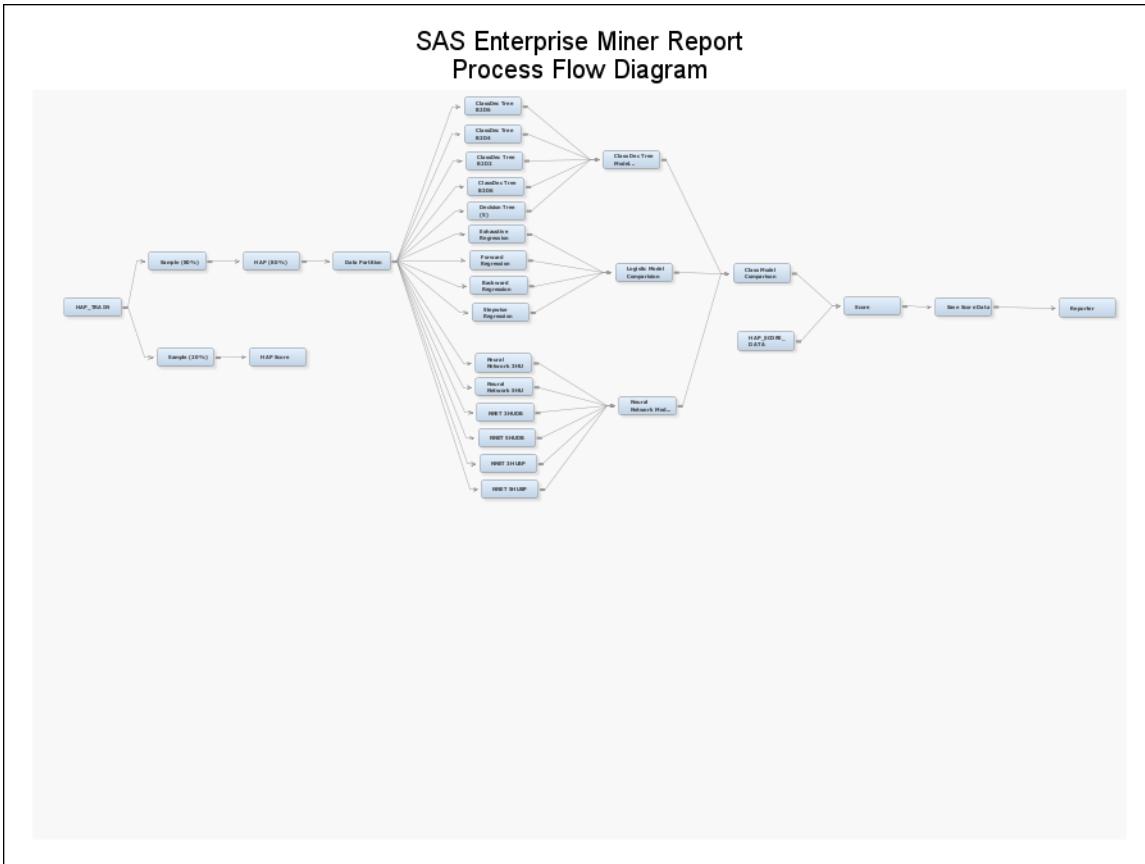


## SAS Enterprise Miner Report

User = ibees2  
 Date = 16:00:19 May 06  
 Project = Heart\_Attack\_Prediction\_Team\_Excel.Predictive\_Analysis  
 Diagram = TE.Classification

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

Format = PDF  
 Style = LISTING



## SAS Enterprise Miner Report

### Node=HAP\_TRAIN Summary

Node id = lds  
 Node label = HAP\_TRAIN  
 Meta path = lds  
 Notes =

### Node=HAP\_TRAIN Properties

| Property                     | Value            | Default | Property             | Value        | Default | Property          | Value     | Default |
|------------------------------|------------------|---------|----------------------|--------------|---------|-------------------|-----------|---------|
| Component                    | DataSource       |         | DsCreatedBy          | ibees2       |         | NBytes            | 4391936   | .       |
| ApplyIntervalLevelLowerLimit | Y                |         | DsId                 | haptrain     |         | NCols             | 18        | .       |
| ApplyMaxClassLevels          | Y                |         | DsModifiedBy         | ibees2       |         | NObs              | 29944     | .       |
| ApplyMaxPercentMissing       | Y                |         | DsModifyDate         | 2030478185.7 |         | NewTable          |           |         |
| CMeta                        | WORK.M24V7CBA    |         | DsSampleName         |              |         | NewVariableRole   | REJECT    |         |
| ComputeStatistics            | N                |         | DsSampleSize         |              |         | OutputType        | VIEW      |         |
| DBPassThrough                | Y                |         | DsSampleSizeType     |              |         | Role              | RAW       | TRAIN   |
| Data                         | TEDATA.HAP_TRAIN |         | DsScope              | LOCAL        |         | Sample            | D         |         |
| DataSelection                | DATASOURCE       |         | IdentifyEmptyColumns | Y            |         | SampleSizeObs     | 10000     |         |
| DataSource                   | haptrain         |         | IntervalLowerLimit   | 20           |         | SampleSizePercent | 20        |         |
| DataSourceRole               | RAW              |         | Library              | TEDATA       |         | SampleSizeType    | PERCENT   |         |
| Description                  |                  |         | MaxClassLevels       | 20           |         | Scope             | LOCAL     |         |
| DropMapVariables             | Y                |         | MaxPercentMissing    | 50           |         | Segment           |           |         |
| DsCreateDate                 | 2030478185.3     |         | MetaAdvisor          | BASIC        |         | Table             | HAP_TRAIN |         |

### Node=HAP\_TRAIN Data Attributes

| Attribute  | Value     | Attribute      | Value              | Attribute    | Value   |
|------------|-----------|----------------|--------------------|--------------|---------|
| Data Name  | HAP_TRAIN | Date Created   | 04May2024:21:40:49 | Data Size    | 4391936 |
| Data Type  | DATA      | Date Modified  | 04May2024:21:40:49 | Role         | RAW     |
| Data Label |           | Number Rows    | 29944              | Segment      |         |
| Engine     | BASE      | Number Columns | 18                 | Data Library | TEDATA  |

### Node=HAP\_TRAIN Variables List

| Name             | Label            | Role     | Level    | Type | Length | Format | Creator |
|------------------|------------------|----------|----------|------|--------|--------|---------|
| AgeCategory      | AgeCategory      | INPUT    | NOMINAL  | C    | 11     | \$11.  |         |
| AlcoholDrinking  | AlcoholDrinking  | INPUT    | BINARY   | C    | 3      | \$3.   |         |
| Asthma           | Asthma           | INPUT    | BINARY   | C    | 3      | \$3.   |         |
| BMI              | BMI              | INPUT    | INTERVAL | N    | 8      | BEST.  |         |
| Diabetic         | Diabetic         | INPUT    | NOMINAL  | C    | 23     | \$23.  |         |
| DiffWalking      | DiffWalking      | INPUT    | BINARY   | C    | 3      | \$3.   |         |
| GenHealth        | GenHealth        | INPUT    | ORDINAL  | C    | 9      | \$9.   |         |
| HeartDisease     | HeartDisease     | TARGET   | BINARY   | C    | 3      | \$3.   |         |
| KidneyDisease    | KidneyDisease    | REJECTED | BINARY   | C    | 3      | \$3.   |         |
| MentalHealth     | MentalHealth     | INPUT    | INTERVAL | N    | 8      | BEST.  |         |
| PhysicalActivity | PhysicalActivity | INPUT    | BINARY   | C    | 3      | \$3.   |         |

| Name           | Label          | Role     | Level    | Type | Length | Format | Creator |
|----------------|----------------|----------|----------|------|--------|--------|---------|
| PhysicalHealth | PhysicalHealth | INPUT    | INTERVAL | N    | 8      | BEST.  |         |
| Race           | Race           | INPUT    | NOMINAL  | C    | 30     | \$30.  |         |
| Sex            | Sex            | INPUT    | NOMINAL  | C    | 6      | \$6.   |         |
| SkinCancer     | SkinCancer     | REJECTED | BINARY   | C    | 3      | \$3.   |         |
| SleepTime      | SleepTime      | INPUT    | INTERVAL | N    | 8      | BEST.  |         |
| Smoking        | Smoking        | INPUT    | BINARY   | C    | 3      | \$3.   |         |
| Stroke         | Stroke         | INPUT    | BINARY   | C    | 3      | \$3.   |         |

## SAS Enterprise Miner Report

### Node=Sample (80%) Summary

Node id = Smpl  
 Node label = Sample (80%)  
 Meta path = Ids => Smpl  
 Notes =

### Node=Sample (80%) Properties

| Property          | Value  | Default | Property              | Value   | Default | Property          | Value        | Default |
|-------------------|--------|---------|-----------------------|---------|---------|-------------------|--------------|---------|
| Component         | Sample |         | IgnoreSmallStrata     | N       |         | OutputType        | DATA         |         |
| AdjustFreq        | N      |         | IntervalDistribution  | Y       |         | Pvalue            | 0.01         |         |
| Alpha             | 0.01   |         | LevelProportion       | 100     |         | RandomSeed        | 12345        |         |
| ClassDistribution | Y      |         | LevelSampleProportion | 50      |         | SizeObs           | .            |         |
| ClusterMethod     | RANDOM |         | LevelSelection        | EVENT   |         | SizePercent       | 80           | 10      |
| FreqCount         | N      |         | Method                | DEFAULT |         | SizeType          | PERCENT      |         |
| FreqMiss          | N      |         | MinStrataSize         | 5       |         | StratifyCriterion | PROPORTIONAL |         |

### Node=Sample (80%) Variable Summary

| Role     | Level    | Frequency Count | Name   |
|----------|----------|-----------------|--|
| TARGET   | BINARY   | 1               | HeartDisease   |
| REJECTED | BINARY   | 2               | KidneyDisease SkinCancer   |
| INPUT    | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT    | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT    | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT    | ORDINAL  | 1               | GenHealth  |

## SAS Enterprise Miner Report

### Node=HAP (80%) Summary

Node id = EMSave  
 Node label = HAP (80%)  
 Meta path = Ids => Smpl => EMSave  
 Notes =

### Node=HAP (80%) Properties

| Property          | Value   | Default | Property | Value        | Default | Property    | Value    | Default  |
|-------------------|---------|---------|----------|--------------|---------|-------------|----------|----------|
| Component         | EMSSave |         | Name     | HAP 80% Data |         | Train       | Y        |          |
| AllObs            | Y       |         | OutObs   | 1000         |         | Transaction | Y        |          |
| AllRoles          | Y       |         | Replace  | N            | Y       | Type        | SAS7BDAT | SAS7DBAT |
| DirectorySelector |         |         | Score    | Y            |         | Validate    | Y        |          |
| Lib               | TEDATA  |         | Test     | Y            |         |             |          |          |

### Node=HAP (80%) Variable Summary

| Role  | Level    | Frequency Count | Name   |
|-------|----------|-----------------|--|
| INPUT | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT | ORDINAL  | 1               | GenHealth  |

## SAS Enterprise Miner Report

### Node=Data Partition Summary

Node id = Part  
 Node label = Data Partition  
 Meta path = Ids => Smpl => EMSave => Part  
 Notes =

### Node=Data Partition Properties

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

### Node=Data Partition Variable Summary

| Role     | Level    | Frequency Count | Name   |
|----------|----------|-----------------|--|
| TARGET   | BINARY   | 1               | HeartDisease   |
| REJECTED | BINARY   | 2               | KidneyDisease SkinCancer   |
| INPUT    | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT    | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT    | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT    | ORDINAL  | 1               | GenHealth  |
| ID       | INTERVAL | 1               | _dataobs_  |

## SAS Enterprise Miner Report

### Node=Neural Network 3HU Summary

Node id = Neural  
 Node label = Neural Network 3HU  
 Meta path = Ids => Smpl => EMSave => Part => Neural  
 Notes =

### Node=Neural Network 3HU Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 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 3HU Variable Summary

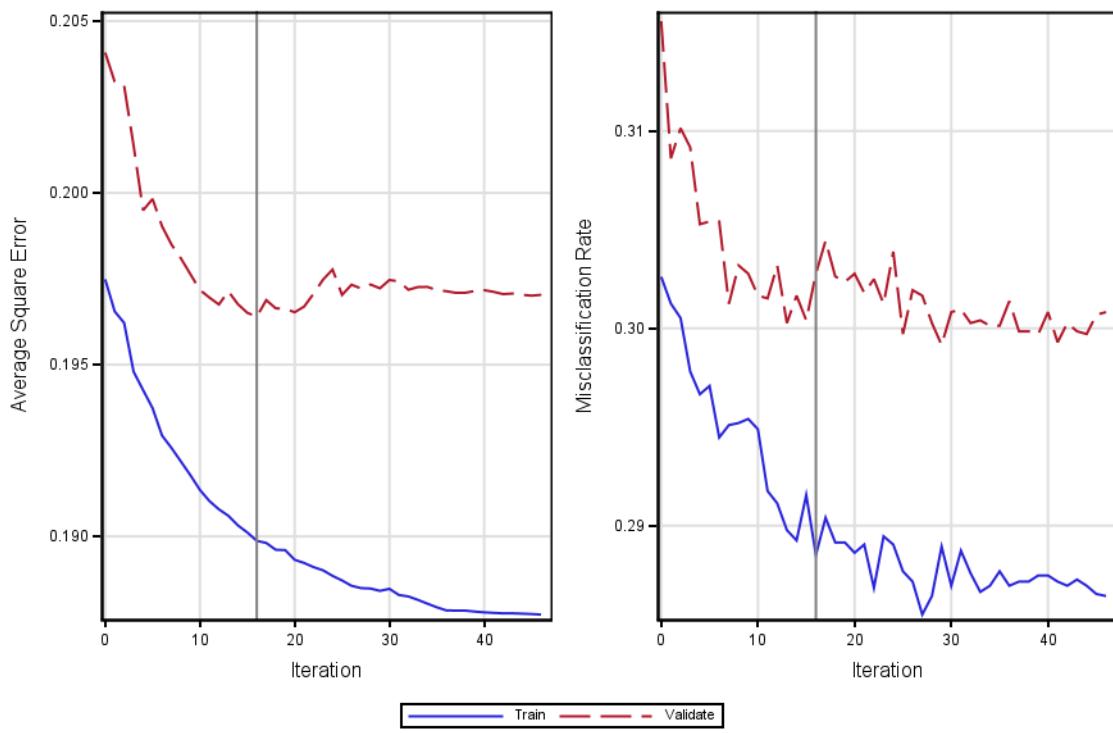
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Neural Network 3HU Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9468.00  | .          | .        |
| Model Degrees of Freedom        | 112.00   | .          | .        |
| Number of Estimated Weights     | 112.00   | .          | .        |
| Akaike's Information Criterion  | 10995.35 | .          | .        |
| Schwarz's Bayesian Criterion    | 11798.10 | .          | .        |
| Average Squared Error           | 0.19     | 0.20       | 0.19     |
| Maximum Absolute Error          | 0.98     | 0.98       | 0.97     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.44     | 0.44       | 0.44     |
| Sum of Squared Errors           | 3637.96  | 2823.01    | 2747.13  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.19     | .          | .        |
| Mean Squared Error              | 0.19     | 0.20       | 0.19     |
| Root Final Prediction Error     | 0.44     | .          | .        |
| Root Mean Squared Error         | 0.44     | 0.44       | 0.44     |
| Average Error Function          | 0.56     | 0.58       | 0.56     |
| Error Function                  | 10771.35 | 8304.85    | 8119.76  |
| Misclassification Rate          | 0.29     | 0.30       | 0.29     |
| Number of Wrong Classifications | 2764.00  | 2176.00    | 2113.00  |

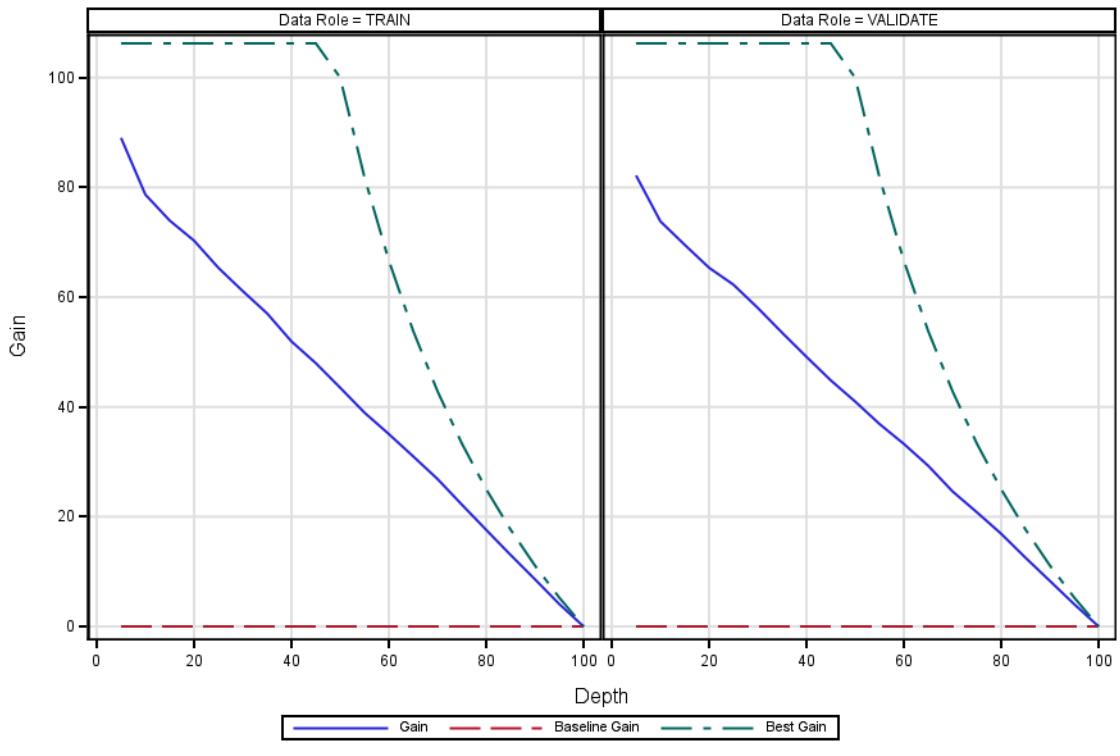
SAS Enterprise Miner Report  
 Node=Neural Network 3HU  
 Model Iteration Plots



## SAS Enterprise Miner Report

Node=Neural Network 3HU

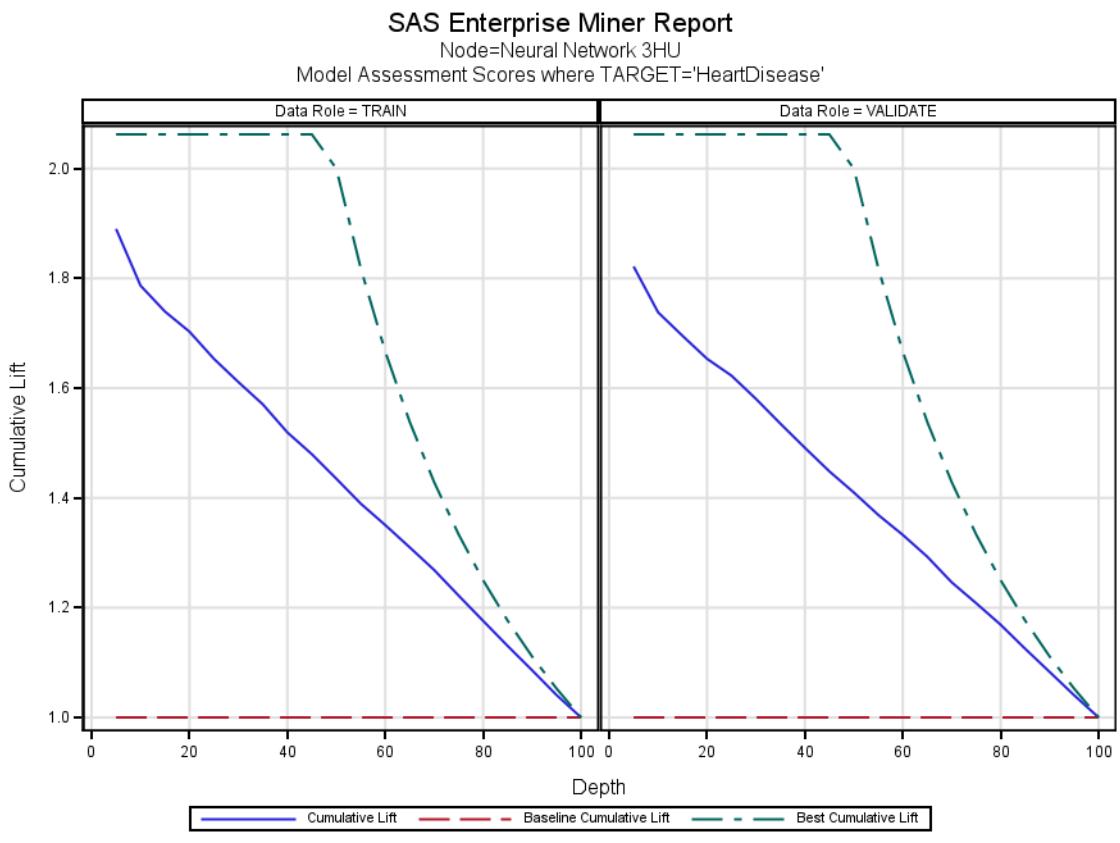
Model Assessment Scores where TARGET='HeartDisease'

