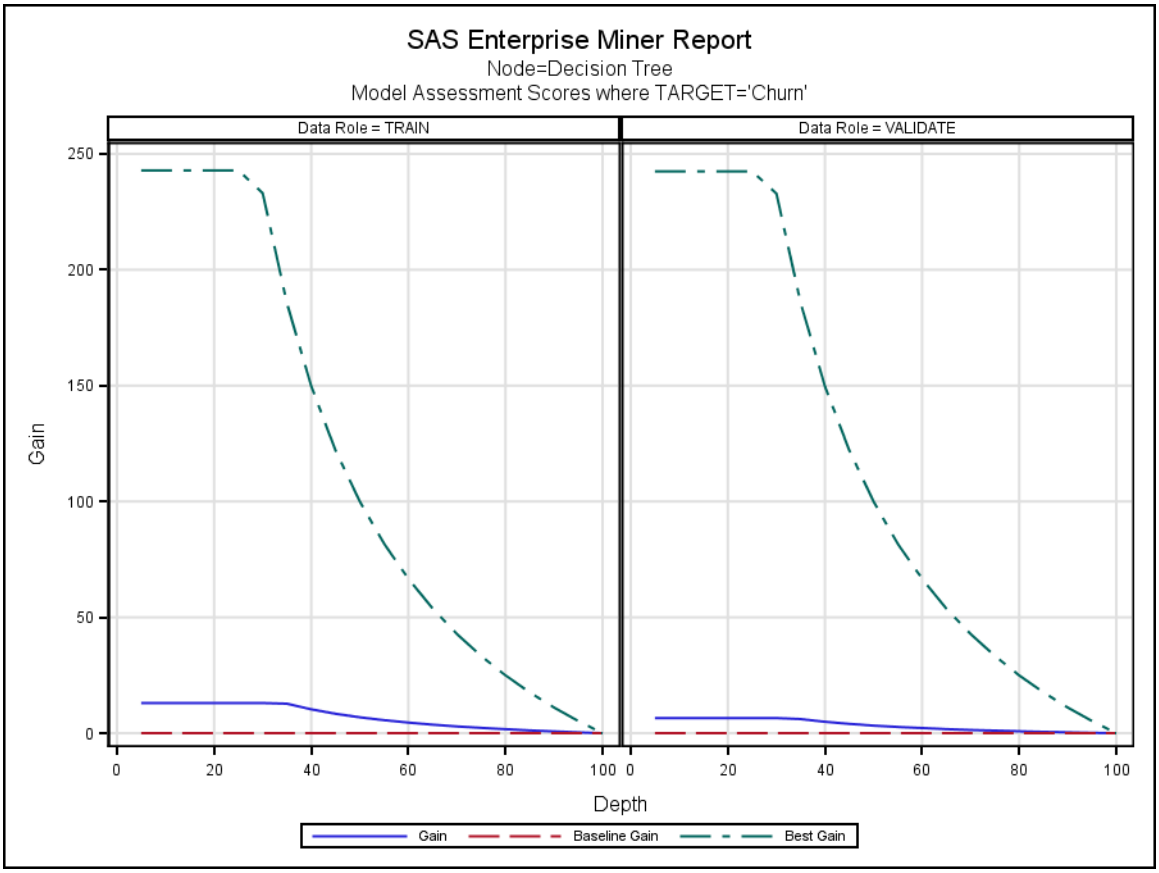


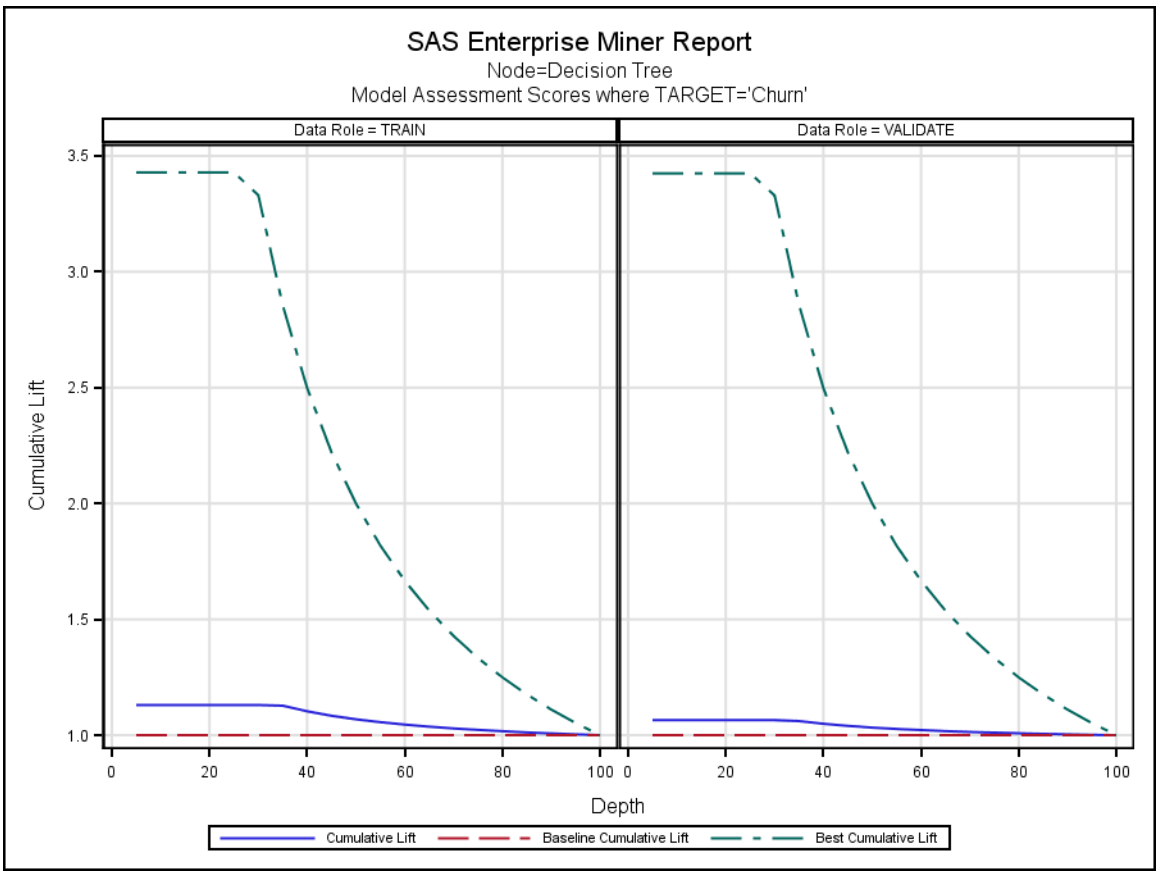
SAS Enterprise Miner Report
Node=Decision Tree
Treemap