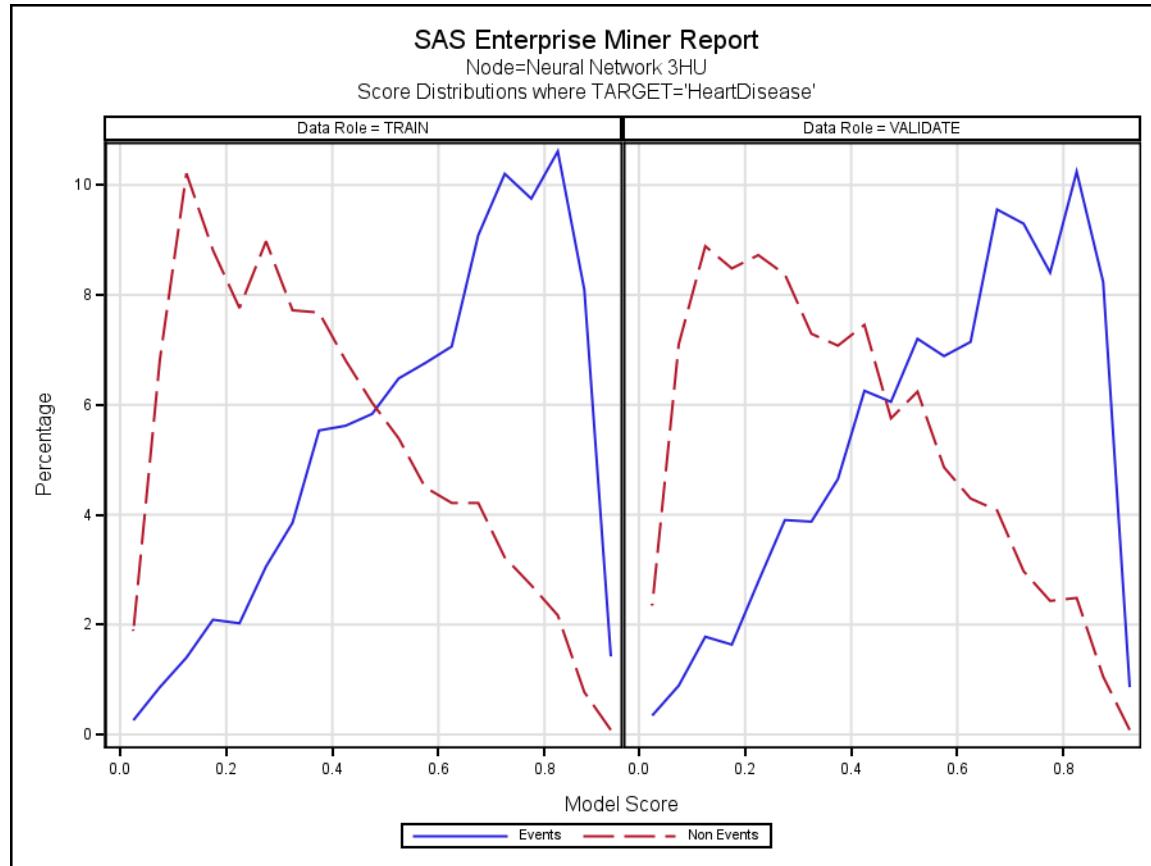
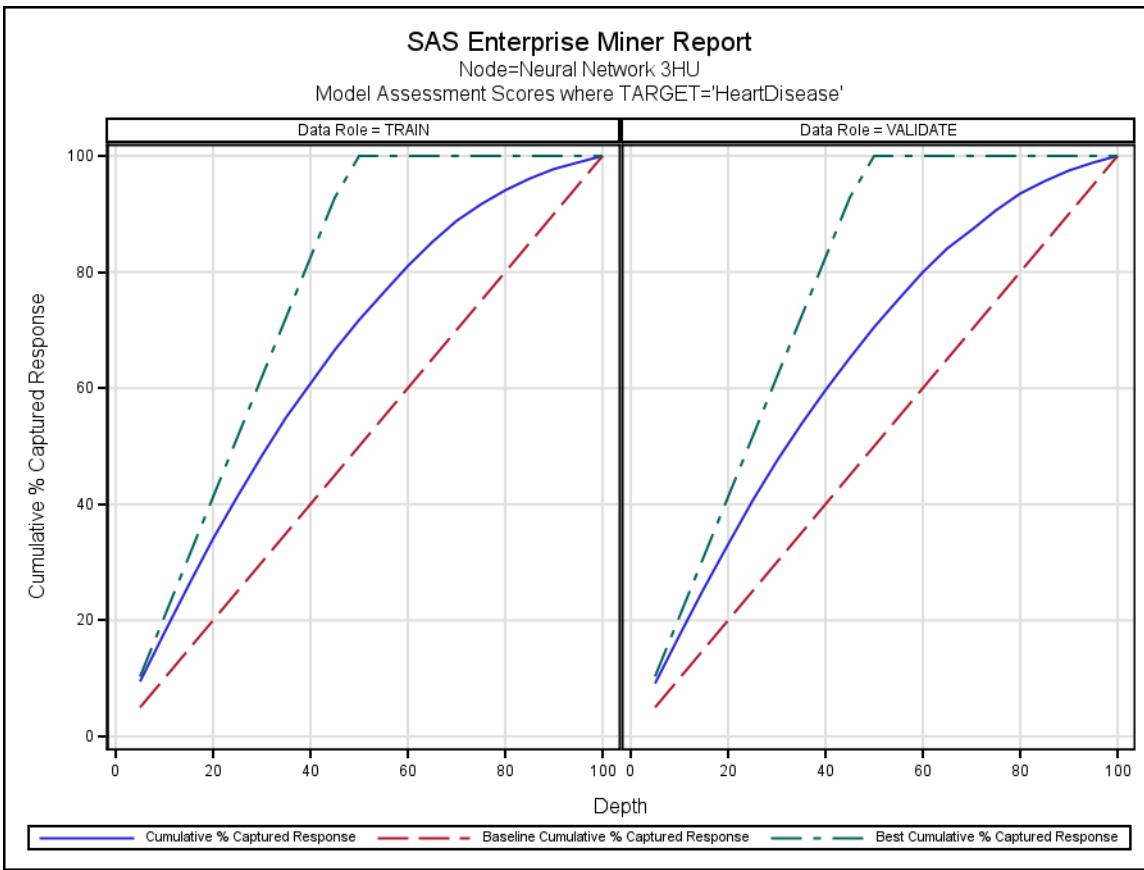


## SAS Enterprise Miner Report

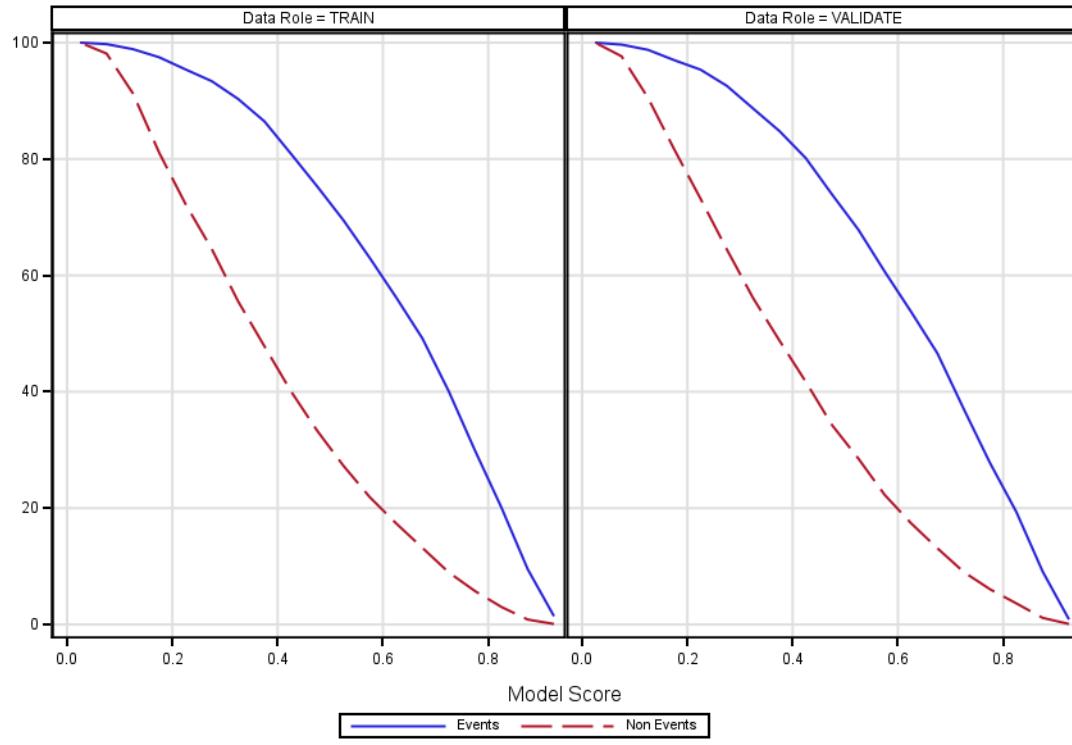
Node=Neural Network 3HU

Model Assessment Scores where TARGET='HeartDisease'





**SAS Enterprise Miner Report**  
 Node=Neural Network 3HU  
 Score Distributions where TARGET='HeartDisease'



**Node=Neural Network 3HU**  
**Score Distributions**

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.90-0.95                   | 66               | 1.4209               | 0.0811                  | 1.421                           | 0.081                              |
| 0.85-0.90                   | 376              | 8.0947               | 0.7700                  | 9.516                           | 0.851                              |
| 0.80-0.85                   | 493              | 10.6136              | 2.1682                  | 20.129                          | 3.019                              |
| 0.75-0.80                   | 453              | 9.7524               | 2.7153                  | 29.882                          | 5.735                              |
| 0.70-0.75                   | 474              | 10.2045              | 3.2219                  | 40.086                          | 8.956                              |
| 0.65-0.70                   | 422              | 9.0850               | 4.2148                  | 49.171                          | 13.171                             |
| 0.60-0.65                   | 328              | 7.0614               | 4.2148                  | 56.233                          | 17.386                             |
| 0.55-0.60                   | 314              | 6.7600               | 4.4985                  | 62.992                          | 21.884                             |
| 0.50-0.55                   | 301              | 6.4801               | 5.3901                  | 69.473                          | 27.275                             |
| 0.45-0.50                   | 271              | 5.8342               | 6.0385                  | 75.307                          | 33.313                             |
| 0.40-0.45                   | 261              | 5.6189               | 6.8085                  | 80.926                          | 40.122                             |
| 0.35-0.40                   | 257              | 5.5328               | 7.6798                  | 86.459                          | 47.801                             |
| 0.30-0.35                   | 179              | 3.8536               | 7.7204                  | 90.312                          | 55.522                             |
| 0.25-0.30                   | 142              | 3.0571               | 8.9767                  | 93.369                          | 64.498                             |
| 0.20-0.25                   | 94               | 2.0237               | 7.7609                  | 95.393                          | 72.259                             |
| 0.15-0.20                   | 97               | 2.0883               | 8.8146                  | 97.481                          | 81.074                             |
| 0.10-0.15                   | 65               | 1.3994               | 10.2128                 | 98.881                          | 91.287                             |
| 0.05-0.10                   | 40               | 0.8611               | 6.8288                  | 99.742                          | 98.116                             |
| 0.00-0.05                   | 12               | 0.2583               | 1.8845                  | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.90-0.95                   | 30               | 0.8608               | 0.08104                 | 0.861                           | 0.081                              |
| 0.85-0.90                   | 287              | 8.2353               | 1.05348                 | 9.096                           | 1.135                              |
| 0.80-0.85                   | 357              | 10.2439              | 2.48514                 | 19.340                          | 3.620                              |
| 0.75-0.80                   | 293              | 8.4075               | 2.43112                 | 27.747                          | 6.051                              |
| 0.70-0.75                   | 324              | 9.2970               | 2.97137                 | 37.044                          | 9.022                              |
| 0.65-0.70                   | 333              | 9.5552               | 4.07888                 | 46.600                          | 13.101                             |
| 0.60-0.65                   | 249              | 7.1449               | 4.29498                 | 53.745                          | 17.396                             |
| 0.55-0.60                   | 240              | 6.8867               | 4.86224                 | 60.631                          | 22.258                             |
| 0.50-0.55                   | 251              | 7.2023               | 6.23987                 | 67.834                          | 28.498                             |
| 0.45-0.50                   | 211              | 6.0545               | 5.75365                 | 73.888                          | 34.252                             |
| 0.40-0.45                   | 218              | 6.2554               | 7.45543                 | 80.143                          | 41.707                             |
| 0.35-0.40                   | 162              | 4.6485               | 7.07726                 | 84.792                          | 48.784                             |
| 0.30-0.35                   | 135              | 3.8737               | 7.29335                 | 88.666                          | 56.078                             |
| 0.25-0.30                   | 136              | 3.9024               | 8.37385                 | 92.568                          | 64.452                             |
| 0.20-0.25                   | 97               | 2.7834               | 8.72501                 | 95.352                          | 73.177                             |
| 0.15-0.20                   | 57               | 1.6356               | 8.48190                 | 96.987                          | 81.659                             |
| 0.10-0.15                   | 62               | 1.7791               | 8.88709                 | 98.766                          | 90.546                             |
| 0.05-0.10                   | 31               | 0.8895               | 7.10427                 | 99.656                          | 97.650                             |
| 0.00-0.05                   | 12               | 0.3443               | 2.35008                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Neural Network 5HU Summary

Node id = Neural2  
 Node label = Neural Network 5HU  
 Meta path = Ids => Smpl => EMSave => Part => Neural2  
 Notes =

### Node=Neural Network 5HU Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 5           | 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 5HU Variable Summary

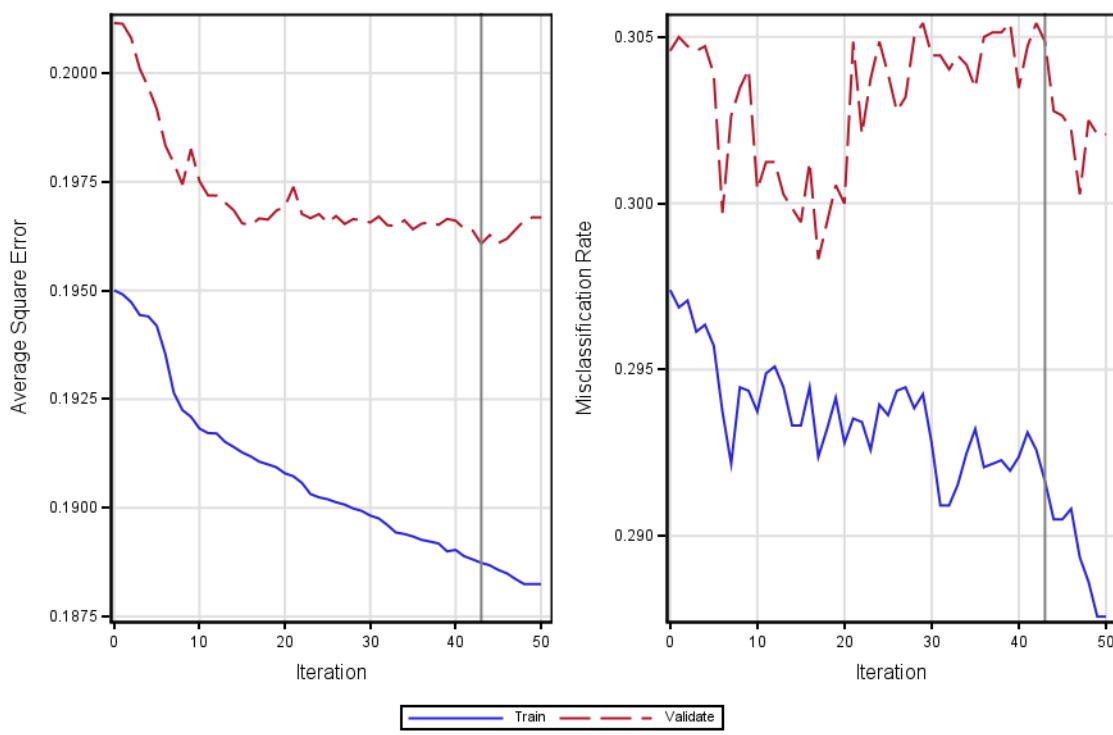
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Neural Network 5HU Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9394.00  | .          | .        |
| Model Degrees of Freedom        | 186.00   | .          | .        |
| Number of Estimated Weights     | 186.00   | .          | .        |
| Akaike's Information Criterion  | 11059.59 | .          | .        |
| Schwarz's Bayesian Criterion    | 12392.73 | .          | .        |
| Average Squared Error           | 0.19     | 0.20       | 0.19     |
| Maximum Absolute Error          | 0.98     | 0.98       | 0.98     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.43     | 0.44       | 0.44     |
| Sum of Squared Errors           | 3616.18  | 2818.39    | 2726.15  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.20     | .          | .        |
| Mean Squared Error              | 0.19     | 0.20       | 0.19     |
| Root Final Prediction Error     | 0.44     | .          | .        |
| Root Mean Squared Error         | 0.44     | 0.44       | 0.44     |
| Average Error Function          | 0.56     | 0.58       | 0.56     |
| Error Function                  | 10687.59 | 8287.14    | 8063.38  |
| Misclassification Rate          | 0.29     | 0.30       | 0.29     |
| Number of Wrong Classifications | 2794.00  | 2191.00    | 2090.00  |

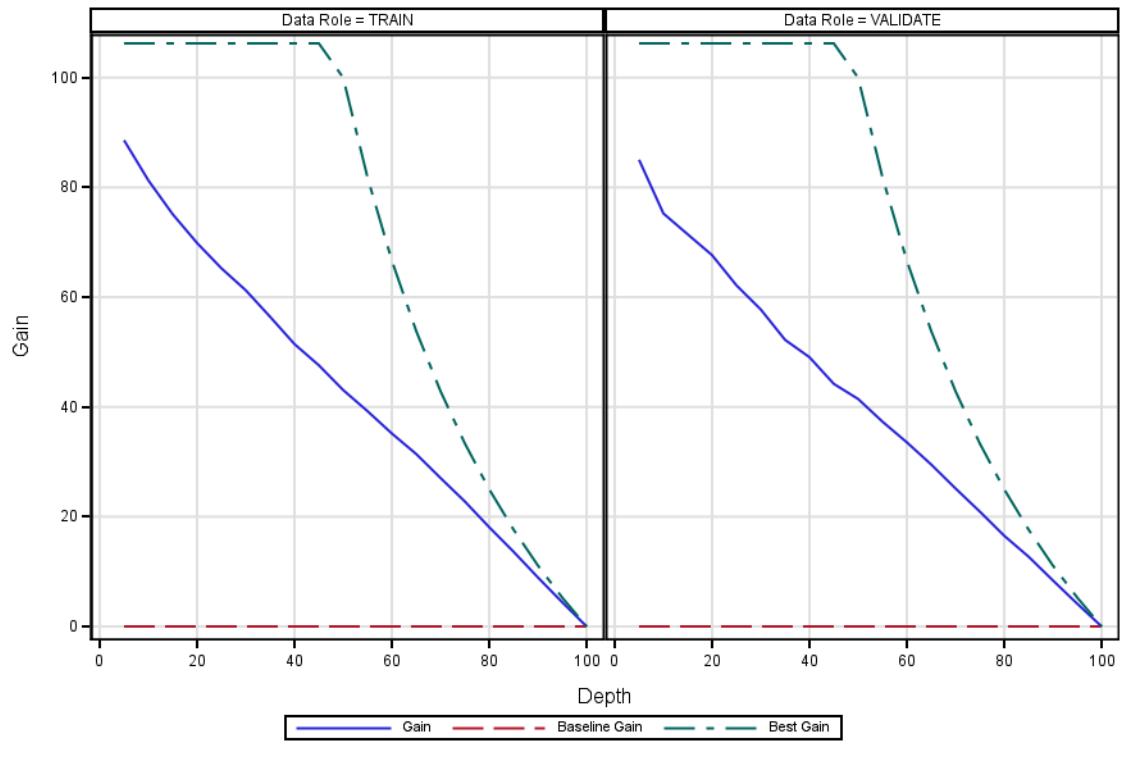
**SAS Enterprise Miner Report**  
**Node=Neural Network 5HU**  
**Model Iteration Plots**



### SAS Enterprise Miner Report

Node=Neural Network 5HU

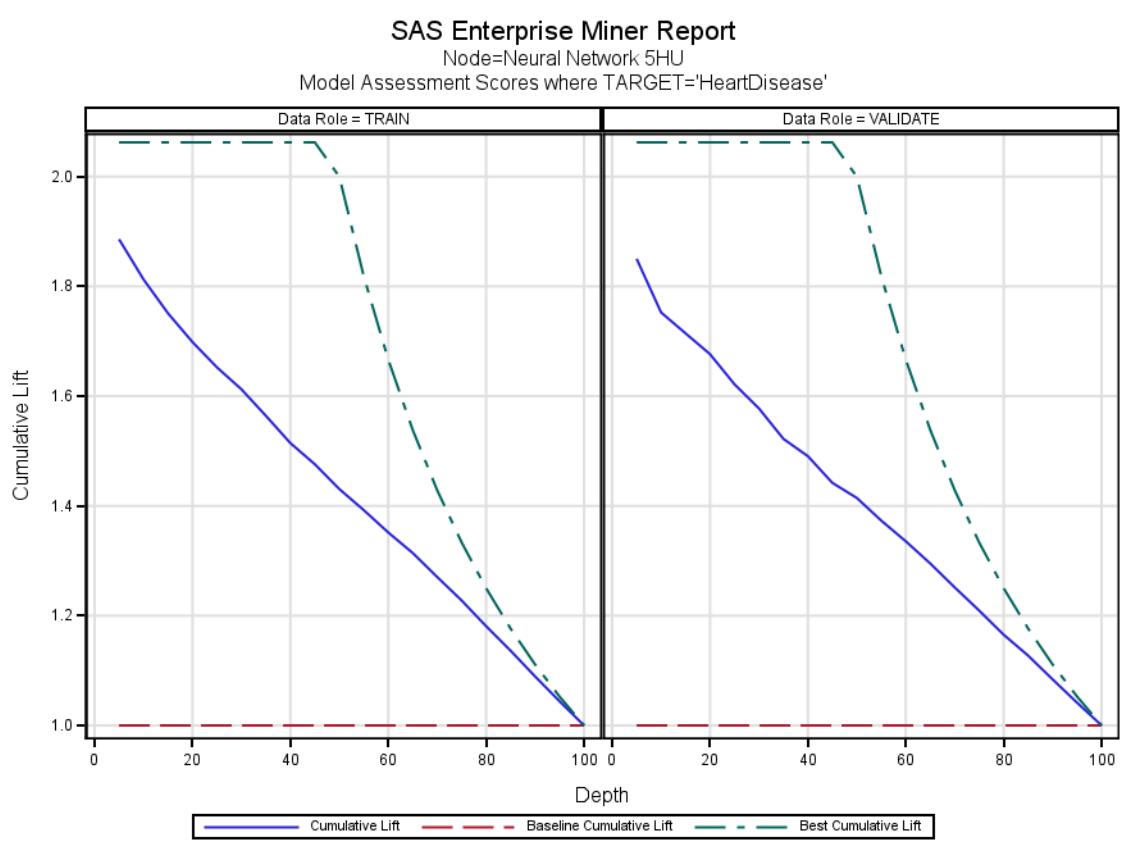
Model Assessment Scores where TARGET='HeartDisease'

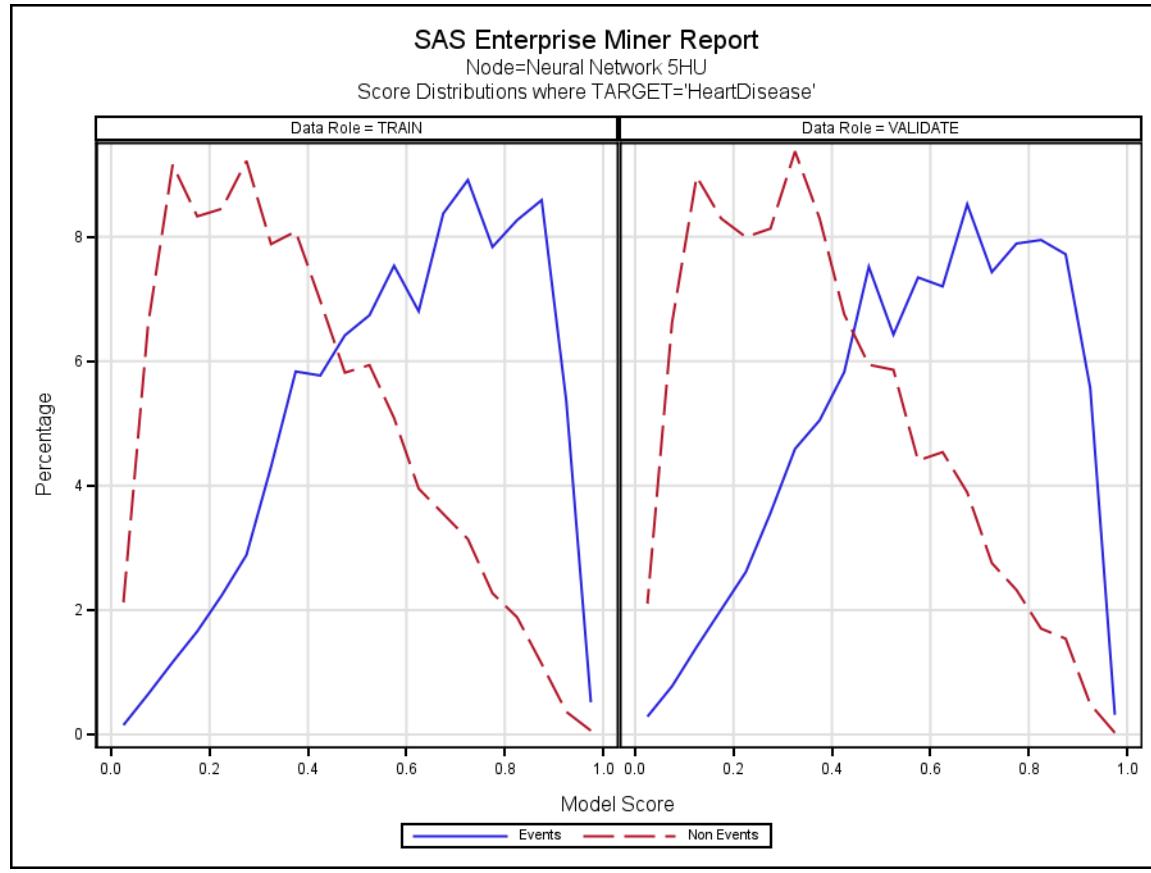
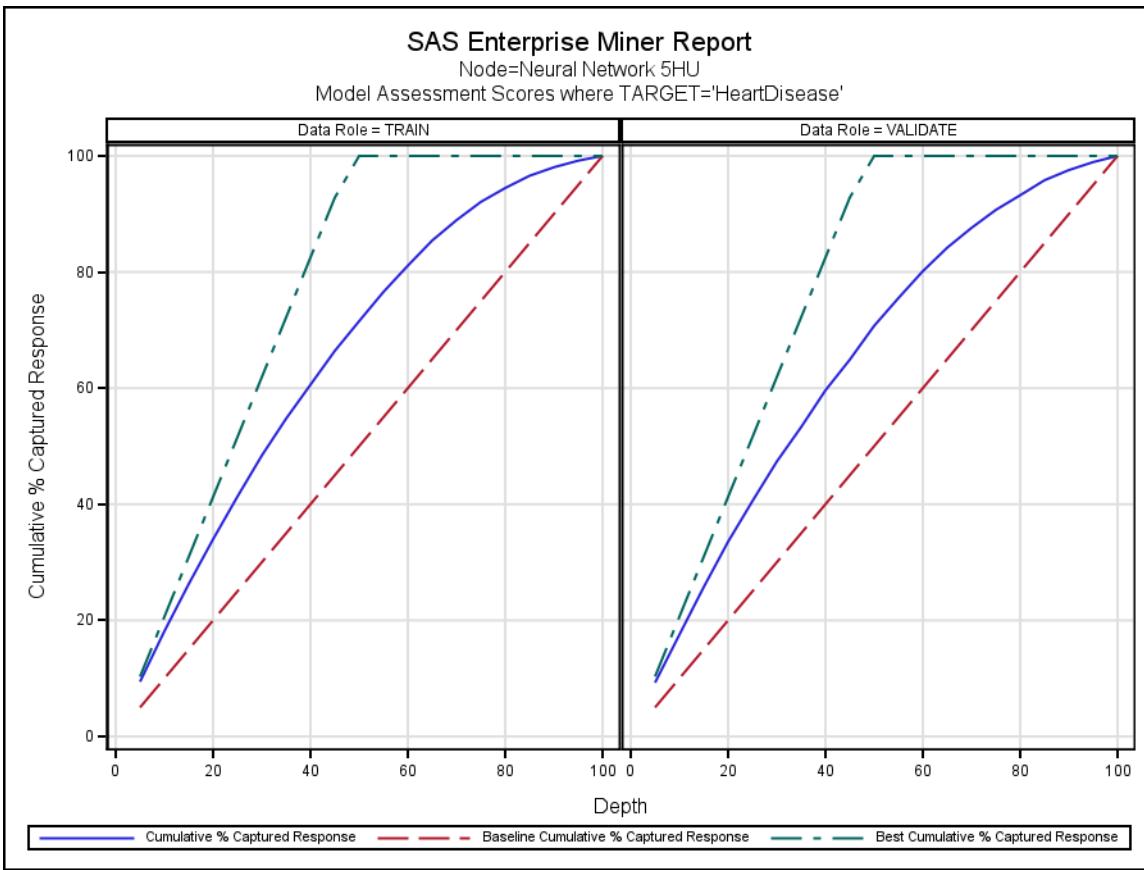


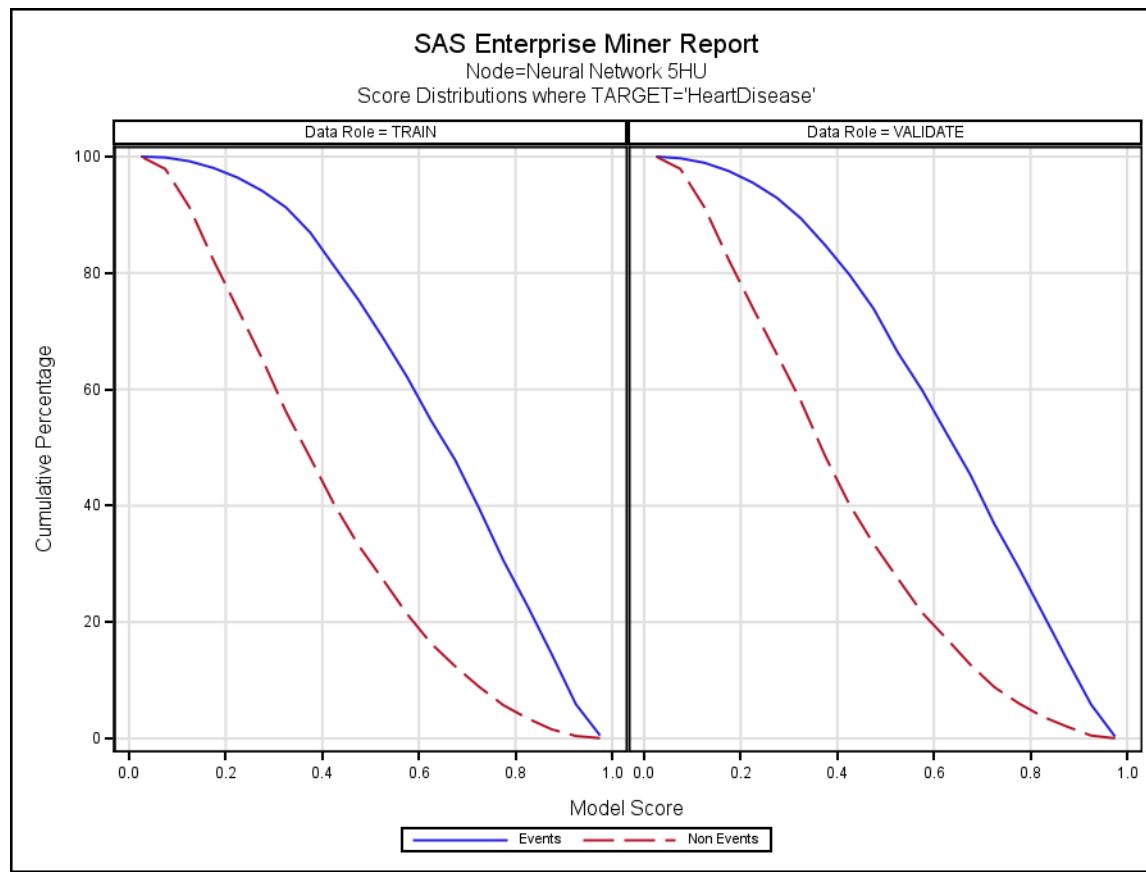
### SAS Enterprise Miner Report

Node=Neural Network 5HU

Model Assessment Scores where TARGET='HeartDisease'







### Node=Neural Network 5HU Score Distributions

Target Variable=HeartDisease 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                   | 24               | 0.51668              | 0.06079                 | 0.517                           | 0.061                              |
| 0.90-0.95                   | 249              | 5.36060              | 0.36474                 | 5.877                           | 0.426                              |
| 0.85-0.90                   | 399              | 8.58988              | 1.13475                 | 14.467                          | 1.560                              |
| 0.80-0.85                   | 384              | 8.26695              | 1.88450                 | 22.734                          | 3.445                              |
| 0.75-0.80                   | 364              | 7.83638              | 2.26950                 | 30.571                          | 5.714                              |
| 0.70-0.75                   | 414              | 8.91281              | 3.14083                 | 39.483                          | 8.855                              |
| 0.65-0.70                   | 389              | 8.37460              | 3.54610                 | 47.858                          | 12.401                             |
| 0.60-0.65                   | 316              | 6.80301              | 3.95137                 | 54.661                          | 16.353                             |
| 0.55-0.60                   | 350              | 7.53498              | 5.08612                 | 62.196                          | 21.439                             |
| 0.50-0.55                   | 313              | 6.73843              | 5.93718                 | 68.934                          | 27.376                             |
| 0.45-0.50                   | 298              | 6.41550              | 5.81560                 | 75.350                          | 33.191                             |
| 0.40-0.45                   | 268              | 5.76964              | 6.97062                 | 81.119                          | 40.162                             |
| 0.35-0.40                   | 271              | 5.83423              | 8.08511                 | 86.954                          | 48.247                             |
| 0.30-0.35                   | 200              | 4.30571              | 7.88247                 | 91.259                          | 56.130                             |
| 0.25-0.30                   | 134              | 2.88482              | 9.21986                 | 94.144                          | 65.350                             |
| 0.20-0.25                   | 104              | 2.23897              | 8.44985                 | 96.383                          | 73.799                             |
| 0.15-0.20                   | 77               | 1.65770              | 8.32827                 | 98.041                          | 82.128                             |
| 0.10-0.15                   | 54               | 1.16254              | 9.15907                 | 99.203                          | 91.287                             |
| 0.05-0.10                   | 30               | 0.64586              | 6.58561                 | 99.849                          | 97.872                             |
| 0.00-0.05                   | 7                | 0.15070              | 2.12766                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| 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               | 0.31564              | 0.02701                 | 0.316                           | 0.027                              |
| 0.90-0.95                   | 194              | 5.56671              | 0.48622                 | 5.882                           | 0.513                              |
| 0.85-0.90                   | 269              | 7.71879              | 1.53971                 | 13.601                          | 2.053                              |
| 0.80-0.85                   | 277              | 7.94835              | 1.70178                 | 21.549                          | 3.755                              |
| 0.75-0.80                   | 275              | 7.89096              | 2.32307                 | 29.440                          | 6.078                              |
| 0.70-0.75                   | 259              | 7.43185              | 2.75527                 | 36.872                          | 8.833                              |
| 0.65-0.70                   | 297              | 8.52224              | 3.88979                 | 45.395                          | 12.723                             |
| 0.60-0.65                   | 251              | 7.20230              | 4.53809                 | 52.597                          | 17.261                             |
| 0.55-0.60                   | 256              | 7.34577              | 4.40303                 | 59.943                          | 21.664                             |
| 0.50-0.55                   | 224              | 6.42755              | 5.86170                 | 66.370                          | 27.526                             |
| 0.45-0.50                   | 262              | 7.51793              | 5.94273                 | 73.888                          | 33.468                             |
| 0.40-0.45                   | 203              | 5.82496              | 6.75311                 | 79.713                          | 40.222                             |
| 0.35-0.40                   | 176              | 5.05022              | 8.29281                 | 84.763                          | 48.514                             |
| 0.30-0.35                   | 160              | 4.59110              | 9.37331                 | 89.354                          | 57.888                             |
| 0.25-0.30                   | 124              | 3.55811              | 8.13074                 | 92.912                          | 66.018                             |
| 0.20-0.25                   | 91               | 2.61119              | 7.99568                 | 95.524                          | 74.014                             |
| 0.15-0.20                   | 70               | 2.00861              | 8.29281                 | 97.532                          | 82.307                             |
| 0.10-0.15                   | 49               | 1.40603              | 8.96813                 | 98.938                          | 91.275                             |
| 0.05-0.10                   | 27               | 0.77475              | 6.61804                 | 99.713                          | 97.893                             |
| 0.00-0.05                   | 10               | 0.28694              | 2.10697                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=NNET 3HUBD Summary

Node id = Neural3  
 Node label = NNET 3HUBD  
 Meta path = Ids => Smpl => EMSave => Part => Neural3  
 Notes =

### Node=NNET 3HUBD Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 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        | 1E-5          | 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                | 1E-5        | 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  | DBLDOG  | DEFAULT |
| GConvValue       | 1E-6          |              | Outfit                  |             |         | UseEstimates       | N       |         |

### Node=NNET 3HUBD Variable Summary

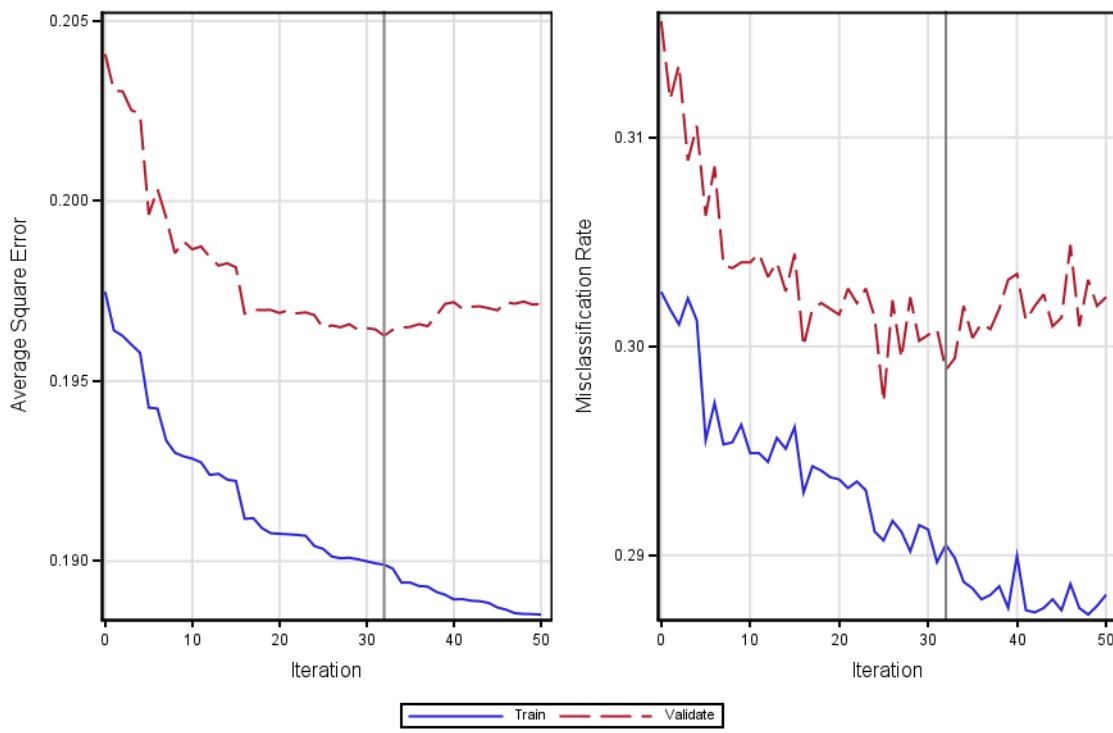
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=NNET 3HUBD Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9468.00  | .          | .        |
| Model Degrees of Freedom        | 112.00   | .          | .        |
| Number of Estimated Weights     | 112.00   | .          | .        |
| Akaike's Information Criterion  | 10993.13 | .          | .        |
| Schwarz's Bayesian Criterion    | 11795.88 | .          | .        |
| Average Squared Error           | 0.19     | 0.20       | 0.19     |
| Maximum Absolute Error          | 0.97     | 0.98       | 0.97     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.44     | 0.44       | 0.44     |
| Sum of Squared Errors           | 3638.57  | 2821.12    | 2739.15  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.19     | .          | .        |
| Mean Squared Error              | 0.19     | 0.20       | 0.19     |
| Root Final Prediction Error     | 0.44     | .          | .        |
| Root Mean Squared Error         | 0.44     | 0.44       | 0.44     |
| Average Error Function          | 0.56     | 0.58       | 0.56     |
| Error Function                  | 10769.13 | 8295.85    | 8100.58  |
| Misclassification Rate          | 0.29     | 0.30       | 0.29     |
| Number of Wrong Classifications | 2783.00  | 2148.00    | 2077.00  |

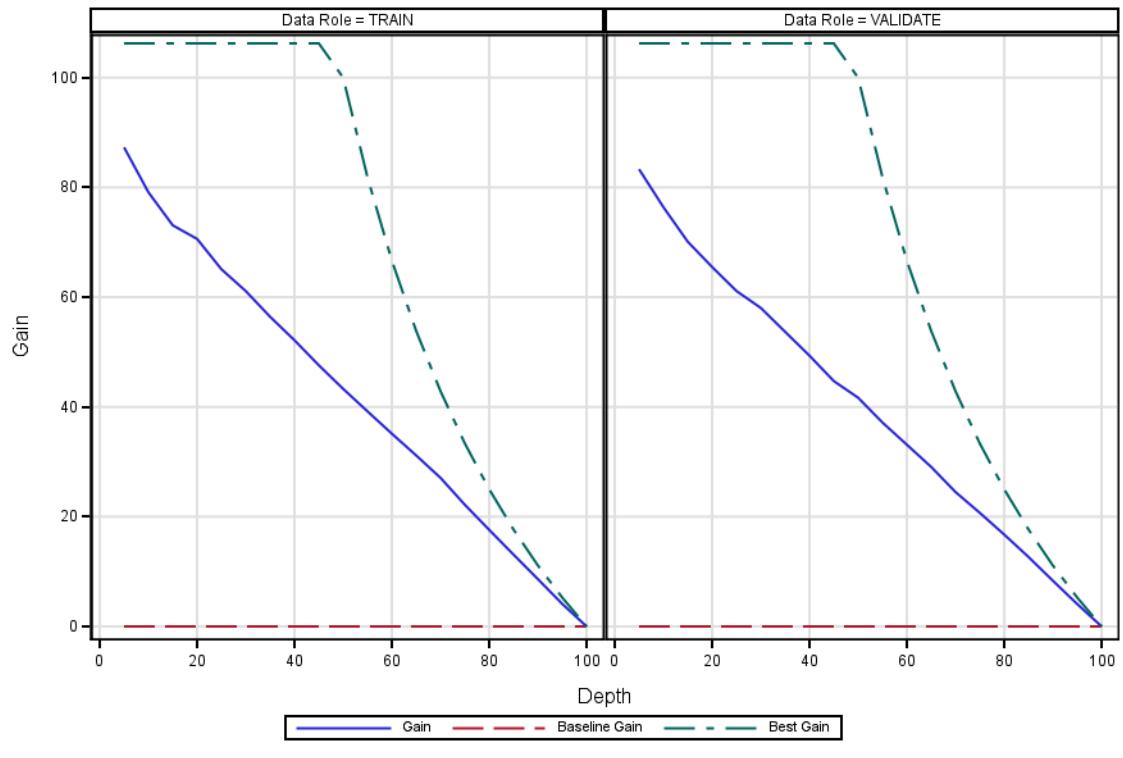
**SAS Enterprise Miner Report**  
**Node=NNET 3HUBD**  
**Model Iteration Plots**



### SAS Enterprise Miner Report

Node=NNET 3HUB

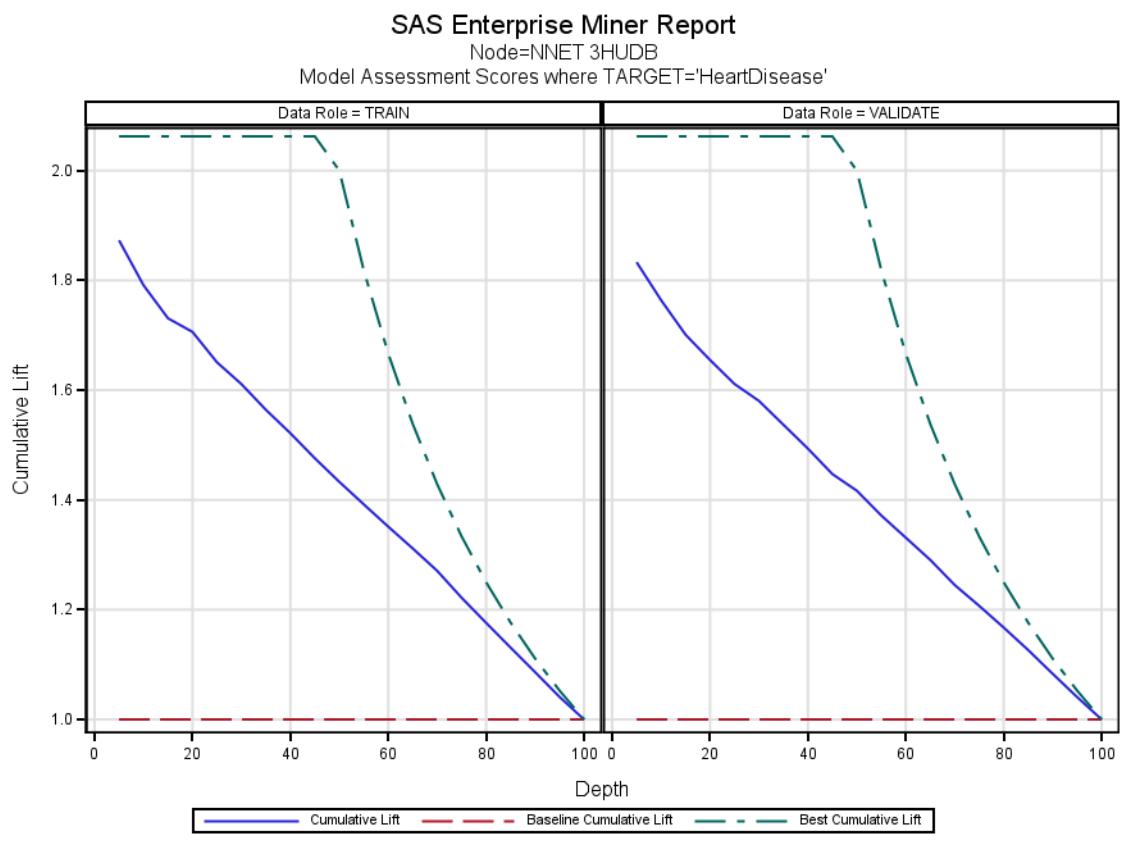
Model Assessment Scores where TARGET='HeartDisease'