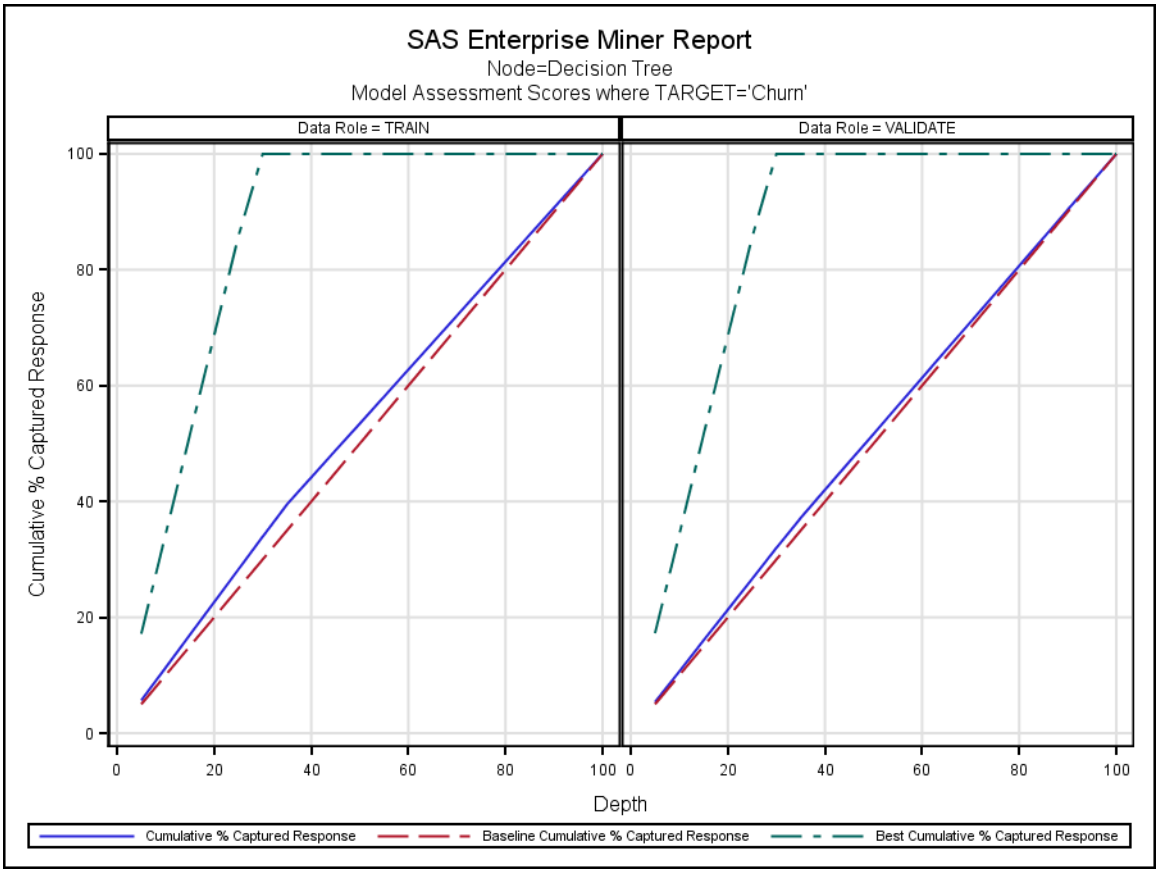


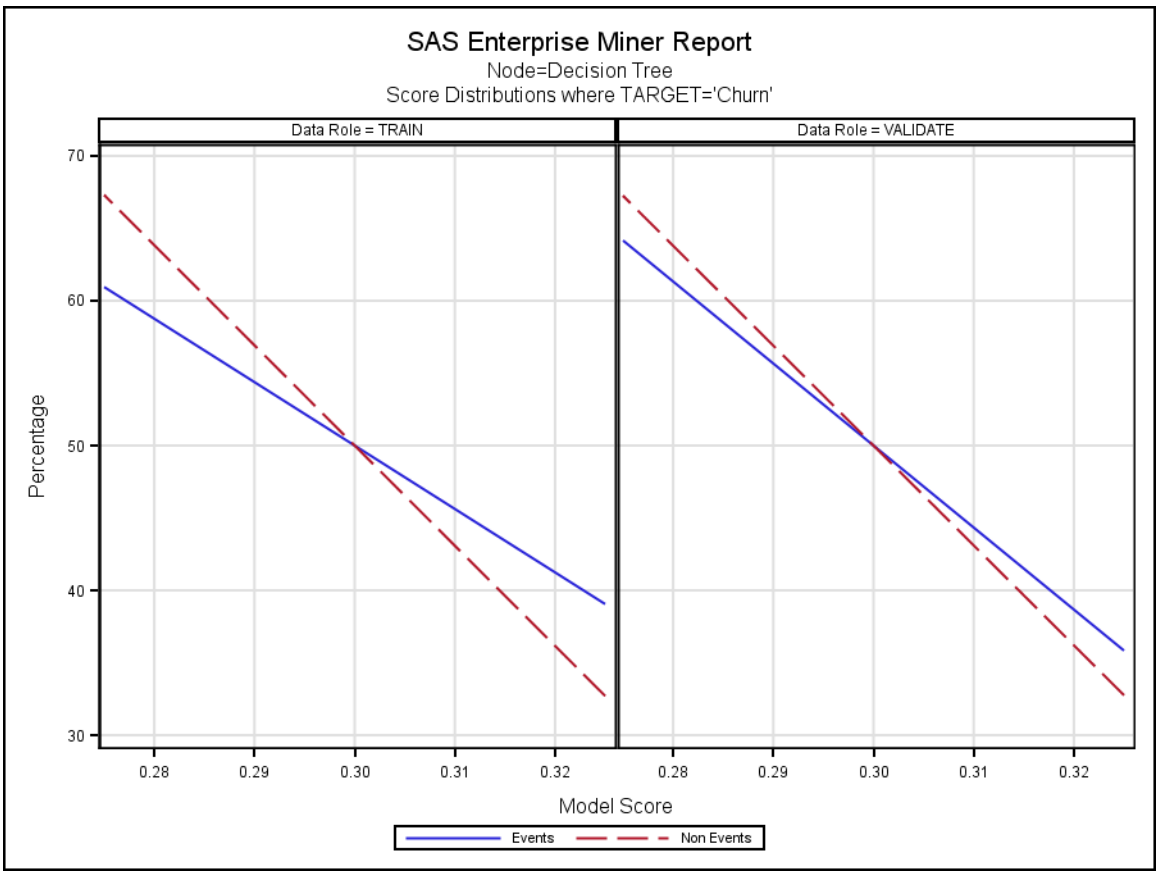
SAS Enterprise Miner Report
Node=Decision Tree
Model Iteration Plots



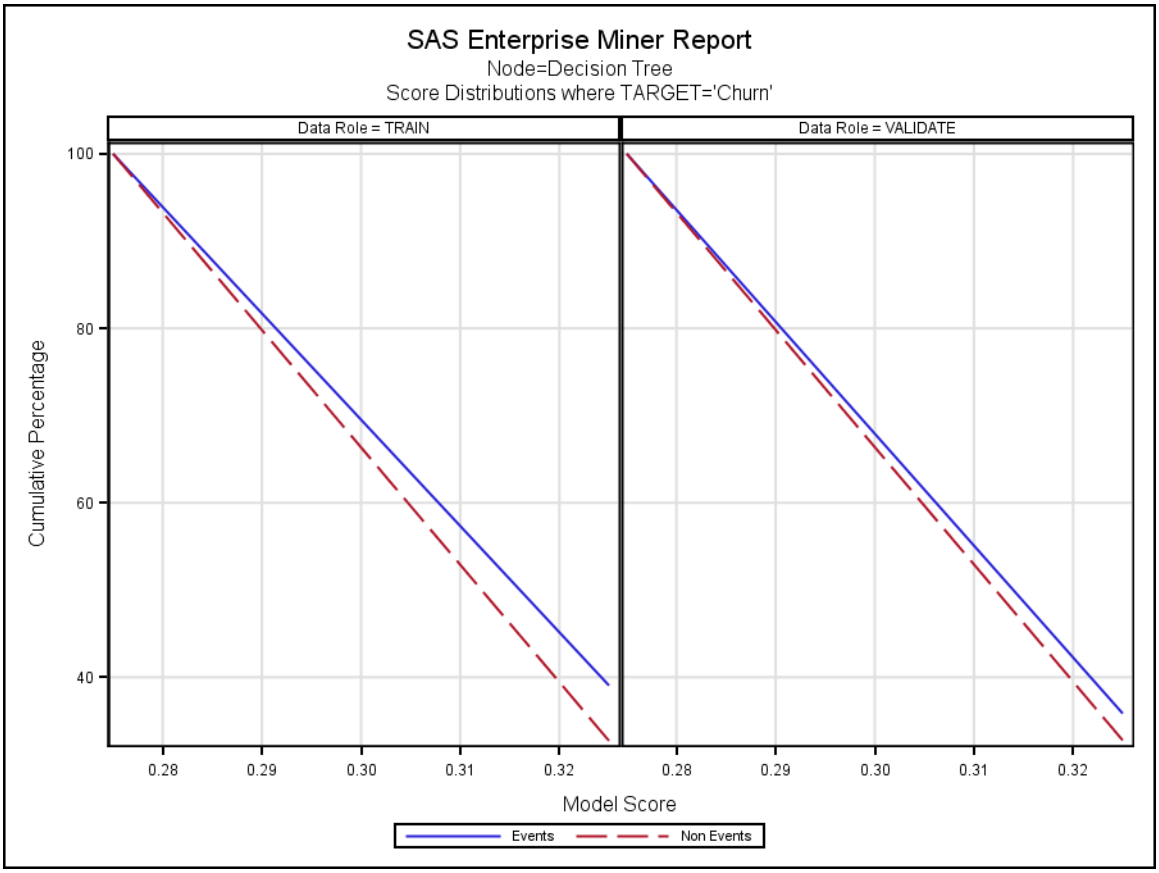

SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Gain
250
200
150
100
50
0
0
20
40
60
80
100
Depth
Gain
Baseline Gain
Best Gain


SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative Lift
3.5
3.0
2.5
2.0
1.5
1.0
0
20
40
60
80
100
Depth
Cumulative Lift
Baseline Cumulative Lift
Best Cumulative Lift


SAS Enterprise Miner Report
Node=Decision Tree
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative % Captured Response
Depth
Cumulative % Captured Response
Baseline Cumulative % Captured Response
Best Cumulative % Captured Response


SAS Enterprise Miner Report
Node=Decision Tree
Score Distributions where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Percentage
Model Score
Events
Non Events

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



Node=Decision Tree
Score Distributions

Target Variable=Churn Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.30-0.35	264	39.0533	32.7040	39.053	32.704
0.25-0.30	412	60.9467	67.2960	100.000	100.000

Target Variable=Churn Data Role=VALIDATE

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.30-0.35	162	35.8407	32.7555	35.841	32.755
0.25-0.30	290	64.1593	67.2445	100.000	100.000

SAS Enterprise Miner Report

Node=Gradient Boosting
Summary

Node id = Boost
Node label = Gradient Boosting
Meta path = FIMPORT => Part => Boost
Notes =

Node=Gradient Boosting
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Boost		MaxBranch	2		Performance	DISK	
AssessMeasure	PROFIT		MaxDepth	2		Precision	0	
CategoricalBins	30		Measure	PROFIT		ReUseVar	1	
CreateHStat	N		MinCatSize	5		Seed	12345	
Exhaustive	5000		Missing	USEINSEARCH		Shrinkage	0.1	
Huber	NO		NSurrs	0		SplitSize	.	
IntervalBins	100		NodeSize	20000		SubSeries	BEST	
IterationNum	1		NumPairImp	0		ToolType	MODEL	
Iterations	50		NumSingleImp	5		TrainProportion	60	
LeafFraction	0.1		ObsImportance	N		VarSelection	Y	

Node=Gradient Boosting
Variable Summary

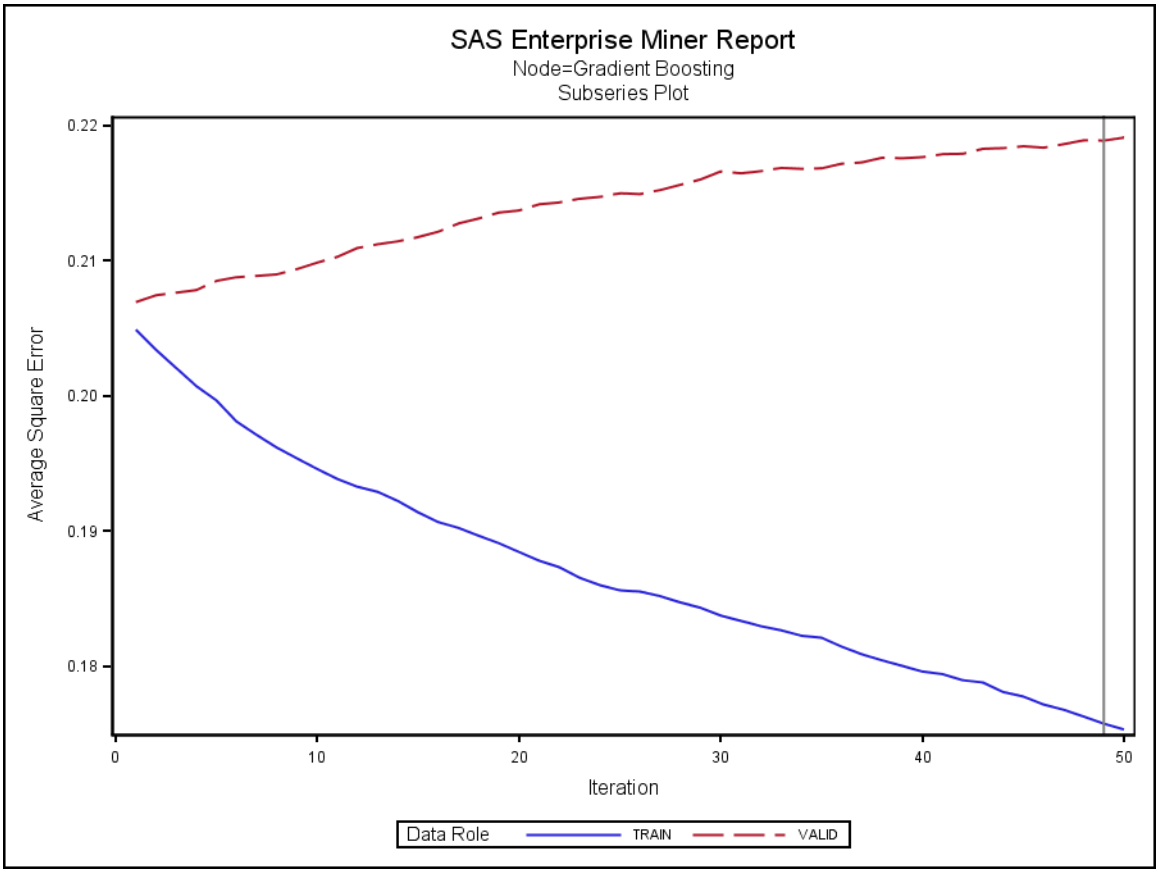
Role	Level	Frequency Count	Name
TARGET	BINARY	1	Churn
INPUT	INTERVAL	3	Age Purchase_Amount__USD_ Review_Rating
INPUT	NOMINAL	9	Category Discount_Applied Gender Location Payment_Method Previous_Purchases Season Shipping_Type Subscription_Status
ID	INTERVAL	1	_dataobs_
ID	NOMINAL	1	Customer_ID

Node=Gradient Boosting
Model Fit Statistics

Target=Churn Target Label=' '