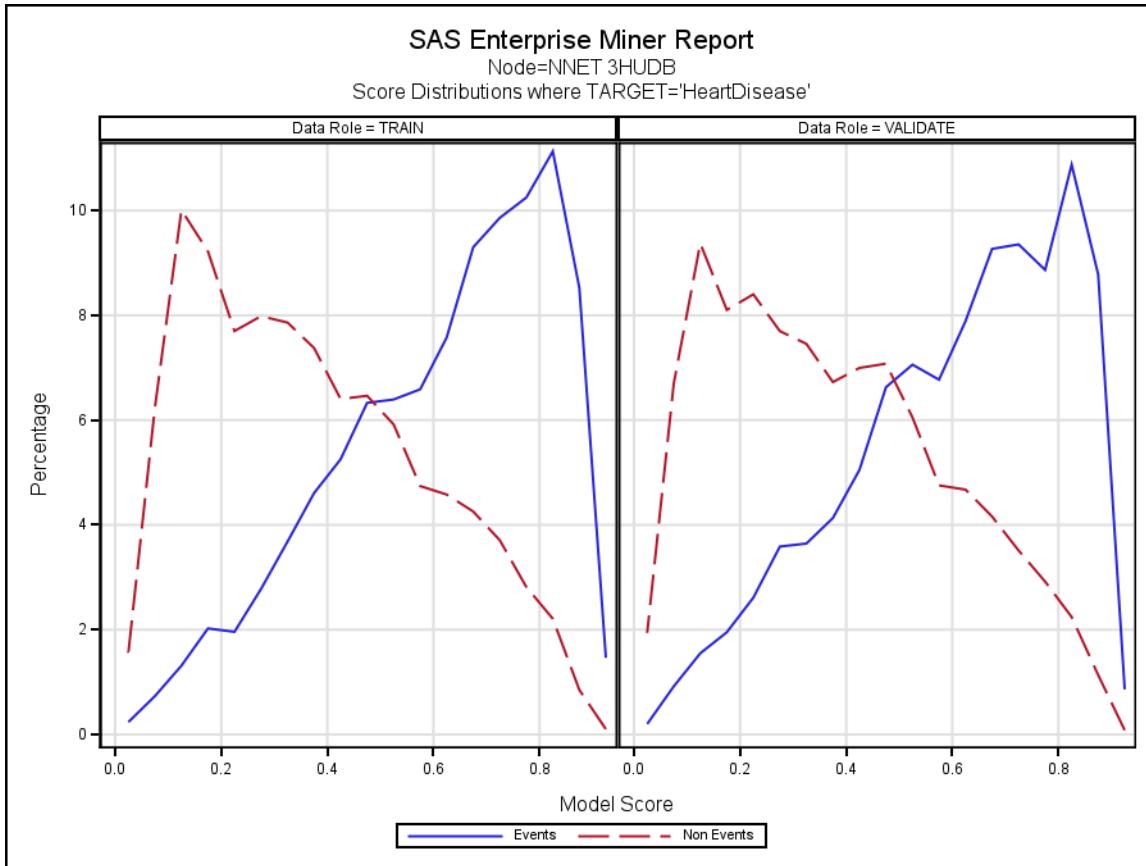
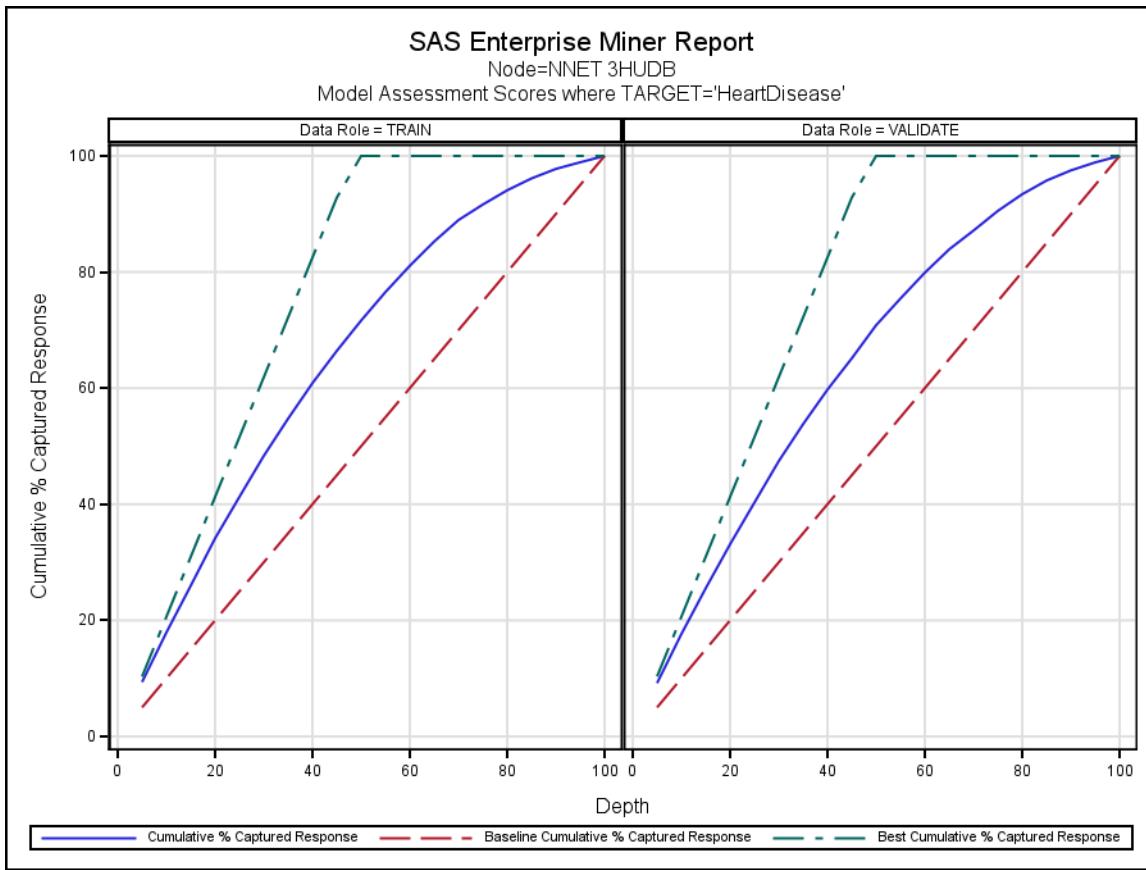


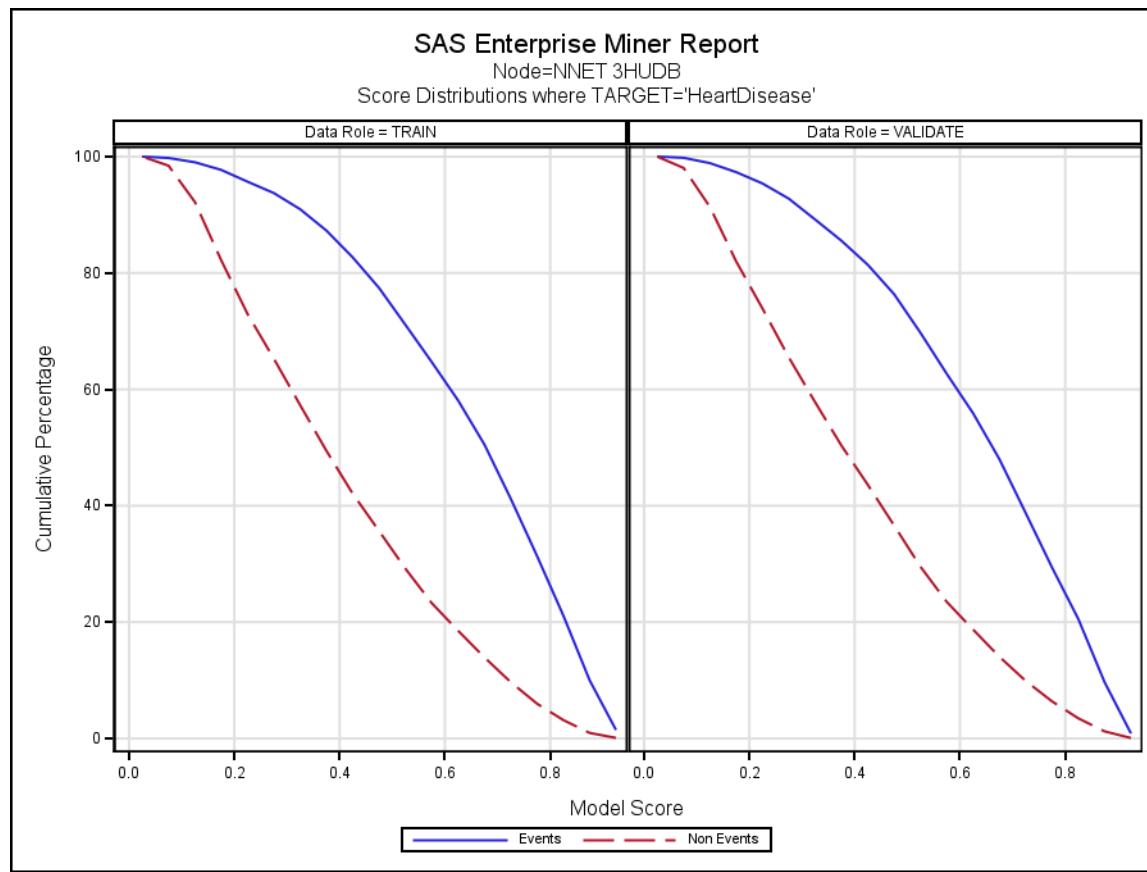
### SAS Enterprise Miner Report

Node=NNET 3HUB

Model Assessment Scores where TARGET='HeartDisease'







### Node=NNET 3HUB

#### Score Distributions

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.90-0.95                   | 68               | 1.4639               | 0.1013                  | 1.464                           | 0.101                              |
| 0.85-0.90                   | 396              | 8.5253               | 0.8511                  | 9.989                           | 0.952                              |
| 0.80-0.85                   | 517              | 11.1302              | 2.2087                  | 21.119                          | 3.161                              |
| 0.75-0.80                   | 476              | 10.2476              | 2.8166                  | 31.367                          | 5.978                              |
| 0.70-0.75                   | 458              | 9.8601               | 3.7082                  | 41.227                          | 9.686                              |
| 0.65-0.70                   | 432              | 9.3003               | 4.2553                  | 50.527                          | 13.941                             |
| 0.60-0.65                   | 352              | 7.5780               | 4.5795                  | 58.105                          | 18.521                             |
| 0.55-0.60                   | 306              | 6.5877               | 4.7416                  | 64.693                          | 23.262                             |
| 0.50-0.55                   | 297              | 6.3940               | 5.9169                  | 71.087                          | 29.179                             |
| 0.45-0.50                   | 294              | 6.3294               | 6.4640                  | 77.417                          | 35.643                             |
| 0.40-0.45                   | 244              | 5.2530               | 6.4032                  | 82.670                          | 42.047                             |
| 0.35-0.40                   | 214              | 4.6071               | 7.3759                  | 87.277                          | 49.422                             |
| 0.30-0.35                   | 171              | 3.6814               | 7.8622                  | 90.958                          | 57.285                             |
| 0.25-0.30                   | 129              | 2.7772               | 7.9838                  | 93.735                          | 65.268                             |
| 0.20-0.25                   | 91               | 1.9591               | 7.7001                  | 95.694                          | 72.969                             |
| 0.15-0.20                   | 94               | 2.0237               | 9.2199                  | 97.718                          | 82.188                             |
| 0.10-0.15                   | 61               | 1.3132               | 10.0101                 | 99.031                          | 92.199                             |
| 0.05-0.10                   | 34               | 0.7320               | 6.2411                  | 99.763                          | 98.440                             |
| 0.00-0.05                   | 11               | 0.2368               | 1.5603                  | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.90-0.95                   | 30               | 0.8608               | 0.08104                 | 0.861                           | 0.081                              |
| 0.85-0.90                   | 306              | 8.7805               | 1.13452                 | 9.641                           | 1.216                              |
| 0.80-0.85                   | 379              | 10.8752              | 2.24203                 | 20.516                          | 3.458                              |
| 0.75-0.80                   | 309              | 8.8666               | 2.91734                 | 29.383                          | 6.375                              |
| 0.70-0.75                   | 326              | 9.3544               | 3.51162                 | 38.737                          | 9.887                              |
| 0.65-0.70                   | 323              | 9.2683               | 4.15991                 | 48.006                          | 14.046                             |
| 0.60-0.65                   | 275              | 7.8910               | 4.67315                 | 55.897                          | 18.720                             |
| 0.55-0.60                   | 236              | 6.7719               | 4.75419                 | 62.669                          | 23.474                             |
| 0.50-0.55                   | 246              | 7.0588               | 6.05078                 | 69.727                          | 29.525                             |
| 0.45-0.50                   | 231              | 6.6284               | 7.07726                 | 76.356                          | 36.602                             |
| 0.40-0.45                   | 176              | 5.0502               | 6.99622                 | 81.406                          | 43.598                             |
| 0.35-0.40                   | 144              | 4.1320               | 6.72609                 | 85.538                          | 50.324                             |
| 0.30-0.35                   | 127              | 3.6442               | 7.45543                 | 89.182                          | 57.780                             |
| 0.25-0.30                   | 125              | 3.5868               | 7.69854                 | 92.769                          | 65.478                             |
| 0.20-0.25                   | 91               | 2.6112               | 8.40086                 | 95.380                          | 73.879                             |
| 0.15-0.20                   | 68               | 1.9512               | 8.10373                 | 97.331                          | 81.983                             |
| 0.10-0.15                   | 54               | 1.5495               | 9.37331                 | 98.881                          | 91.356                             |
| 0.05-0.10                   | 32               | 0.9182               | 6.69908                 | 99.799                          | 98.055                             |
| 0.00-0.05                   | 7                | 0.2009               | 1.94489                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=NNET 5HUBD Summary

Node id = Neural4  
 Node label = NNET 5HUBD  
 Meta path = Ids => Smpl => EMSave => Part => Neural4  
 Notes =

### Node=NNET 5HUBD Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 5           | 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        | 1E-5          | 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                | 1E-5        | 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  | DBLDOG  | DEFAULT |
| GConvValue       | 1E-6          |              | Outfit                  |             |         | UseEstimates       | N       |         |

### Node=NNET 5HUBD Variable Summary

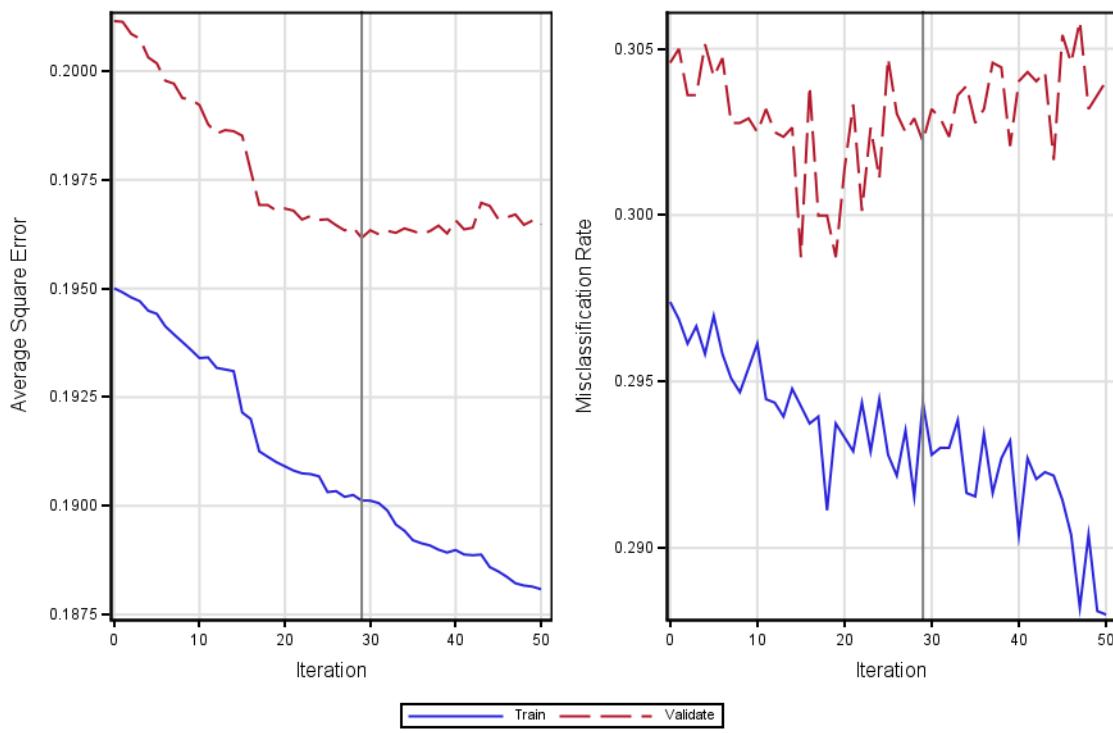
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=NNET 5HUBD Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9394.00  | .          | .        |
| Model Degrees of Freedom        | 186.00   | .          | .        |
| Number of Estimated Weights     | 186.00   | .          | .        |
| Akaike's Information Criterion  | 11132.29 | .          | .        |
| Schwarz's Bayesian Criterion    | 12465.43 | .          | .        |
| Average Squared Error           | 0.19     | 0.20       | 0.19     |
| Maximum Absolute Error          | 0.99     | 0.98       | 0.97     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.44     | 0.44       | 0.44     |
| Sum of Squared Errors           | 3642.74  | 2819.68    | 2730.51  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.20     | .          | .        |
| Mean Squared Error              | 0.19     | 0.20       | 0.19     |
| Root Final Prediction Error     | 0.44     | .          | .        |
| Root Mean Squared Error         | 0.44     | 0.44       | 0.44     |
| Average Error Function          | 0.56     | 0.58       | 0.56     |
| Error Function                  | 10760.29 | 8287.67    | 8070.64  |
| Misclassification Rate          | 0.29     | 0.30       | 0.29     |
| Number of Wrong Classifications | 2820.00  | 2172.00    | 2088.00  |

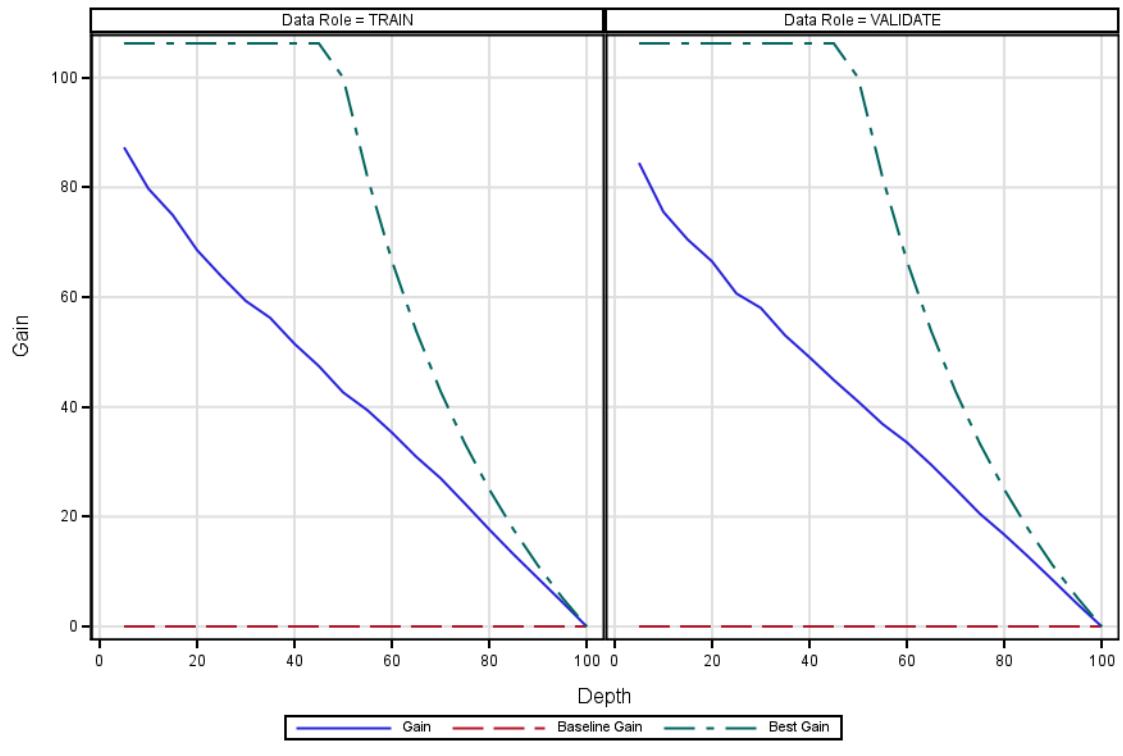
**SAS Enterprise Miner Report**  
**Node=NNET 5HUBD**  
**Model Iteration Plots**



### SAS Enterprise Miner Report

Node=NNET 5HUB

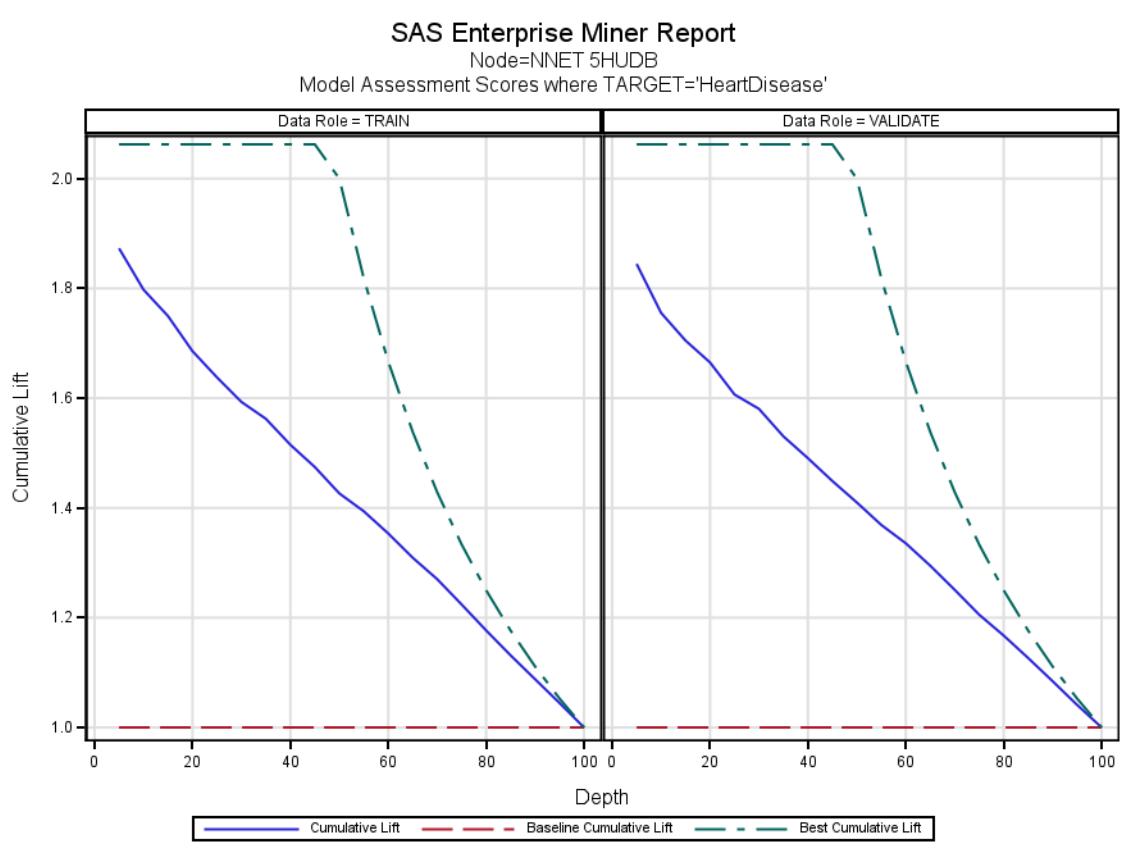
Model Assessment Scores where TARGET='HeartDisease'

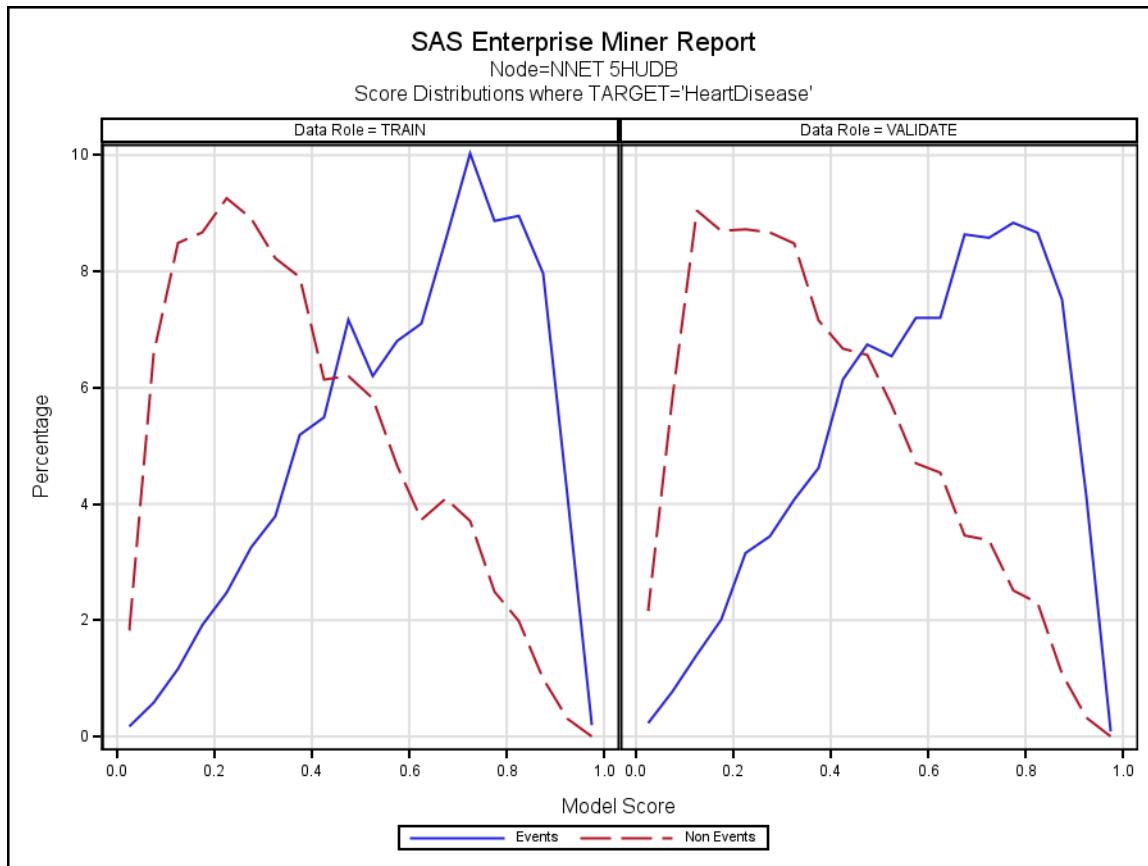
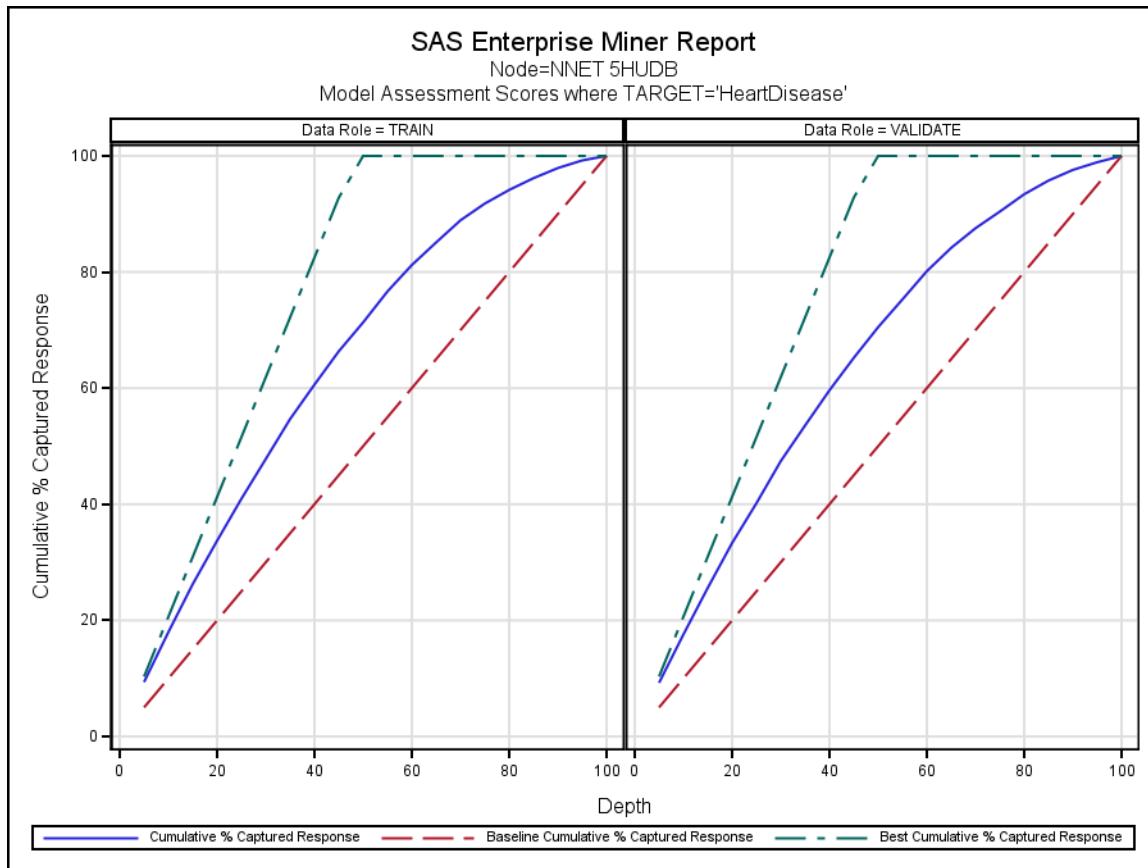


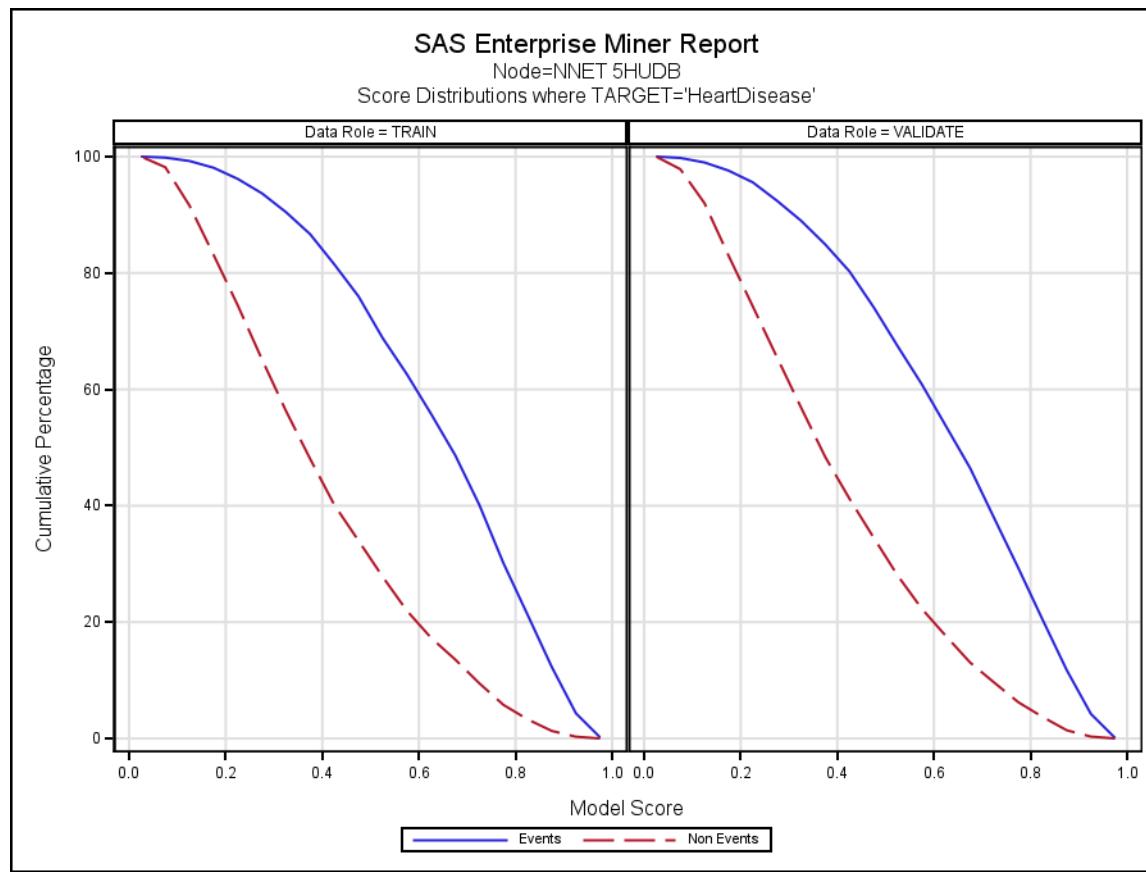
### SAS Enterprise Miner Report

Node=NNET 5HUB

Model Assessment Scores where TARGET='HeartDisease'







### Node=NNET 5HUB

#### Score Distributions

Target Variable=HeartDisease 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                   | 9                | 0.1938               | 0.00000                 | 0.194                           | 0.000                              |
| 0.90-0.95                   | 192              | 4.1335               | 0.30395                 | 4.327                           | 0.304                              |
| 0.85-0.90                   | 370              | 7.9656               | 0.99291                 | 12.293                          | 1.297                              |
| 0.80-0.85                   | 416              | 8.9559               | 1.98582                 | 21.249                          | 3.283                              |
| 0.75-0.80                   | 412              | 8.8698               | 2.49240                 | 30.118                          | 5.775                              |
| 0.70-0.75                   | 466              | 10.0323              | 3.70821                 | 40.151                          | 9.483                              |
| 0.65-0.70                   | 397              | 8.5468               | 4.09321                 | 48.698                          | 13.576                             |
| 0.60-0.65                   | 330              | 7.1044               | 3.72847                 | 55.802                          | 17.305                             |
| 0.55-0.60                   | 316              | 6.8030               | 4.66059                 | 62.605                          | 21.966                             |
| 0.50-0.55                   | 288              | 6.2002               | 5.81560                 | 68.805                          | 27.781                             |
| 0.45-0.50                   | 333              | 7.1690               | 6.20061                 | 75.974                          | 33.982                             |
| 0.40-0.45                   | 255              | 5.4898               | 6.13982                 | 81.464                          | 40.122                             |
| 0.35-0.40                   | 241              | 5.1884               | 7.90274                 | 86.652                          | 48.024                             |
| 0.30-0.35                   | 176              | 3.7890               | 8.22695                 | 90.441                          | 56.251                             |
| 0.25-0.30                   | 151              | 3.2508               | 8.91591                 | 93.692                          | 65.167                             |
| 0.20-0.25                   | 115              | 2.4758               | 9.26039                 | 96.168                          | 74.428                             |
| 0.15-0.20                   | 89               | 1.9160               | 8.67275                 | 98.084                          | 83.100                             |
| 0.10-0.15                   | 54               | 1.1625               | 8.49037                 | 99.247                          | 91.591                             |
| 0.05-0.10                   | 27               | 0.5813               | 6.58561                 | 99.828                          | 98.176                             |
| 0.00-0.05                   | 8                | 0.1722               | 1.82371                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.95-1.00                   | 3                | 0.08608              | 0.00000                 | 0.086                           | 0.000                              |
| 0.90-0.95                   | 144              | 4.13199              | 0.32415                 | 4.218                           | 0.324                              |
| 0.85-0.90                   | 262              | 7.51793              | 1.08050                 | 11.736                          | 1.405                              |
| 0.80-0.85                   | 302              | 8.66571              | 2.29606                 | 20.402                          | 3.701                              |
| 0.75-0.80                   | 308              | 8.83788              | 2.51216                 | 29.240                          | 6.213                              |
| 0.70-0.75                   | 299              | 8.57963              | 3.37655                 | 37.819                          | 9.589                              |
| 0.65-0.70                   | 301              | 8.63702              | 3.45759                 | 46.456                          | 13.047                             |
| 0.60-0.65                   | 251              | 7.20230              | 4.53809                 | 53.659                          | 17.585                             |
| 0.55-0.60                   | 251              | 7.20230              | 4.70016                 | 60.861                          | 22.285                             |
| 0.50-0.55                   | 228              | 6.54232              | 5.69962                 | 67.403                          | 27.985                             |
| 0.45-0.50                   | 235              | 6.74319              | 6.56402                 | 74.146                          | 34.549                             |
| 0.40-0.45                   | 214              | 6.14060              | 6.67207                 | 80.287                          | 41.221                             |
| 0.35-0.40                   | 161              | 4.61980              | 7.15829                 | 84.907                          | 48.379                             |
| 0.30-0.35                   | 142              | 4.07461              | 8.48190                 | 88.981                          | 56.861                             |
| 0.25-0.30                   | 120              | 3.44333              | 8.67099                 | 92.425                          | 65.532                             |
| 0.20-0.25                   | 110              | 3.15638              | 8.72501                 | 95.581                          | 74.257                             |
| 0.15-0.20                   | 70               | 2.00861              | 8.69800                 | 97.590                          | 82.955                             |
| 0.10-0.15                   | 49               | 1.40603              | 9.04916                 | 98.996                          | 92.004                             |
| 0.05-0.10                   | 27               | 0.77475              | 5.83468                 | 99.770                          | 97.839                             |
| 0.00-0.05                   | 8                | 0.22956              | 2.16099                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=NNET 3HUBP Summary

Node id = Neural5  
 Node label = NNET 3HUBP  
 Meta path = Ids => Smpl => EMSave => Part => Neural5  
 Notes =

### Node=NNET 3HUBP Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 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        | 1E-5          | 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                | 1E-5        | 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  | BPROP   | DEFAULT |
| GConvValue       | 1E-6          |              | Outfit                  |             |         | UseEstimates       | N       |         |

### Node=NNET 3HUBP Variable Summary

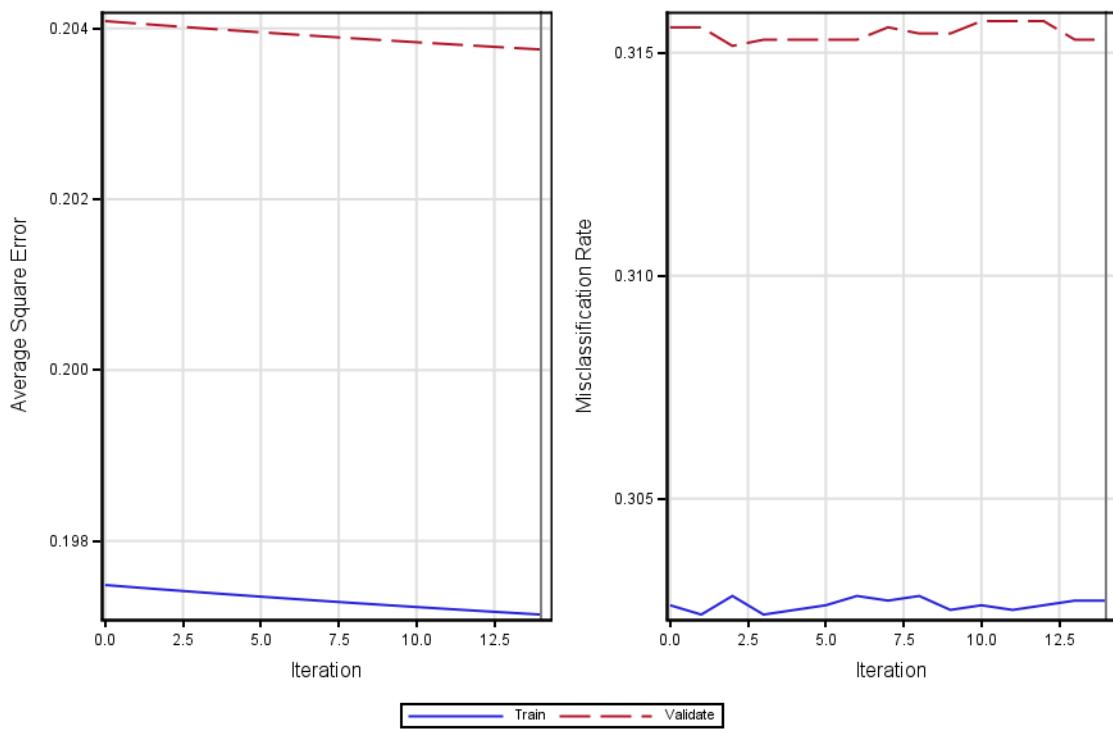
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=NNET 3HUBP Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9468.00  | .          | .        |
| Model Degrees of Freedom        | 112.00   | .          | .        |
| Number of Estimated Weights     | 112.00   | .          | .        |
| Akaike's Information Criterion  | 11329.98 | .          | .        |
| Schwarz's Bayesian Criterion    | 12132.73 | .          | .        |
| Average Squared Error           | 0.20     | 0.20       | 0.20     |
| Maximum Absolute Error          | 0.91     | 0.90       | 0.92     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.44     | 0.45       | 0.44     |
| Sum of Squared Errors           | 3777.16  | 2928.74    | 2834.95  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.20     | .          | .        |
| Mean Squared Error              | 0.20     | 0.20       | 0.20     |
| Root Final Prediction Error     | 0.45     | .          | .        |
| Root Mean Squared Error         | 0.45     | 0.45       | 0.44     |
| Average Error Function          | 0.58     | 0.59       | 0.58     |
| Error Function                  | 11105.98 | 8549.51    | 8336.06  |
| Misclassification Rate          | 0.30     | 0.32       | 0.30     |
| Number of Wrong Classifications | 2900.00  | 2266.00    | 2170.00  |

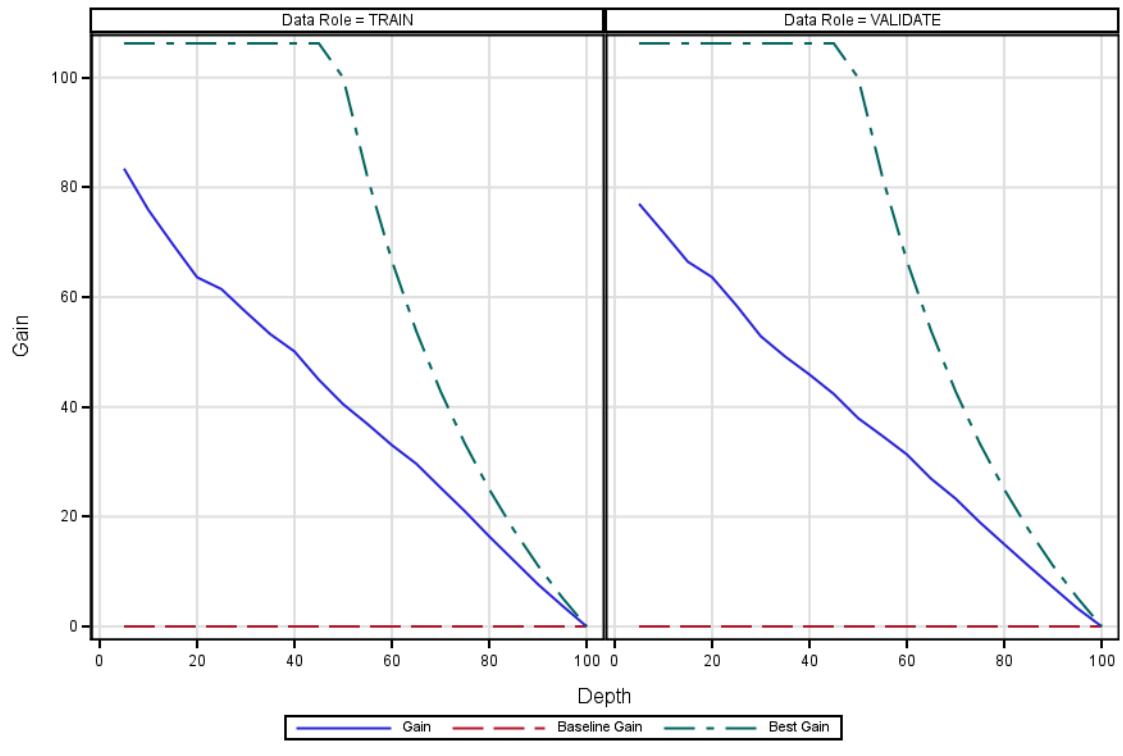
SAS Enterprise Miner Report  
Node=NNET 3HUBP  
Model Iteration Plots