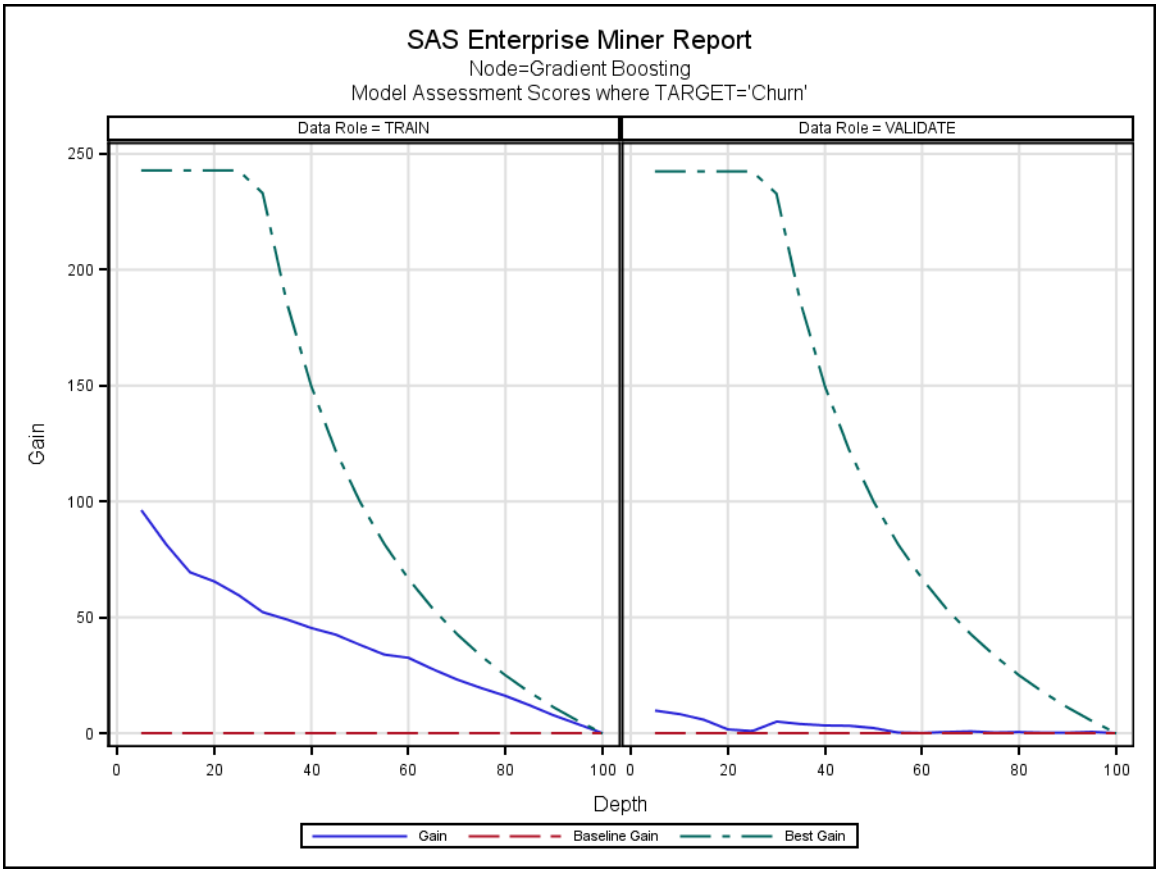
Label of Statistic	Train	Validation	Test
Sum of Frequencies	2318.00	1548.00	.
Sum of Case Weights Times Freq	4636.00	3096.00	.
Misclassification Rate	0.29	0.29	.
Maximum Absolute Error	0.84	0.85	.
Sum of Squared Errors	896.02	653.10	.
Average Squared Error	0.19	0.21	.
Root Average Squared Error	0.44	0.46	.
Divisor for ASE	4636.00	3096.00	.
Total Degrees of Freedom	2318.00	.	.

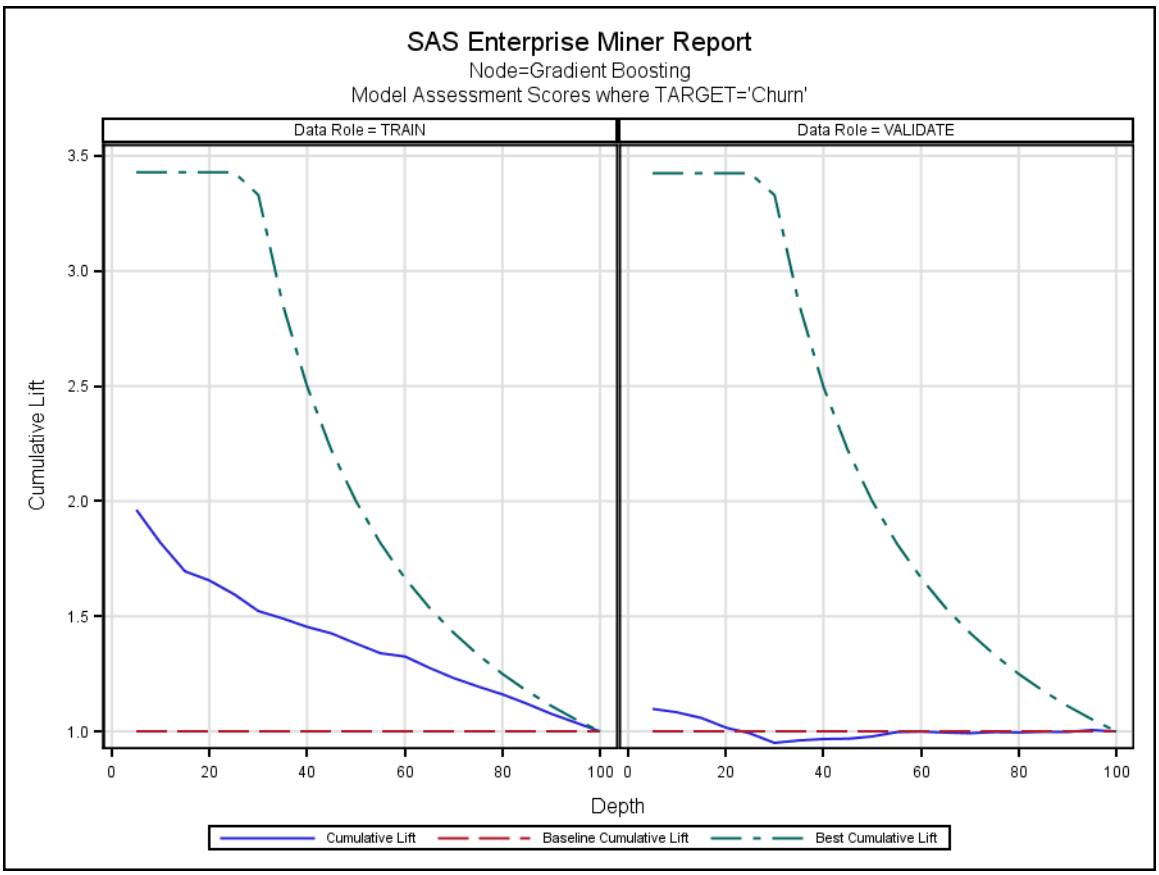
SAS Enterprise Miner Report
Node=Gradient Boosting
Subseries Plot

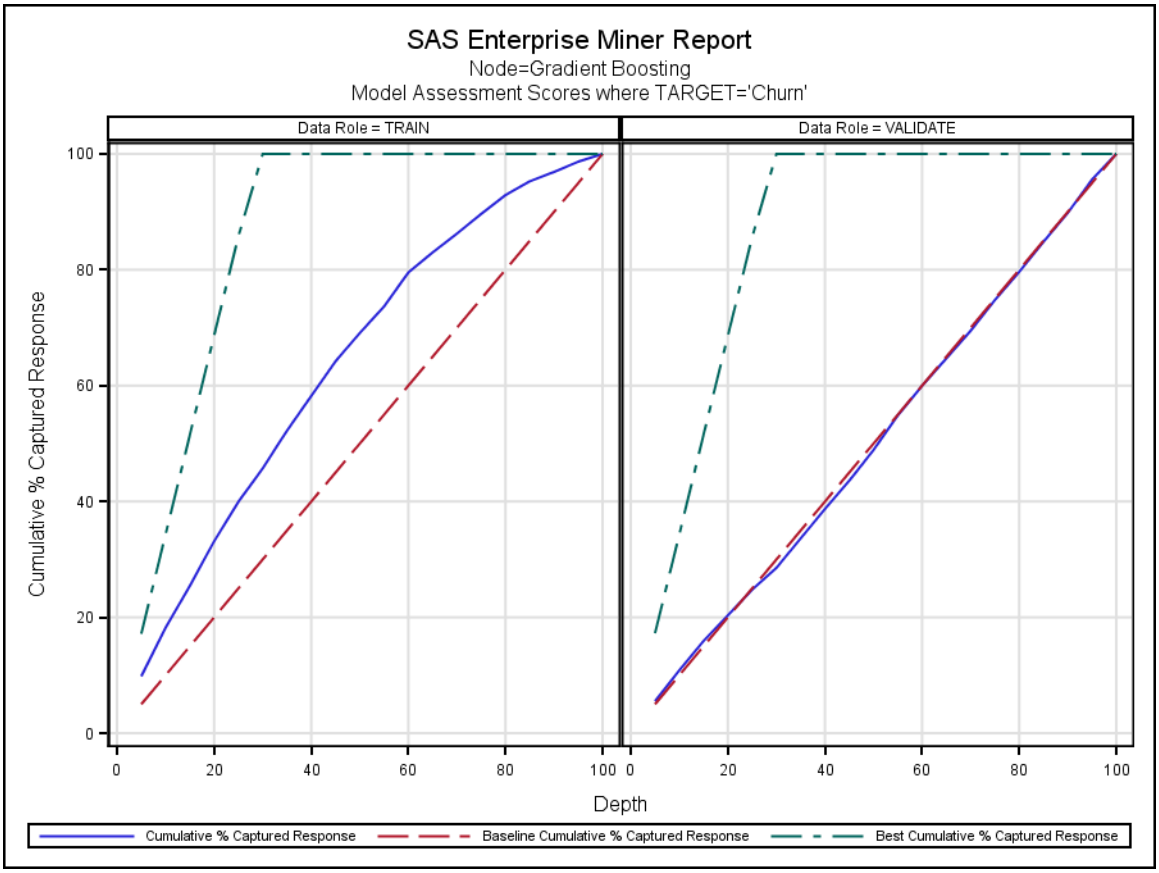


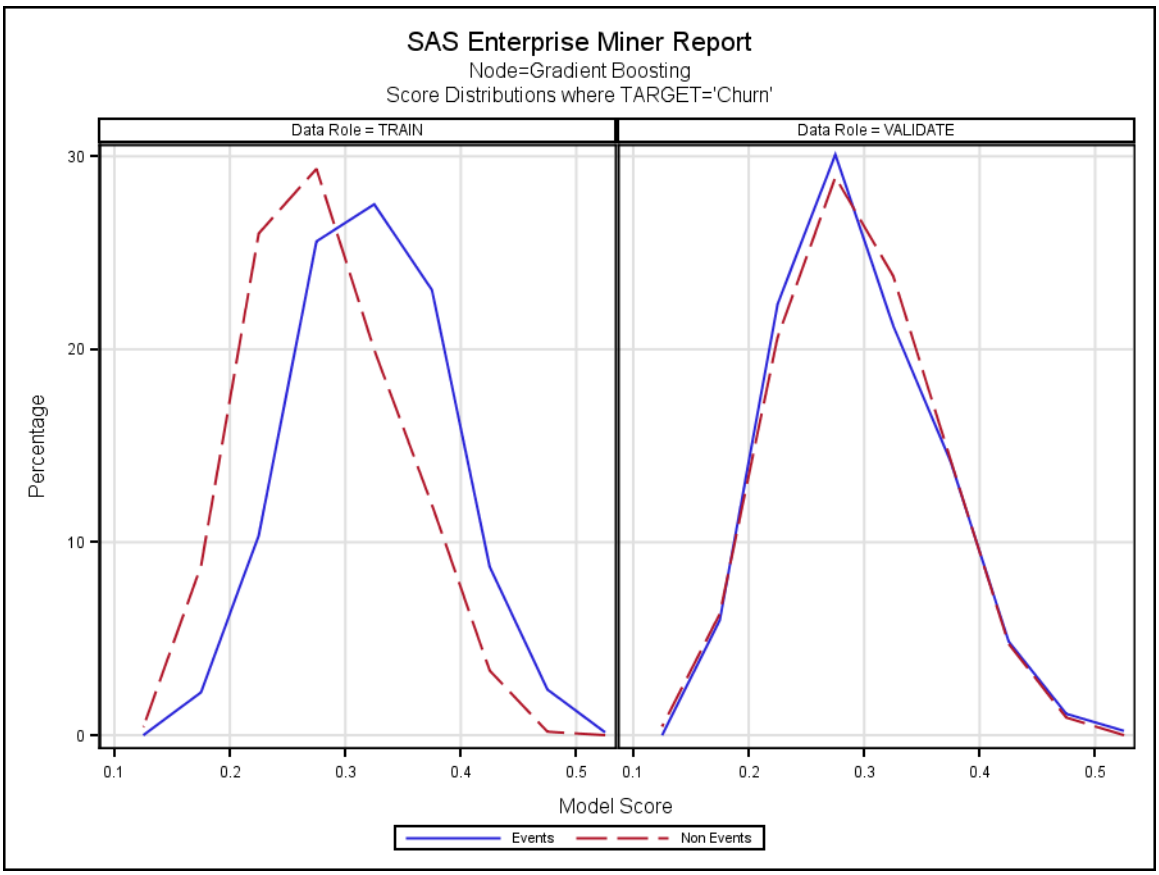
Node=Gradient Boosting
Variable Importance

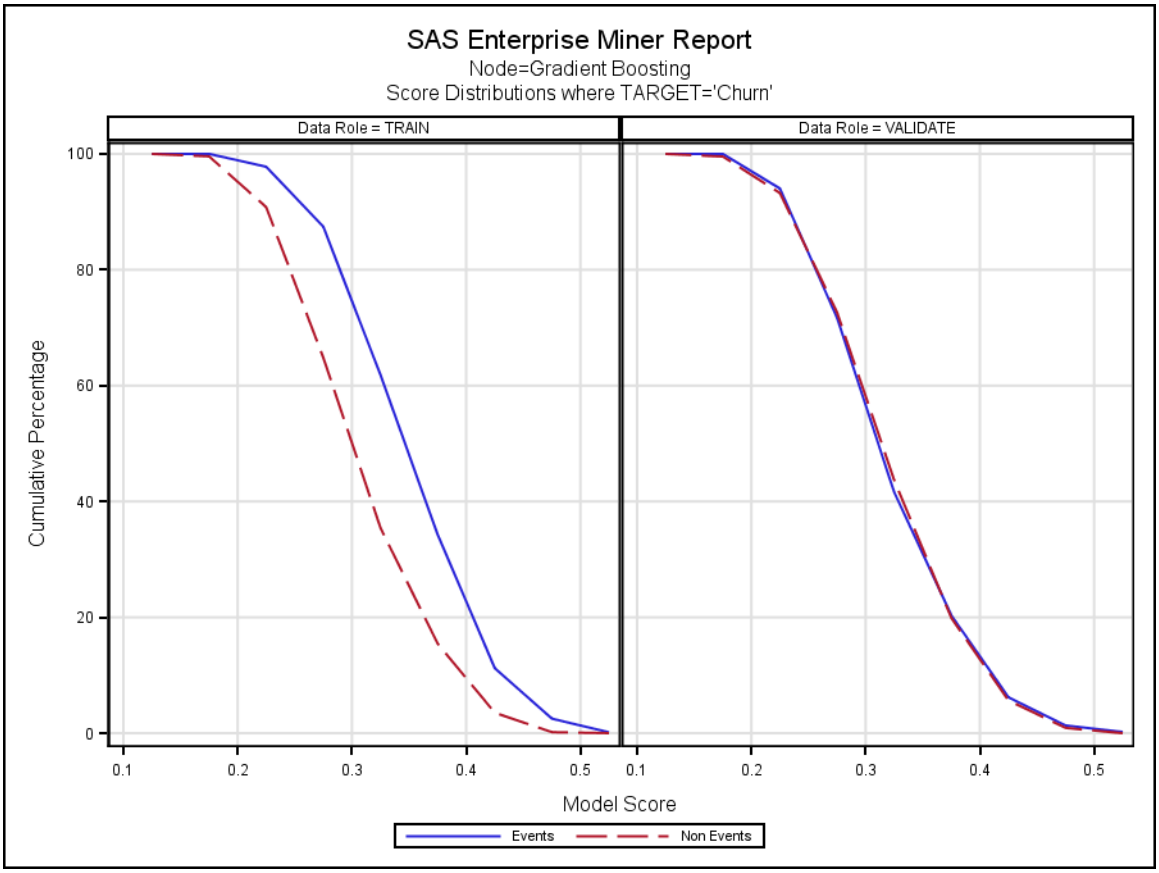
Variable Name	Label	Number of Splitting Rules	Importance	Validation Importance	Ratio of Validation to Training Importance
Previous_Purchases	Previous Purchases	18	1.00000	0	0
Location		18	0.99665	0	0
Age		0	0.00000	0	.
Gender		0	0.00000	0	.
Review_Rating	Review Rating	0	0.00000	0	.
Category		0	0.00000	0	.
Discount_Applied	Discount Applied	0	0.00000	0	.
Purchase_Amount__USD_	Purchase Amount (USD)	0	0.00000	0	.
Season		0	0.00000	0	.
Payment_Method	Payment Method	0	0.00000	0	.
Subscription_Status	Subscription Status	0	0.00000	0	.
Shipping_Type	Shipping Type	0	0.00000	0	.