### SAS Enterprise Miner Report

Node=NNET 3HUBP

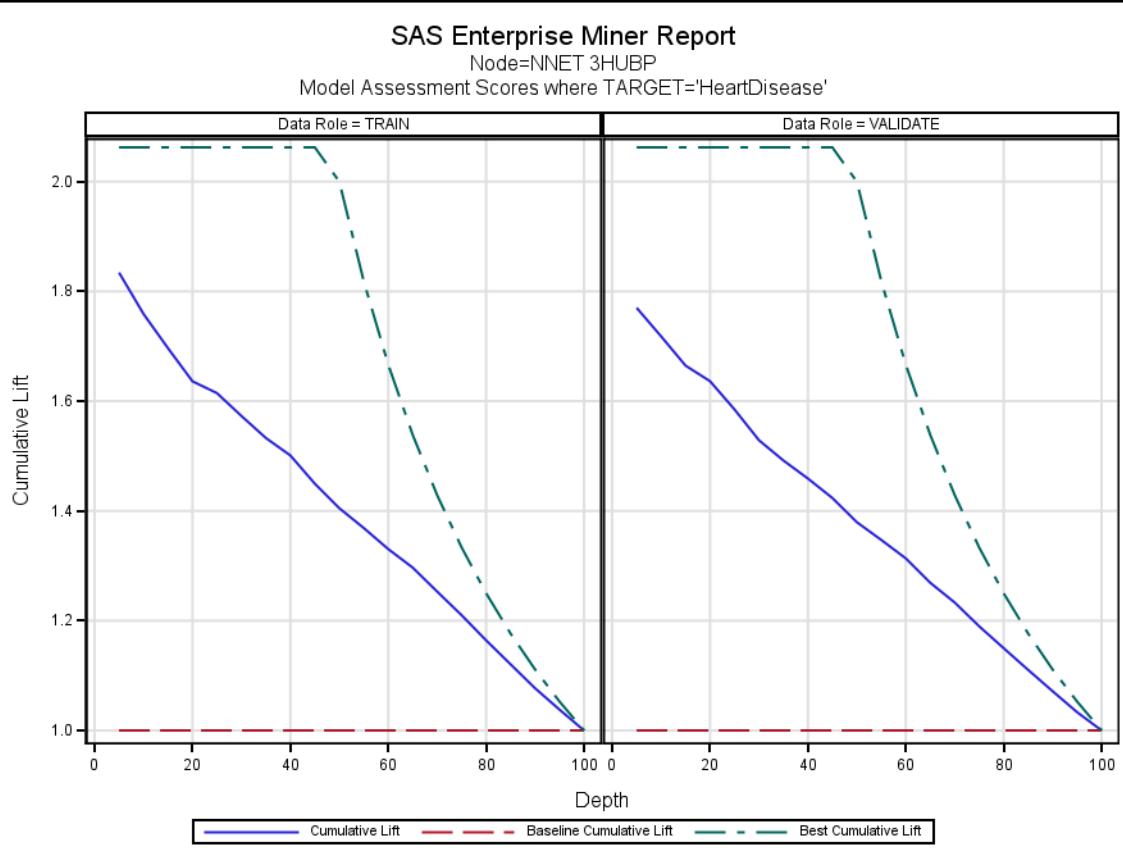
Model Assessment Scores where TARGET='HeartDisease'



### SAS Enterprise Miner Report

Node=NNET 3HUBP

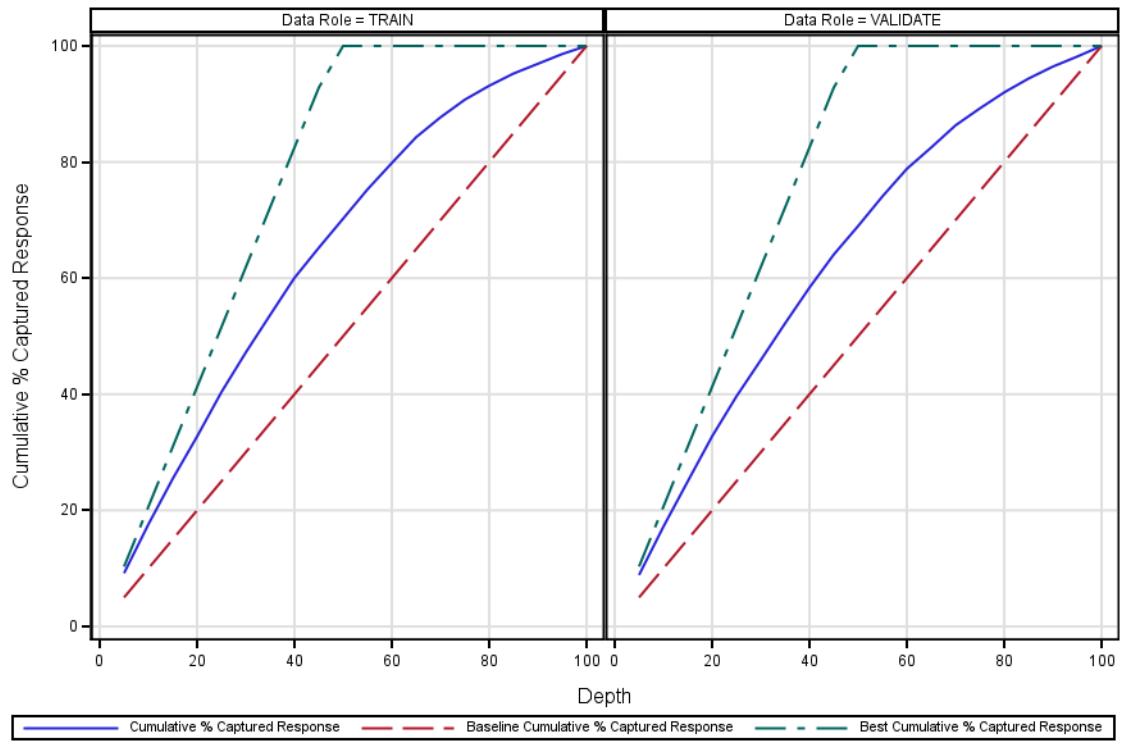
Model Assessment Scores where TARGET='HeartDisease'



### SAS Enterprise Miner Report

Node=NNET 3HUBP

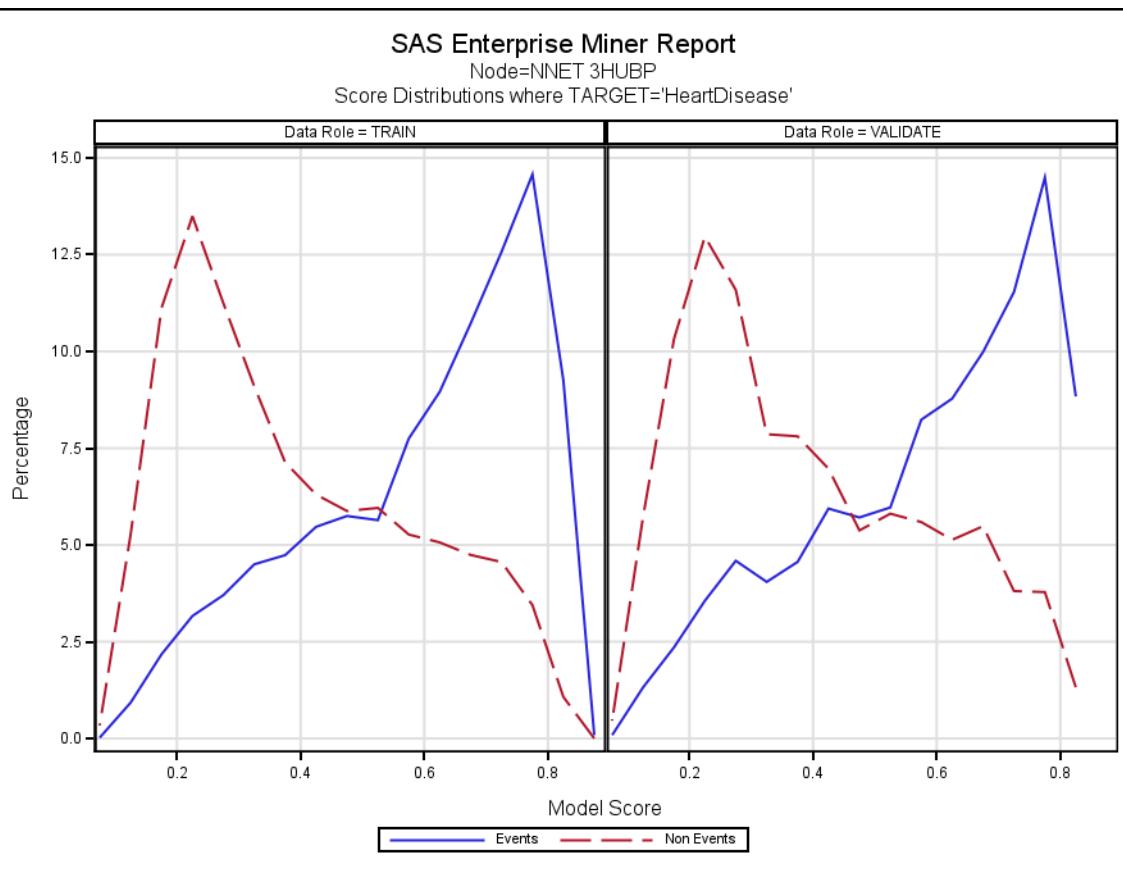
Model Assessment Scores where TARGET='HeartDisease'

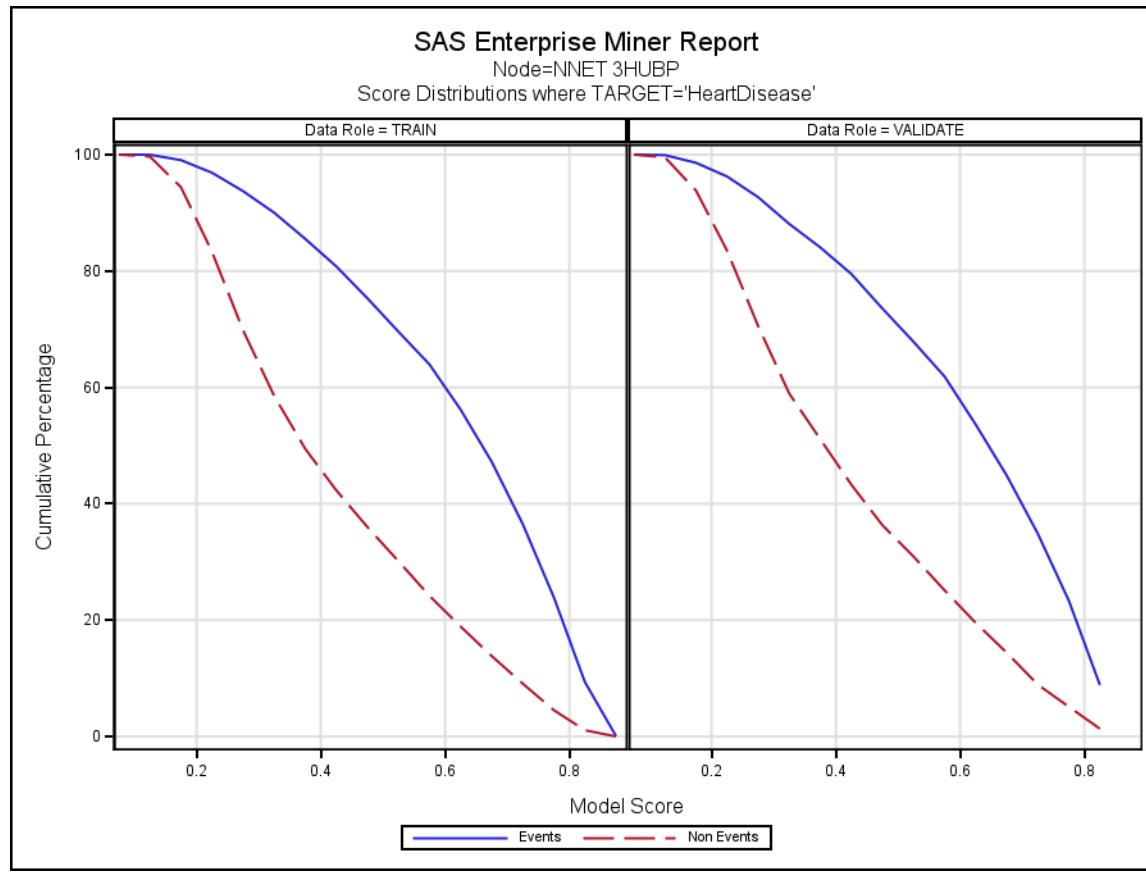


### SAS Enterprise Miner Report

Node=NNET 3HUBP

Score Distributions where TARGET='HeartDisease'





### Node=NNET 3HUBP

#### Score Distributions

Target Variable=HeartDisease 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                   | 4                | 0.0861               | 0.0000                  | 0.086                           | 0.000                              |
| 0.80-0.85                   | 430              | 9.2573               | 1.0740                  | 9.343                           | 1.074                              |
| 0.75-0.80                   | 677              | 14.5748              | 3.4448                  | 23.918                          | 4.519                              |
| 0.70-0.75                   | 584              | 12.5727              | 4.5593                  | 36.491                          | 9.078                              |
| 0.65-0.70                   | 498              | 10.7212              | 4.7416                  | 47.212                          | 13.820                             |
| 0.60-0.65                   | 416              | 8.9559               | 5.0659                  | 56.168                          | 18.886                             |
| 0.55-0.60                   | 360              | 7.7503               | 5.2685                  | 63.918                          | 24.154                             |
| 0.50-0.55                   | 262              | 5.6405               | 5.9574                  | 69.559                          | 30.111                             |
| 0.45-0.50                   | 267              | 5.7481               | 5.8764                  | 75.307                          | 35.988                             |
| 0.40-0.45                   | 254              | 5.4682               | 6.3019                  | 80.775                          | 42.290                             |
| 0.35-0.40                   | 220              | 4.7363               | 7.1327                  | 85.511                          | 49.422                             |
| 0.30-0.35                   | 209              | 4.4995               | 9.0983                  | 90.011                          | 58.521                             |
| 0.25-0.30                   | 172              | 3.7029               | 11.2462                 | 93.714                          | 69.767                             |
| 0.20-0.25                   | 147              | 3.1647               | 13.4954                 | 96.878                          | 83.262                             |
| 0.15-0.20                   | 101              | 2.1744               | 11.1246                 | 99.053                          | 94.387                             |
| 0.10-0.15                   | 43               | 0.9257               | 5.2685                  | 99.978                          | 99.656                             |
| 0.05-0.10                   | 1                | 0.0215               | 0.3445                  | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.80-0.85                   | 308              | 8.8379               | 1.3236                  | 8.838                           | 1.324                              |
| 0.75-0.80                   | 505              | 14.4907              | 3.7817                  | 23.329                          | 5.105                              |
| 0.70-0.75                   | 402              | 11.5352              | 3.8088                  | 34.864                          | 8.914                              |
| 0.65-0.70                   | 348              | 9.9857               | 5.4835                  | 44.849                          | 14.398                             |
| 0.60-0.65                   | 306              | 8.7805               | 5.1324                  | 53.630                          | 19.530                             |
| 0.55-0.60                   | 287              | 8.2353               | 5.5916                  | 61.865                          | 25.122                             |
| 0.50-0.55                   | 208              | 5.9684               | 5.8077                  | 67.834                          | 30.929                             |
| 0.45-0.50                   | 199              | 5.7102               | 5.3755                  | 73.544                          | 36.305                             |
| 0.40-0.45                   | 207              | 5.9397               | 6.9692                  | 79.484                          | 43.274                             |
| 0.35-0.40                   | 159              | 4.5624               | 7.8066                  | 84.046                          | 51.080                             |
| 0.30-0.35                   | 141              | 4.0459               | 7.8606                  | 88.092                          | 58.941                             |
| 0.25-0.30                   | 160              | 4.5911               | 11.5883                 | 92.683                          | 70.529                             |
| 0.20-0.25                   | 124              | 3.5581               | 12.9660                 | 96.241                          | 83.495                             |
| 0.15-0.20                   | 82               | 2.3529               | 10.3187                 | 98.594                          | 93.814                             |
| 0.10-0.15                   | 46               | 1.3199               | 5.7266                  | 99.914                          | 99.541                             |
| 0.05-0.10                   | 3                | 0.0861               | 0.4592                  | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=NNET 5HUBP Summary

Node id = Neural6  
 Node label = NNET 5HUBP  
 Meta path = Ids => Smpl => EMSave => Part => Neural6  
 Notes =

### Node=NNET 5HUBP Properties

| Property         | Value         | Default      | Property                | Value       | Default | Property           | Value   | Default |
|------------------|---------------|--------------|-------------------------|-------------|---------|--------------------|---------|---------|
| Component        | NeuralNetwork |              | Hidden                  | 5           | 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        | 1E-5          | 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                | 1E-5        | 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  | BPROP   | DEFAULT |
| GConvValue       | 1E-6          |              | Outfit                  |             |         | UseEstimates       | N       |         |

### Node=NNET 5HUBP Variable Summary

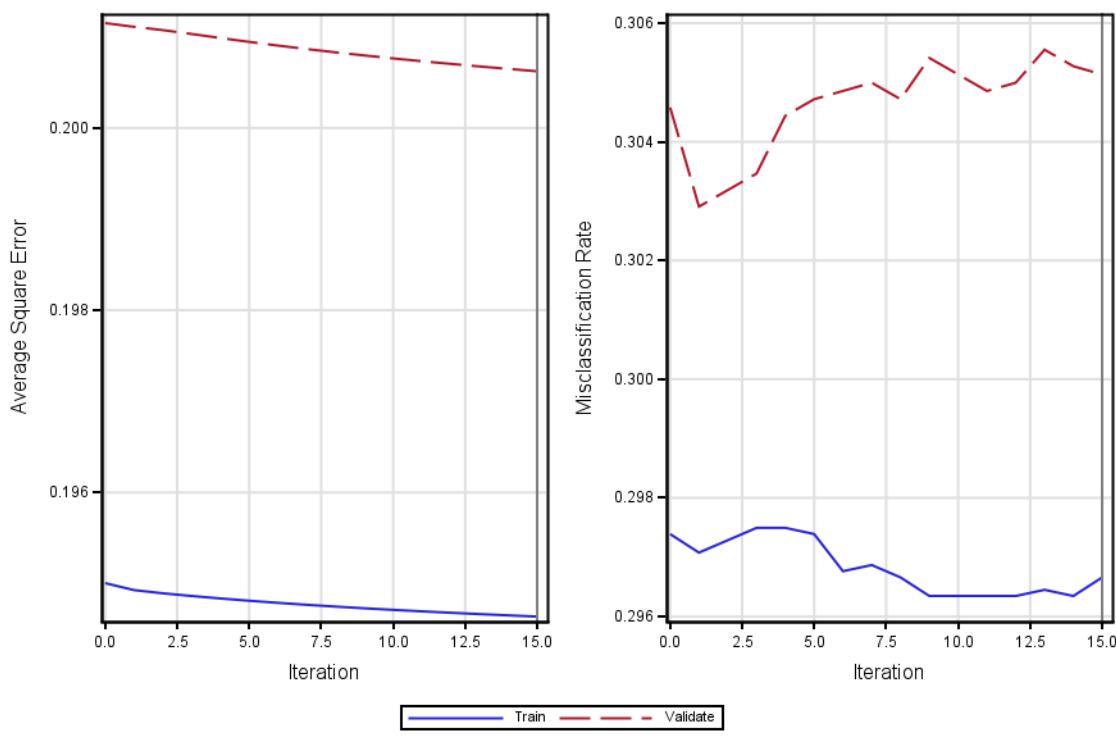
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=NNET 5HUBP Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic              | Train    | Validation | Test     |
|---------------------------------|----------|------------|----------|
| Total Degrees of Freedom        | 9580.00  | .          | .        |
| Degrees of Freedom for Error    | 9394.00  | .          | .        |
| Model Degrees of Freedom        | 186.00   | .          | .        |
| Number of Estimated Weights     | 186.00   | .          | .        |
| Akaike's Information Criterion  | 11354.17 | .          | .        |
| Schwarz's Bayesian Criterion    | 12687.31 | .          | .        |
| Average Squared Error           | 0.19     | 0.20       | 0.19     |
| Maximum Absolute Error          | 0.97     | 0.97       | 0.96     |
| Divisor for ASE                 | 19160.00 | 14374.00   | 14376.00 |
| Sum of Frequencies              | 9580.00  | 7187.00    | 7188.00  |
| Root Average Squared Error      | 0.44     | 0.45       | 0.44     |
| Sum of Squared Errors           | 3729.28  | 2883.74    | 2772.49  |
| Sum of Case Weights Times Freq  | 19160.00 | 14374.00   | 14376.00 |
| Final Prediction Error          | 0.20     | .          | .        |
| Mean Squared Error              | 0.20     | 0.20       | 0.19     |
| Root Final Prediction Error     | 0.45     | .          | .        |
| Root Mean Squared Error         | 0.45     | 0.45       | 0.44     |
| Average Error Function          | 0.57     | 0.59       | 0.57     |
| Error Function                  | 10982.17 | 8444.47    | 8187.60  |
| Misclassification Rate          | 0.30     | 0.31       | 0.29     |
| Number of Wrong Classifications | 2842.00  | 2193.00    | 2099.00  |

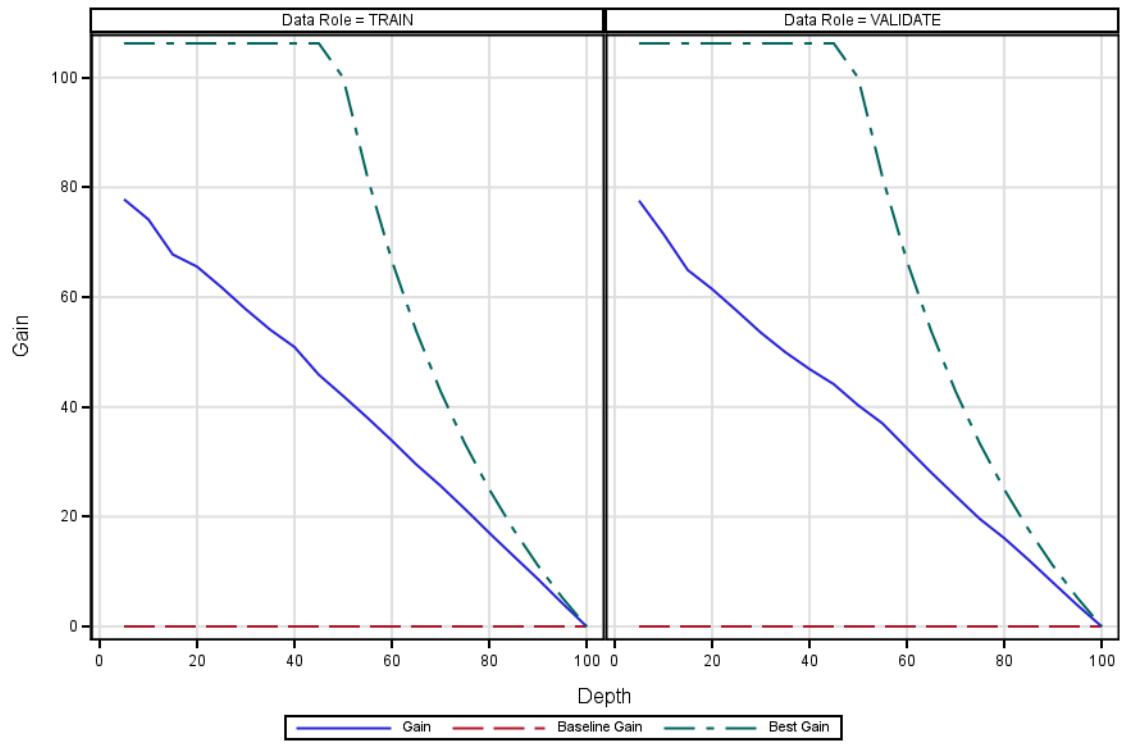
SAS Enterprise Miner Report  
Node=NNET 5HUBP  
Model Iteration Plots