SAS Enterprise Miner Report
Node=Gradient Boosting
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Gain
250
200
150
100
50
0
0
20
40
60
80
100
Depth
Gain
Baseline Gain
Best Gain


SAS Enterprise Miner Report
Node=Gradient Boosting
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative Lift
3.5
3.0
2.5
2.0
1.5
1.0
0
20
40
60
80
100
Depth
Cumulative Lift
Baseline Cumulative Lift
Best Cumulative Lift


SAS Enterprise Miner Report
Node=Gradient Boosting
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative % Captured Response
Depth
Cumulative % Captured Response
Baseline Cumulative % Captured Response
Best Cumulative % Captured Response


SAS Enterprise Miner Report
Node=Gradient Boosting
Score Distributions where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Percentage
Model Score
Events
Non Events



Node=Gradient Boosting
Score Distributions

Target Variable=Churn Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.50-0.55	1	0.1479	0.0000	0.148	0.000
0.45-0.50	16	2.3669	0.1827	2.515	0.183
0.40-0.45	59	8.7278	3.3496	11.243	3.532
0.35-0.40	156	23.0769	11.9367	34.320	15.469
0.30-0.35	186	27.5148	19.9756	61.834	35.445
0.25-0.30	173	25.5917	29.3544	87.426	64.799
0.20-0.25	70	10.3550	26.0049	97.781	90.804
0.15-0.20	15	2.2189	8.7698	100.000	99.574
0.10-0.15	0	0.0000	0.4263	100.000	100.000

Target Variable=Churn Data Role=VALIDATE

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.50-0.55	1	0.2212	0.0000	0.221	0.000
0.45-0.50	5	1.1062	0.9124	1.327	0.912
0.40-0.45	22	4.8673	4.7445	6.195	5.657
0.35-0.40	64	14.1593	14.2336	20.354	19.891
0.30-0.35	96	21.2389	23.8139	41.593	43.704
0.25-0.30	136	30.0885	28.9234	71.681	72.628

Target Variable=Churn Data Role=VALIDATE

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.20-0.25	101	22.3451	20.6204	94.027	93.248
0.15-0.20	27	5.9735	6.2956	100.000	99.544
0.10-0.15	0	0.0000	0.4562	100.000	100.000

SAS Enterprise Miner Report

Node=Ensemble
Summary

Node id = Ensmbl
Node label = Ensemble
Meta path = FIMPORT => Part => Tree => Ensmbl
Notes =

Node=Ensemble
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Ensemble		Posterior	AVERAGE		Predicted	AVERAGE	

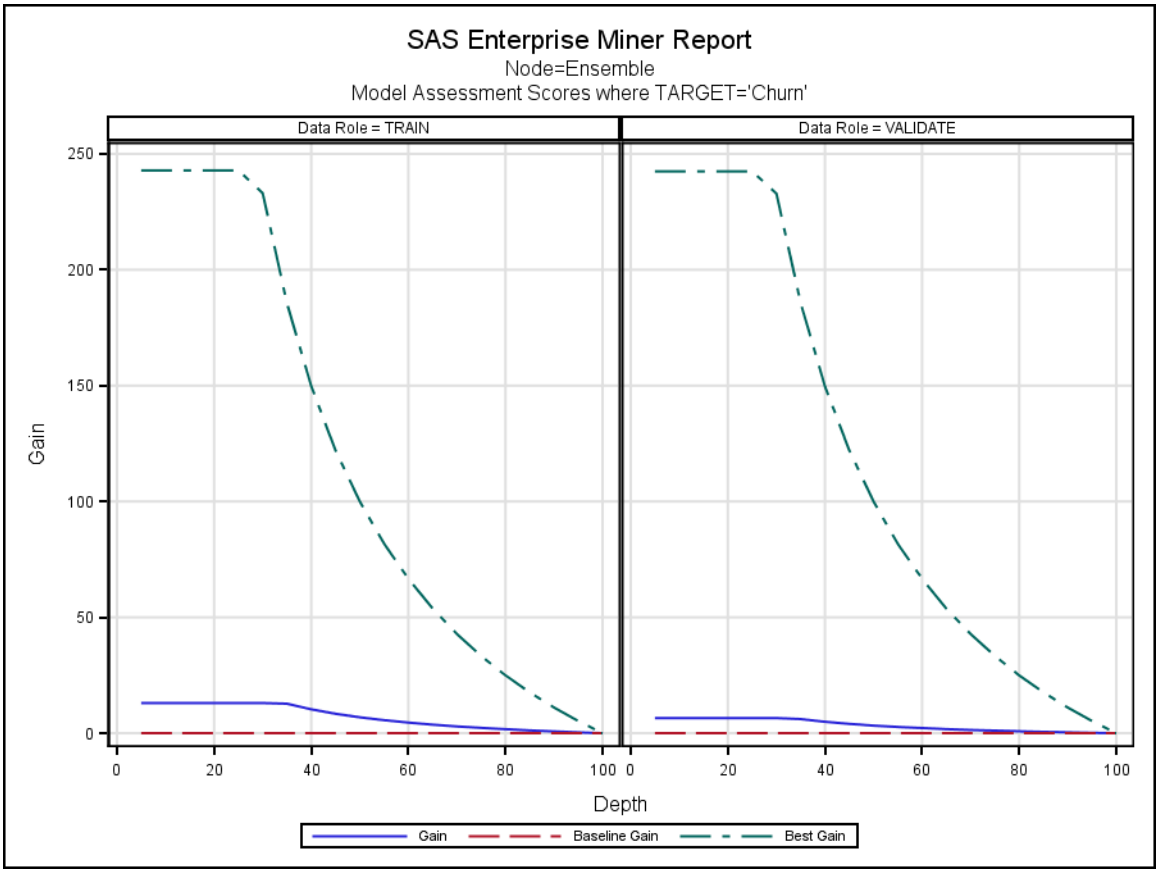
Node=Ensemble
Variable Summary

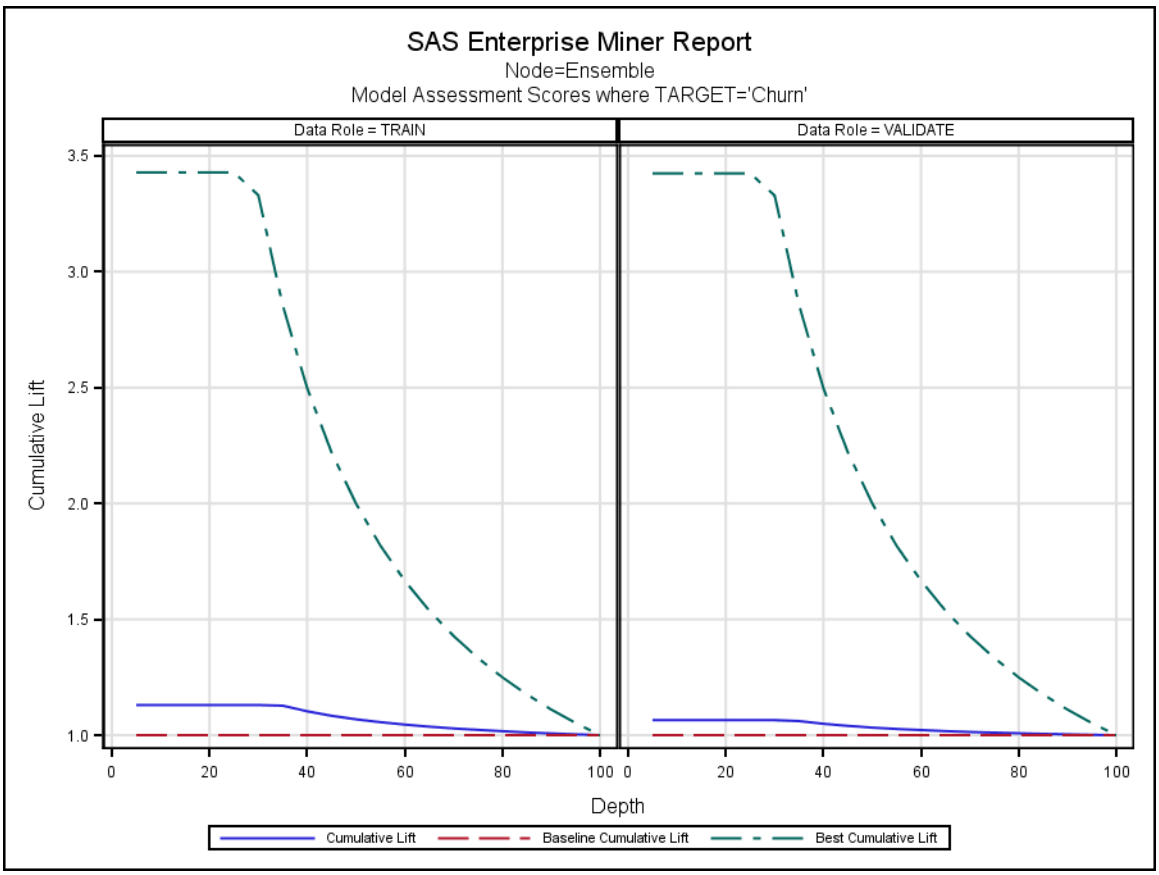
Role	Level	Frequency Count	Name
TARGET	BINARY	1	Churn
INPUT	INTERVAL	1	Age