### SAS Enterprise Miner Report

Node=NNET 5HUBP

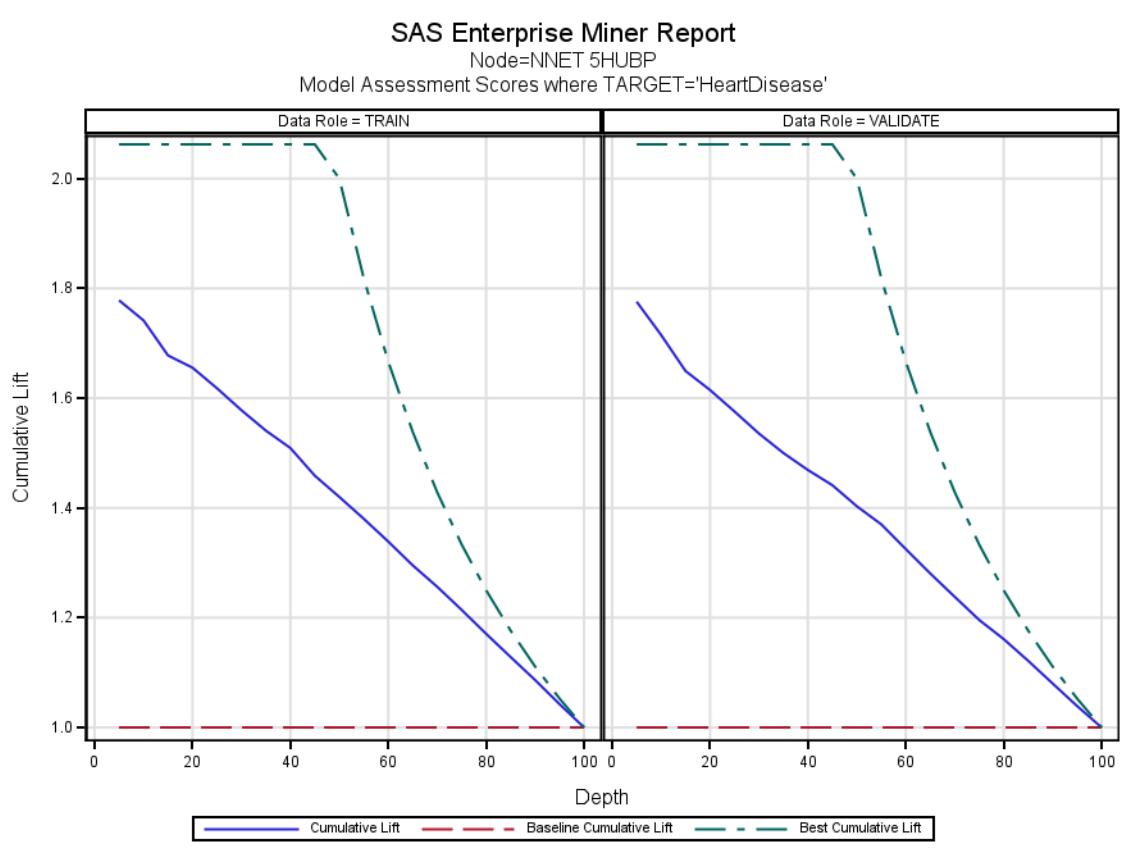
Model Assessment Scores where TARGET='HeartDisease'

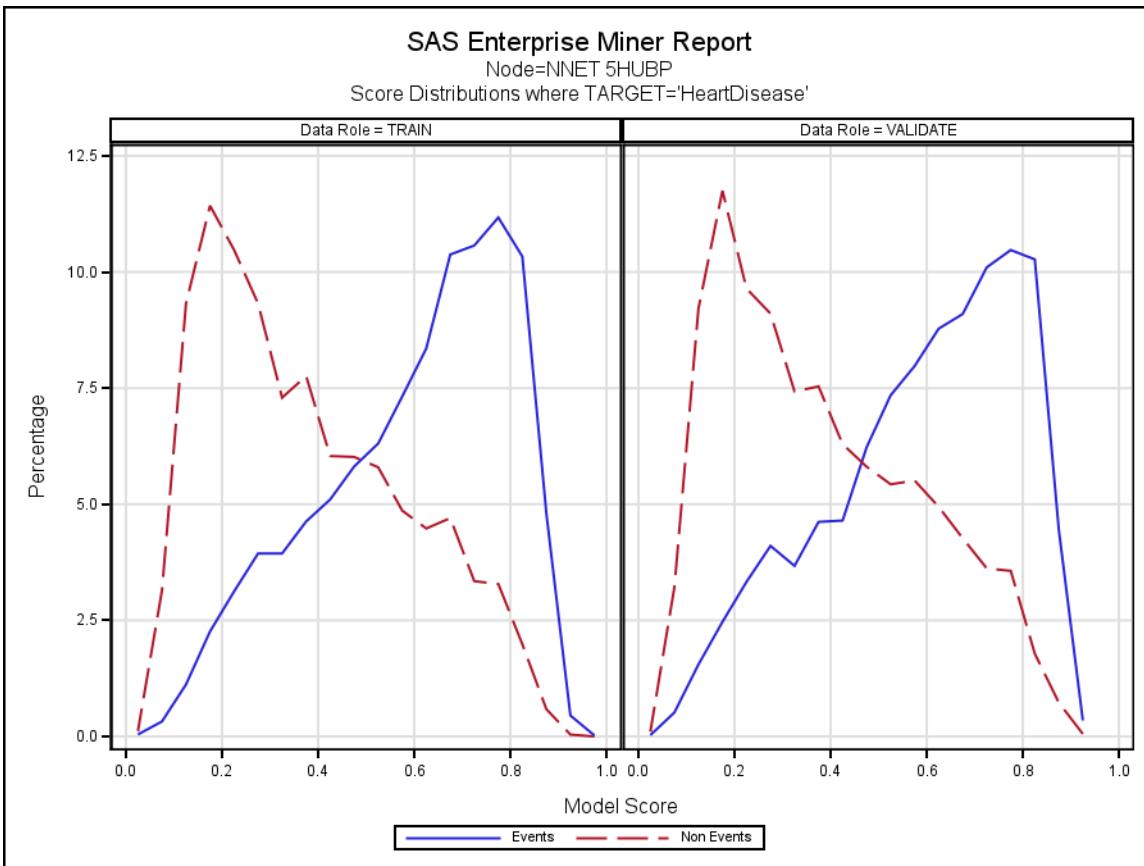
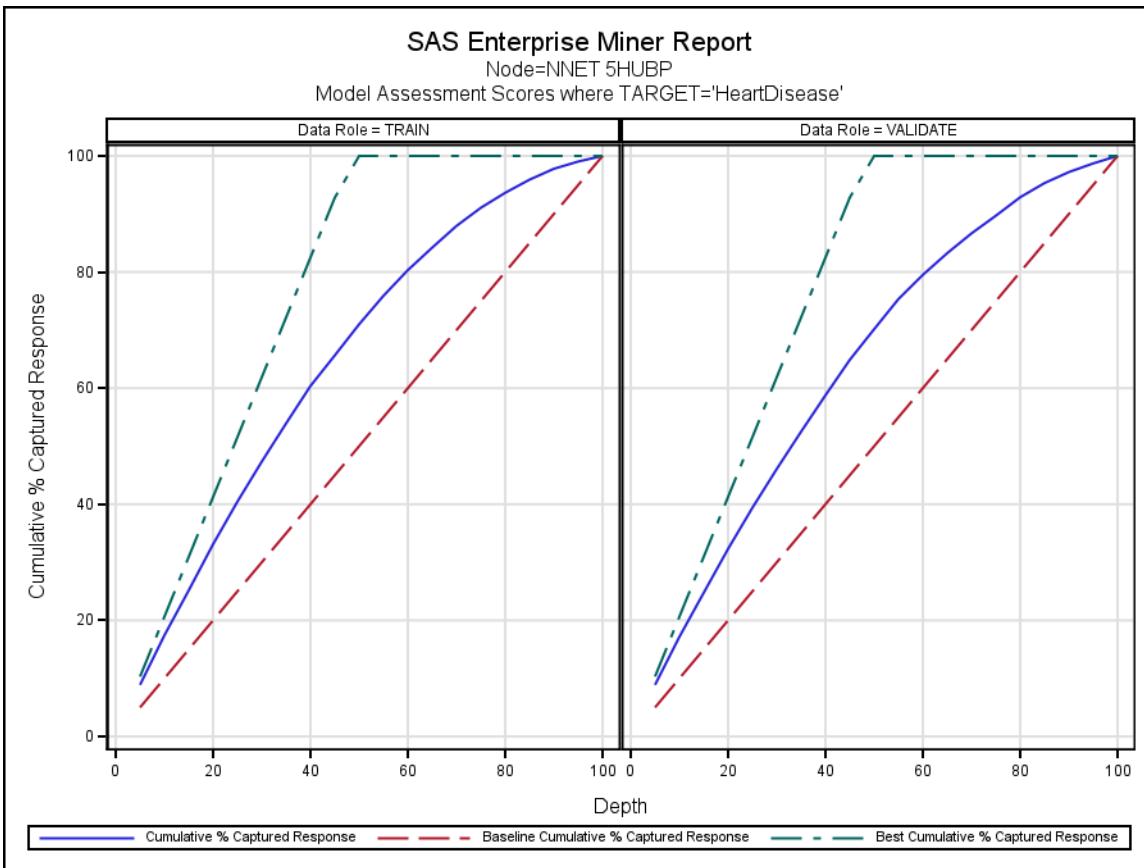


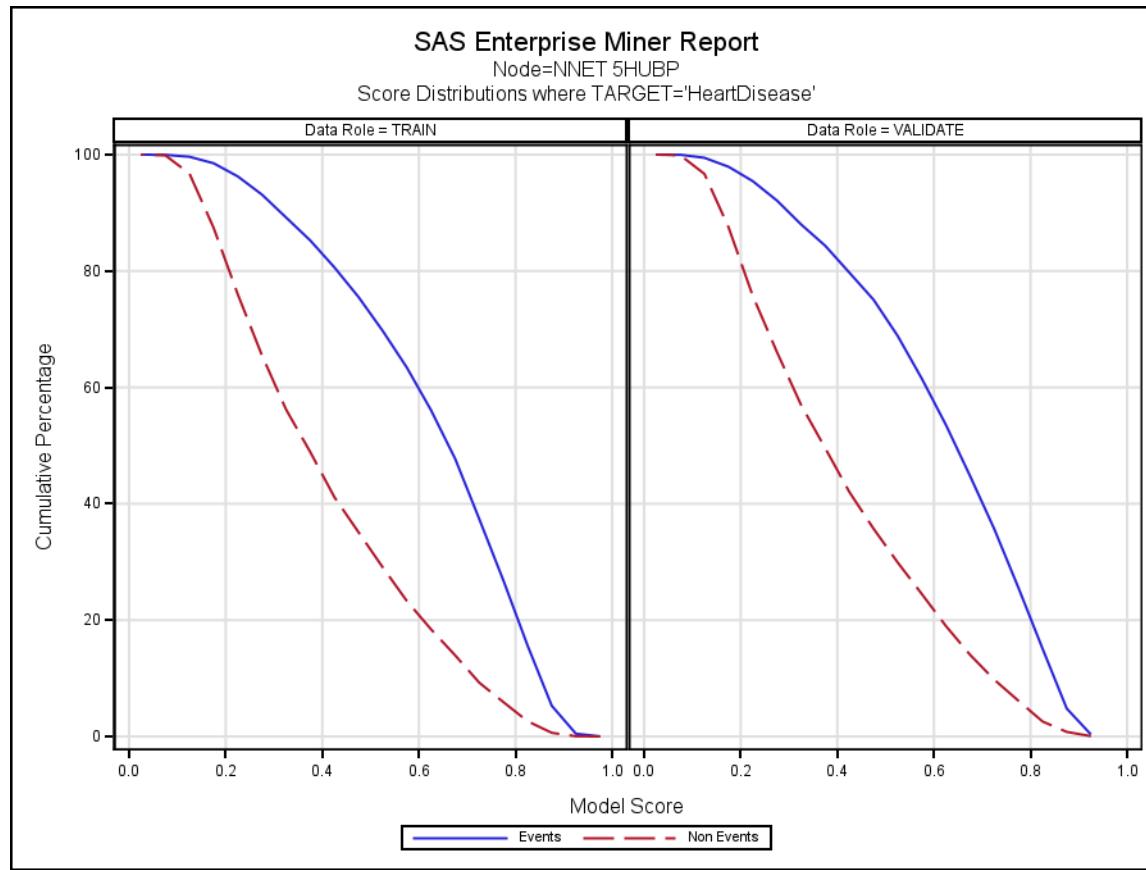
### SAS Enterprise Miner Report

Node=NNET 5HUBP

Model Assessment Scores where TARGET='HeartDisease'







### Node=NNET 5HUBP

#### Score Distributions

Target Variable=HeartDisease 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                   | 1                | 0.0215               | 0.0000                  | 0.022                           | 0.000                              |
| 0.90-0.95                   | 21               | 0.4521               | 0.0405                  | 0.474                           | 0.041                              |
| 0.85-0.90                   | 223              | 4.8009               | 0.5876                  | 5.274                           | 0.628                              |
| 0.80-0.85                   | 480              | 10.3337              | 1.9858                  | 15.608                          | 2.614                              |
| 0.75-0.80                   | 519              | 11.1733              | 3.2827                  | 26.781                          | 5.897                              |
| 0.70-0.75                   | 491              | 10.5705              | 3.3435                  | 37.352                          | 9.240                              |
| 0.65-0.70                   | 482              | 10.3767              | 4.7011                  | 47.729                          | 13.941                             |
| 0.60-0.65                   | 388              | 8.3531               | 4.4782                  | 56.082                          | 18.419                             |
| 0.55-0.60                   | 340              | 7.3197               | 4.8632                  | 63.402                          | 23.283                             |
| 0.50-0.55                   | 293              | 6.3079               | 5.7953                  | 69.709                          | 29.078                             |
| 0.45-0.50                   | 270              | 5.8127               | 6.0182                  | 75.522                          | 35.096                             |
| 0.40-0.45                   | 237              | 5.1023               | 6.0385                  | 80.624                          | 41.135                             |
| 0.35-0.40                   | 215              | 4.6286               | 7.7609                  | 85.253                          | 48.896                             |
| 0.30-0.35                   | 183              | 3.9397               | 7.2948                  | 89.193                          | 56.190                             |
| 0.25-0.30                   | 183              | 3.9397               | 9.3212                  | 93.132                          | 65.512                             |
| 0.20-0.25                   | 145              | 3.1216               | 10.4762                 | 96.254                          | 75.988                             |
| 0.15-0.20                   | 105              | 2.2605               | 11.4286                 | 98.515                          | 87.416                             |
| 0.10-0.15                   | 52               | 1.1195               | 9.3212                  | 99.634                          | 96.738                             |
| 0.05-0.10                   | 15               | 0.3229               | 3.1408                  | 99.957                          | 99.878                             |
| 0.00-0.05                   | 2                | 0.0431               | 0.1216                  | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.90-0.95                   | 12               | 0.3443               | 0.0540                  | 0.344                           | 0.054                              |
| 0.85-0.90                   | 155              | 4.4476               | 0.7293                  | 4.792                           | 0.783                              |
| 0.80-0.85                   | 358              | 10.2726              | 1.7828                  | 15.065                          | 2.566                              |
| 0.75-0.80                   | 365              | 10.4735              | 3.5656                  | 25.538                          | 6.132                              |
| 0.70-0.75                   | 352              | 10.1004              | 3.6197                  | 35.638                          | 9.751                              |
| 0.65-0.70                   | 317              | 9.0961               | 4.2680                  | 44.735                          | 14.019                             |
| 0.60-0.65                   | 306              | 8.7805               | 4.9433                  | 53.515                          | 18.963                             |
| 0.55-0.60                   | 278              | 7.9770               | 5.5105                  | 61.492                          | 24.473                             |
| 0.50-0.55                   | 256              | 7.3458               | 5.4295                  | 68.838                          | 29.903                             |
| 0.45-0.50                   | 217              | 6.2267               | 5.8077                  | 75.065                          | 35.710                             |
| 0.40-0.45                   | 162              | 4.6485               | 6.2939                  | 79.713                          | 42.004                             |
| 0.35-0.40                   | 161              | 4.6198               | 7.5365                  | 84.333                          | 49.541                             |
| 0.30-0.35                   | 128              | 3.6729               | 7.4284                  | 88.006                          | 56.969                             |
| 0.25-0.30                   | 143              | 4.1033               | 9.1032                  | 92.109                          | 66.072                             |
| 0.20-0.25                   | 116              | 3.3286               | 9.6434                  | 95.438                          | 75.716                             |
| 0.15-0.20                   | 86               | 2.4677               | 11.7504                 | 97.905                          | 87.466                             |
| 0.10-0.15                   | 54               | 1.5495               | 9.2112                  | 99.455                          | 96.677                             |
| 0.05-0.10                   | 18               | 0.5165               | 3.2145                  | 99.971                          | 99.892                             |
| 0.00-0.05                   | 1                | 0.0287               | 0.1080                  | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Decision Tree (5) Summary

Node id = Tree5  
 Node label = Decision Tree (5)  
 Meta path = Ids => Smpl => EMSave => Part => Tree5  
 Notes =

### Node=Decision Tree (5) 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          |         |

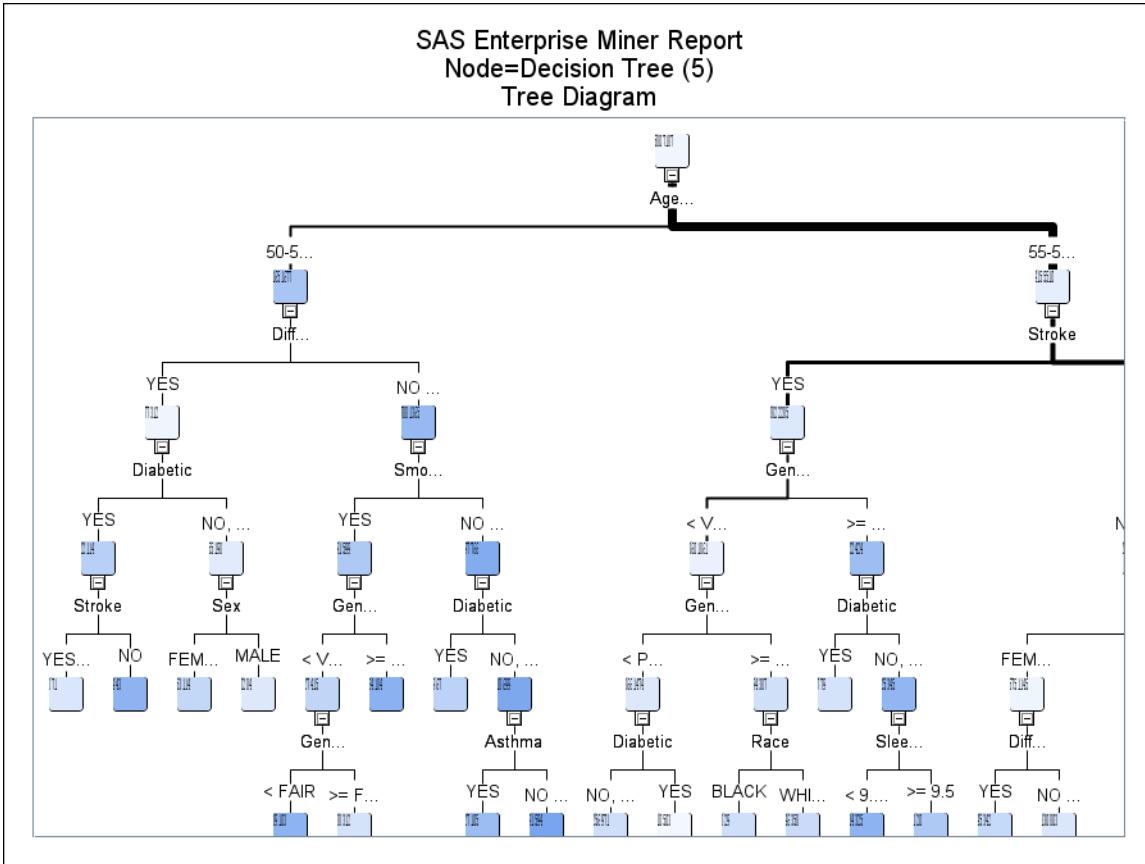
### Node=Decision Tree (5) Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |
| ID     | INTERVAL | 1               | _dataobs_  |

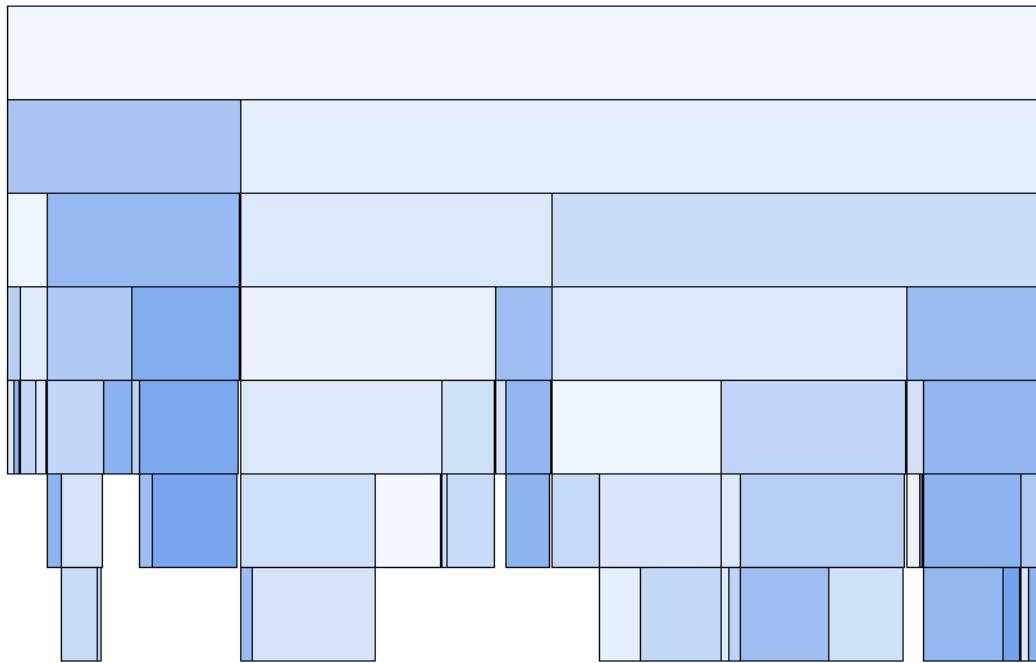
### Node=Decision Tree (5) Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