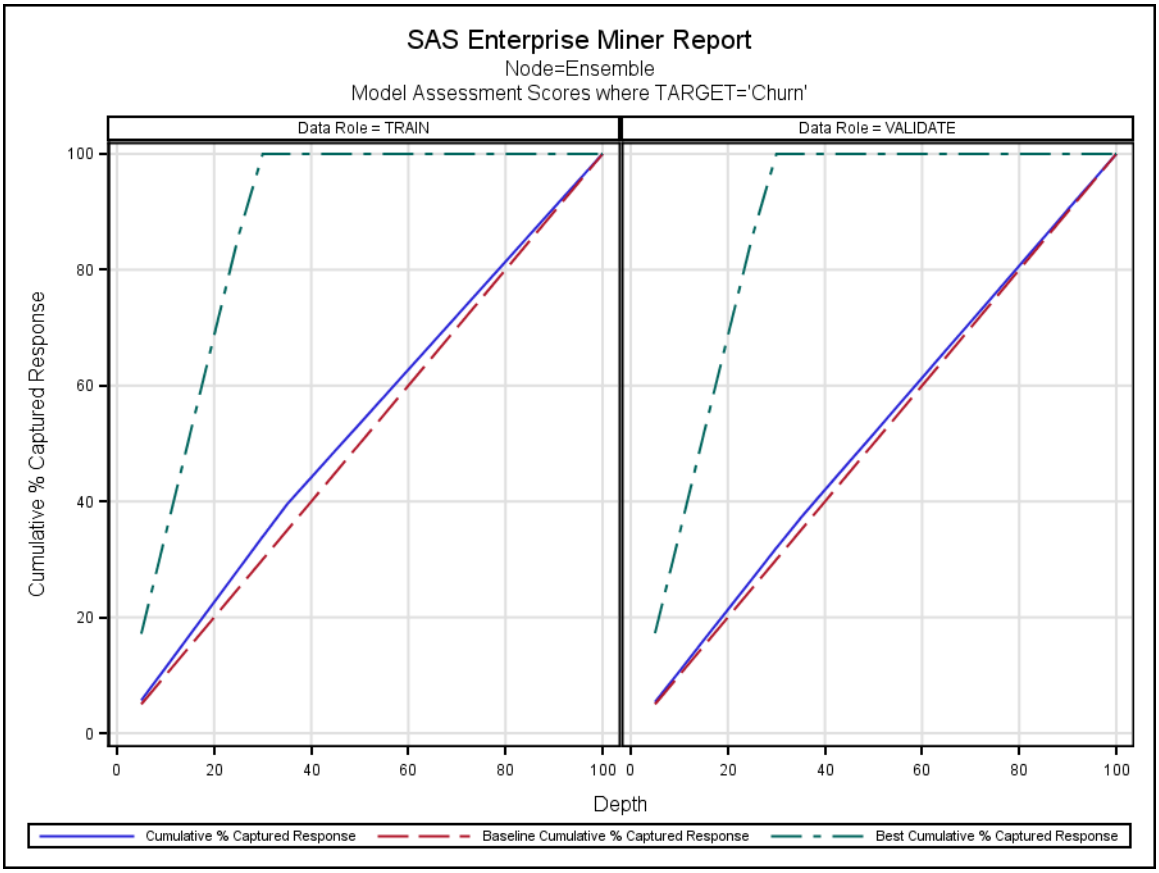
Node=Ensemble
Model Fit Statistics

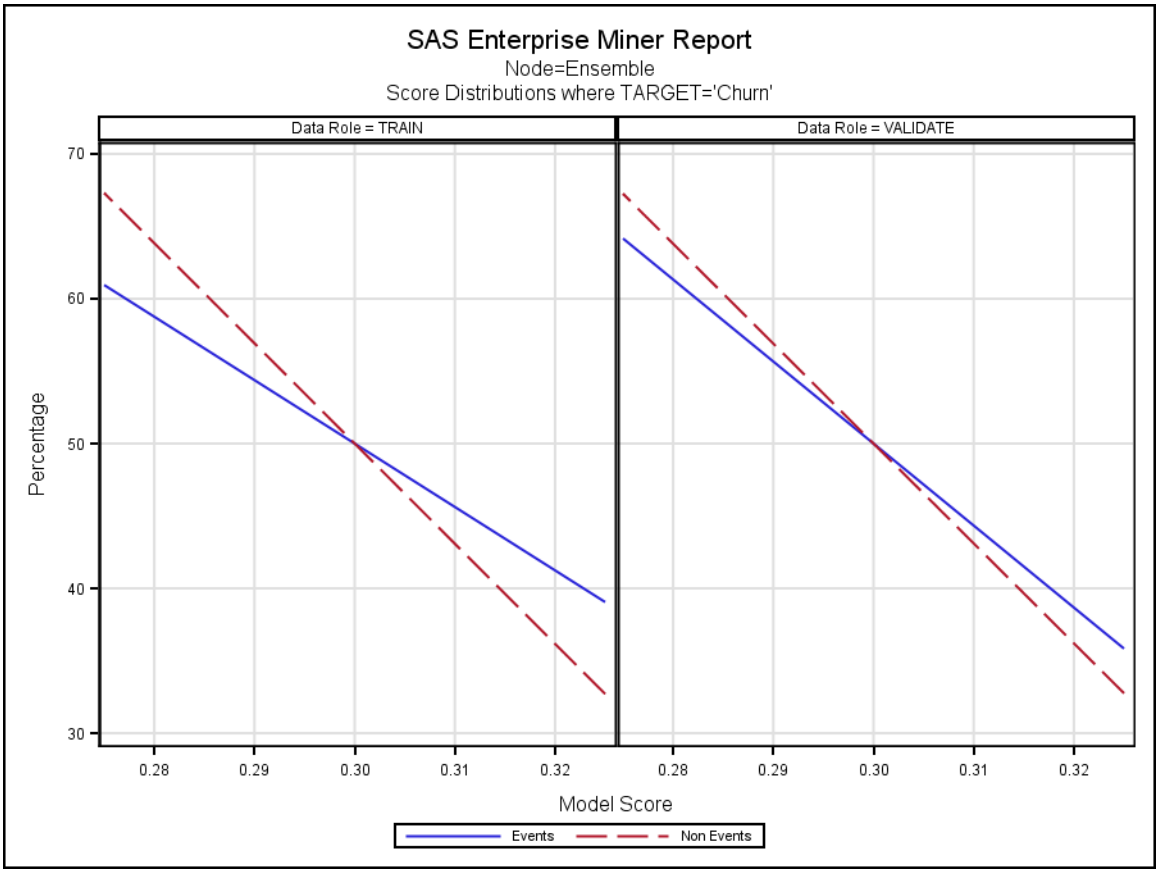
Target=Churn Target Label=' '

Label of Statistic	Train	Validation	Test
Average Squared Error	0.21	0.21	.
Divisor for ASE	4636.00	3096.00	.
Maximum Absolute Error	0.73	0.73	.
Sum of Frequencies	2318.00	1548.00	.
Root Average Squared Error	0.45	0.45	.
Sum of Squared Errors	954.19	640.08	.
Frequency of Classified Cases	2318.00	1548.00	.
Misclassification Rate	0.29	0.29	.
Number of Wrong Classifications	676.00	452.00	.

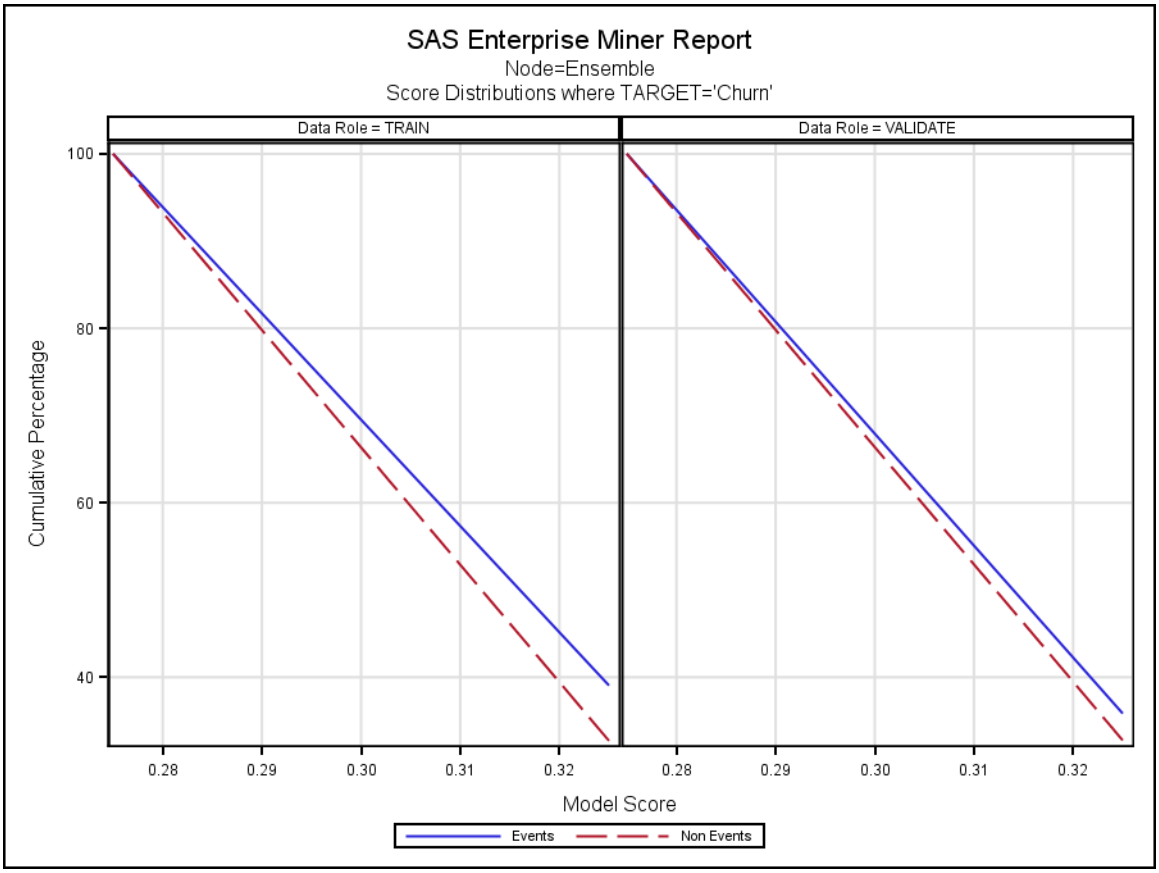

SAS Enterprise Miner Report
Node=Ensemble
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Gain
250
200
150
100
50
0
0
20
40
60
80
100
Depth
Gain
Baseline Gain
Best Gain


SAS Enterprise Miner Report
Node=Ensemble
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative Lift
3.5
3.0
2.5
2.0
1.5
1.0
0
20
40
60
80
100
Depth
Cumulative Lift
Baseline Cumulative Lift
Best Cumulative Lift


SAS Enterprise Miner Report
Node=Ensemble
Model Assessment Scores where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Cumulative % Captured Response
Depth
Cumulative % Captured Response
Baseline Cumulative % Captured Response
Best Cumulative % Captured Response


SAS Enterprise Miner Report
Node=Ensemble
Score Distributions where TARGET='Churn'
Data Role = TRAIN
Data Role = VALIDATE
Percentage
Model Score
Events
Non Events

SAS Enterprise Miner Report
Node=Ensemble
Score Distributions where TARGET='Churn'



Node=Ensemble
Score Distributions

Target Variable=Churn Data Role=TRAIN

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.30-0.35	264	39.0533	32.7040	39.053	32.704
0.25-0.30	412	60.9467	67.2960	100.000	100.000

Target Variable=Churn Data Role=VALIDATE

Posterior Probability Range	Number of Events	Percentage of Events	Percentage of Nonevents	Cumulative Percentage of Events	Cumulative Percentage of Nonevents
0.30-0.35	162	35.8407	32.7555	35.841	32.755
0.25-0.30	290	64.1593	67.2445	100.000	100.000

End of Report