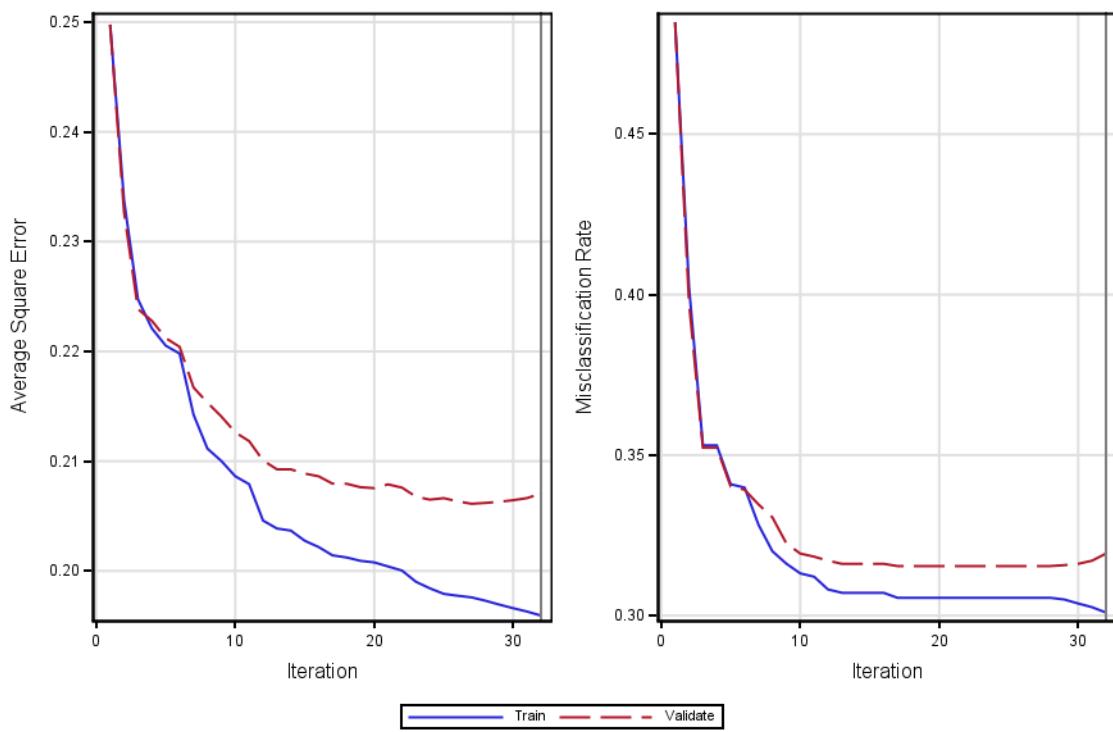
| Label of Statistic         | Train    | Validation | Test     |
|----------------------------|----------|------------|----------|
| Sum of Frequencies         | 9580.00  | 7187.00    | 7188.00  |
| Misclassification Rate     | 0.30     | 0.32       | 0.32     |
| Maximum Absolute Error     | 0.97     | 0.97       | 0.97     |
| Sum of Squared Errors      | 3754.13  | 2976.20    | 2956.10  |
| Average Squared Error      | 0.20     | 0.21       | 0.21     |
| Root Average Squared Error | 0.44     | 0.46       | 0.45     |
| Divisor for ASE            | 19160.00 | 14374.00   | 14376.00 |
| Total Degrees of Freedom   | 9580.00  |            |          |

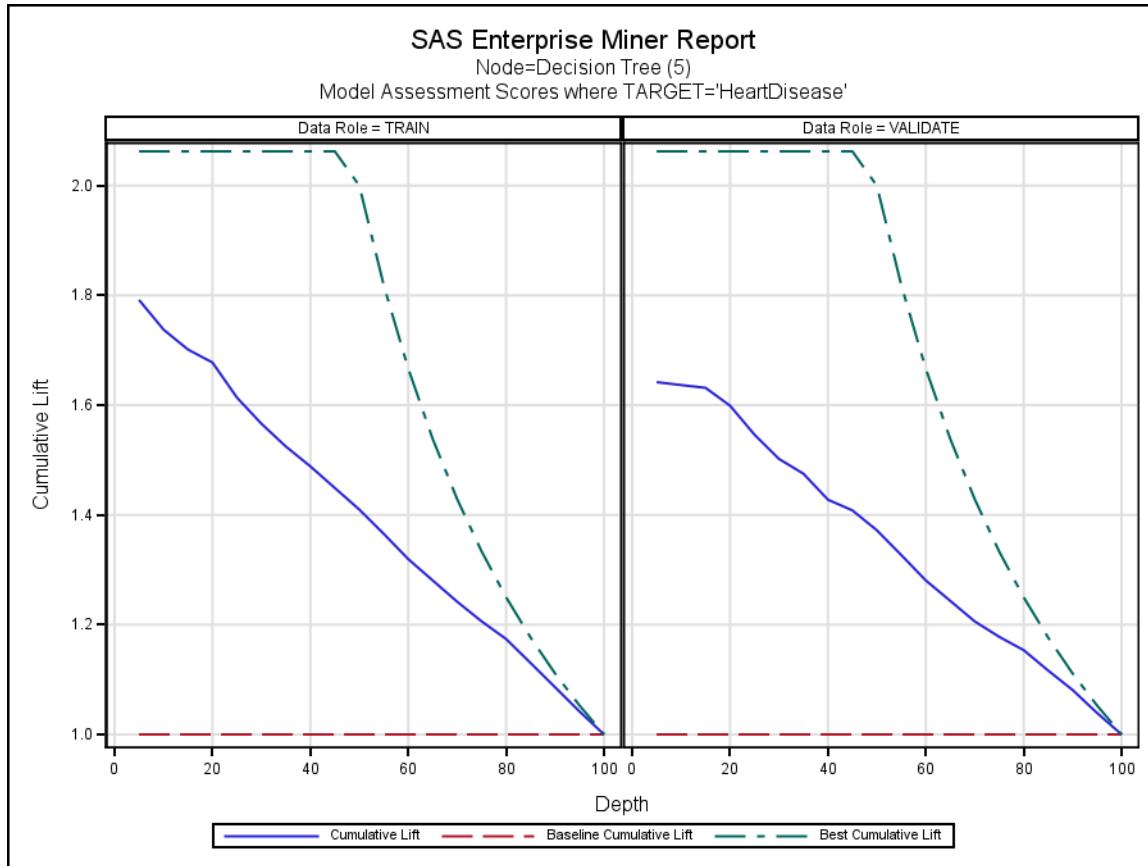
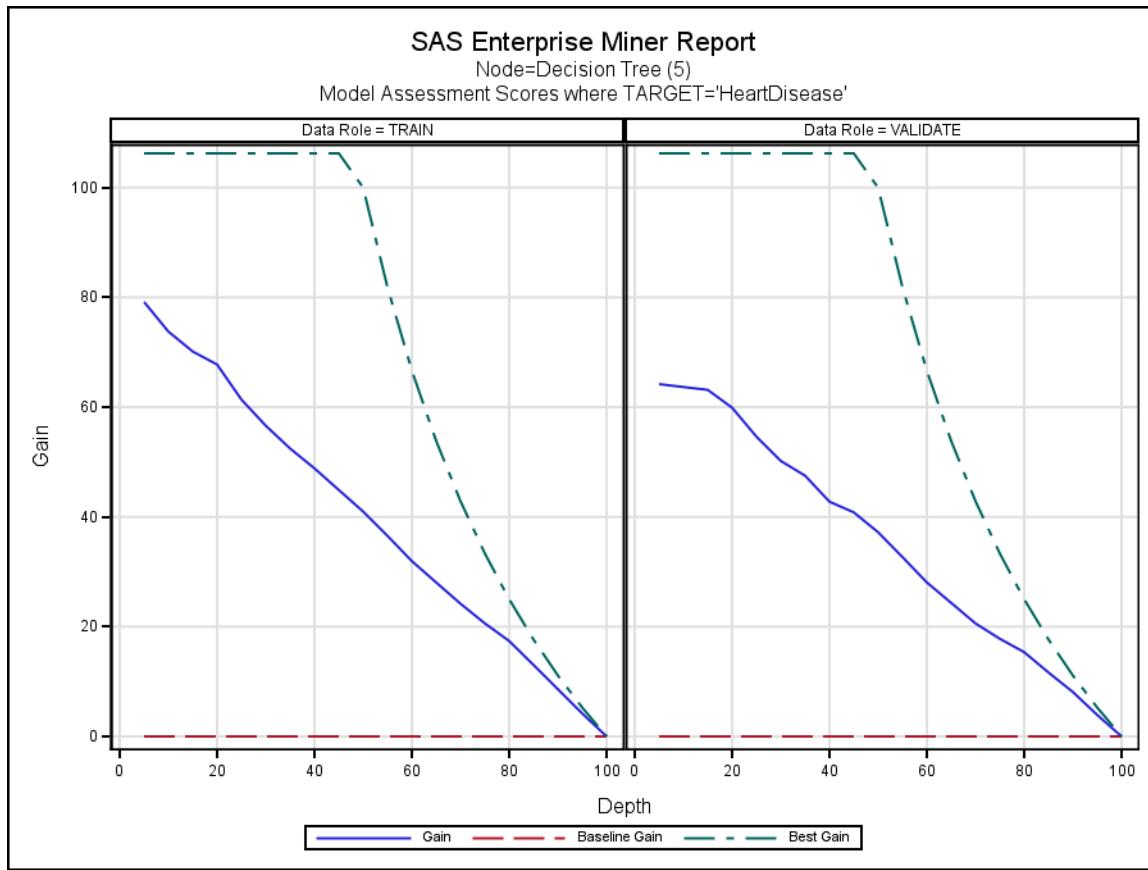


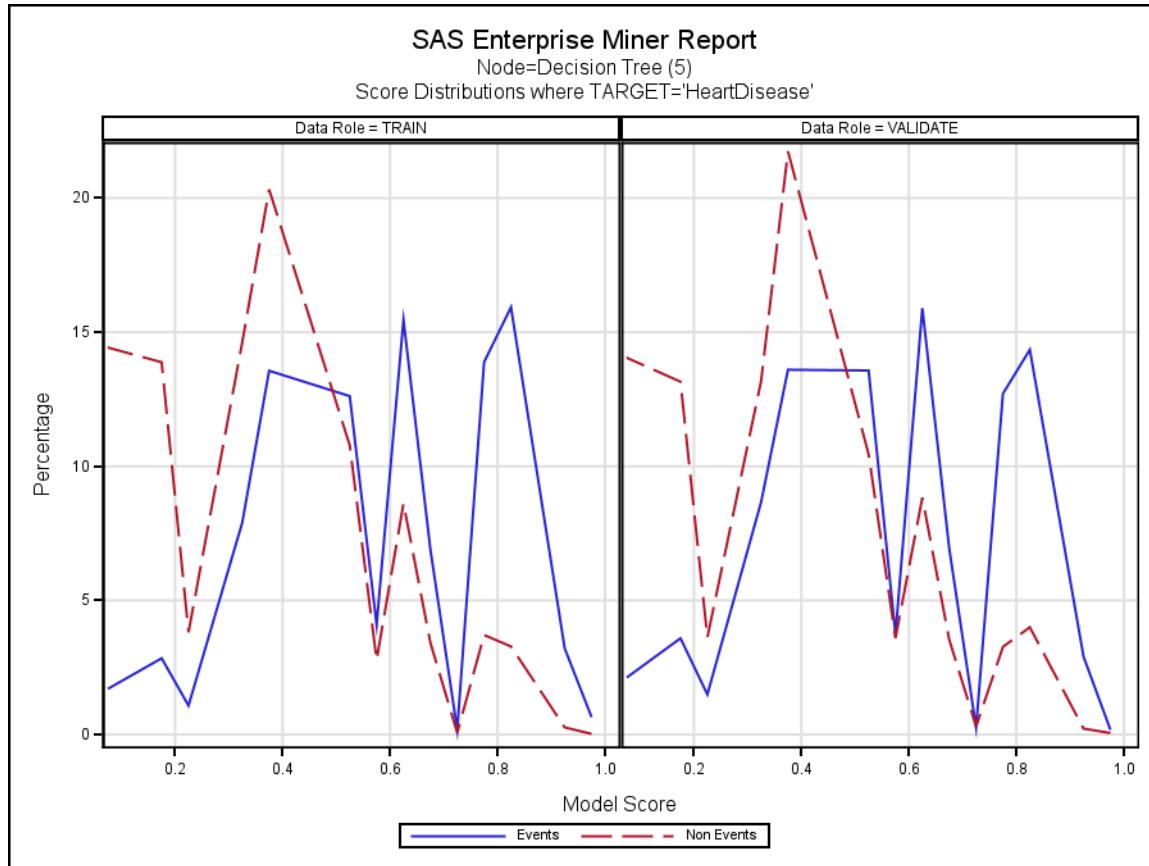
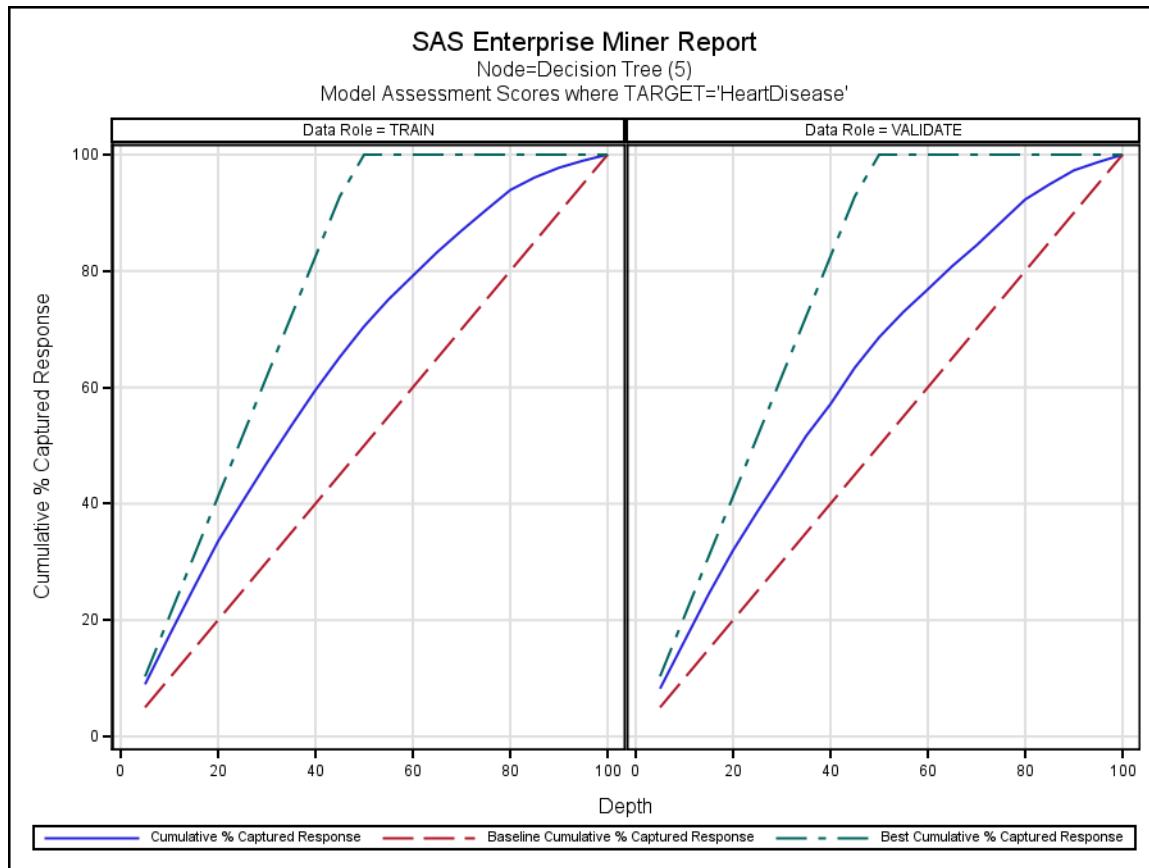
SAS Enterprise Miner Report  
Node=Decision Tree (5)  
Treemap

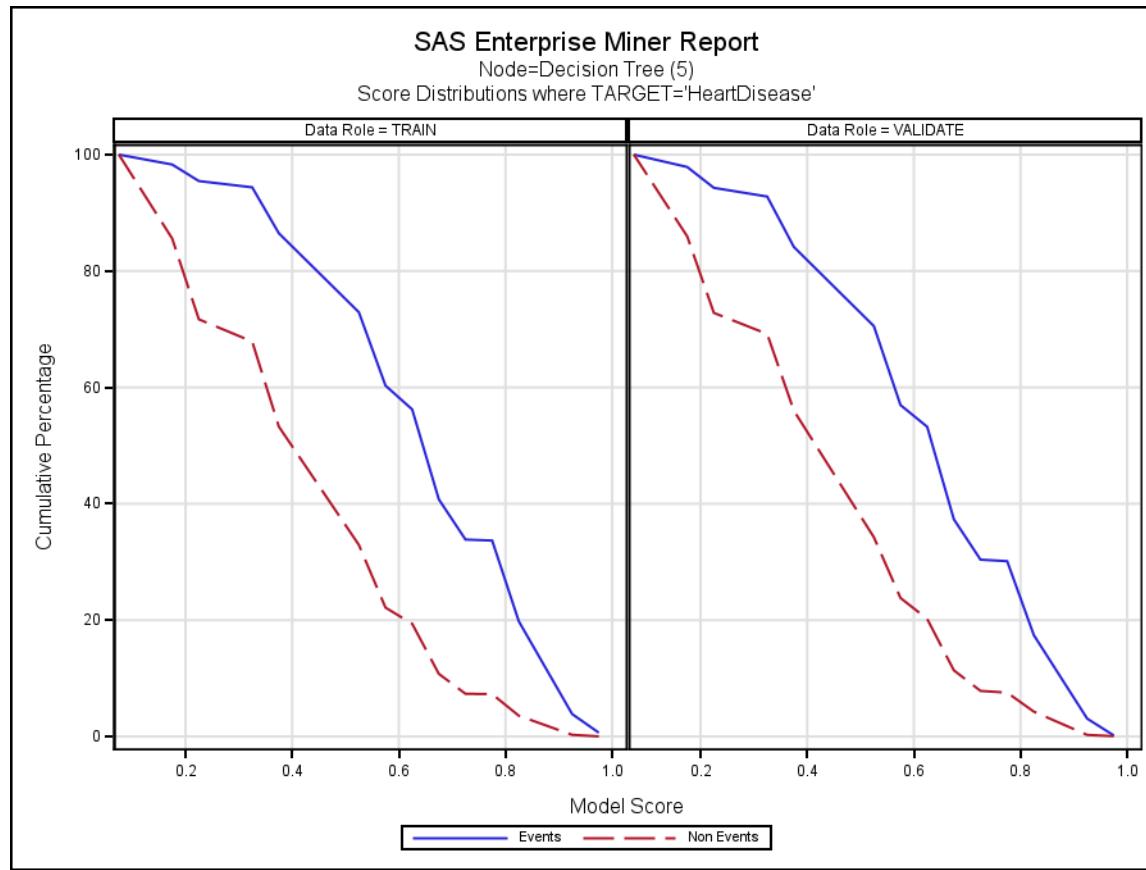


SAS Enterprise Miner Report  
Node=Decision Tree (5)  
Model Iteration Plots









### Node=Decision Tree (5)

#### Score Distributions

Target Variable=HeartDisease 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                   | 30               | 0.6459               | 0.0203                  | 0.646                           | 0.020                              |
| 0.90-0.95                   | 149              | 3.2078               | 0.2634                  | 3.854                           | 0.284                              |
| 0.80-0.85                   | 740              | 15.9311              | 3.2827                  | 19.785                          | 3.566                              |
| 0.75-0.80                   | 645              | 13.8859              | 3.7082                  | 33.671                          | 7.275                              |
| 0.70-0.75                   | 8                | 0.1722               | 0.0608                  | 33.843                          | 7.335                              |
| 0.65-0.70                   | 321              | 6.9107               | 3.4245                  | 40.753                          | 10.760                             |
| 0.60-0.65                   | 718              | 15.4575              | 8.6120                  | 56.211                          | 19.372                             |
| 0.55-0.60                   | 190              | 4.0904               | 2.7761                  | 60.301                          | 22.148                             |
| 0.50-0.55                   | 586              | 12.6157              | 10.7801                 | 72.917                          | 32.928                             |
| 0.35-0.40                   | 630              | 13.5630              | 20.3242                 | 86.480                          | 53.252                             |
| 0.30-0.35                   | 367              | 7.9010               | 14.6302                 | 94.381                          | 67.882                             |
| 0.20-0.25                   | 50               | 1.0764               | 3.8095                  | 95.457                          | 71.692                             |
| 0.15-0.20                   | 132              | 2.8418               | 13.8804                 | 98.299                          | 85.572                             |
| 0.05-0.10                   | 79               | 1.7008               | 14.4276                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.95-1.00                   | 6                | 0.1722               | 0.0540                  | 0.172                           | 0.054                              |
| 0.90-0.95                   | 101              | 2.8981               | 0.2161                  | 3.070                           | 0.270                              |
| 0.80-0.85                   | 500              | 14.3472              | 3.9978                  | 17.418                          | 4.268                              |
| 0.75-0.80                   | 443              | 12.7116              | 3.2685                  | 30.129                          | 7.536                              |
| 0.70-0.75                   | 9                | 0.2582               | 0.2971                  | 30.387                          | 7.834                              |
| 0.65-0.70                   | 242              | 6.9440               | 3.5386                  | 37.331                          | 11.372                             |
| 0.60-0.65                   | 554              | 15.8967              | 8.8331                  | 53.228                          | 20.205                             |
| 0.55-0.60                   | 130              | 3.7303               | 3.5927                  | 56.958                          | 23.798                             |
| 0.50-0.55                   | 473              | 13.5725              | 10.4538                 | 70.531                          | 34.252                             |
| 0.35-0.40                   | 474              | 13.6011              | 21.7450                 | 84.132                          | 55.997                             |
| 0.30-0.35                   | 302              | 8.6657               | 13.1821                 | 92.798                          | 69.179                             |
| 0.20-0.25                   | 52               | 1.4921               | 3.6197                  | 94.290                          | 72.798                             |
| 0.15-0.20                   | 125              | 3.5868               | 13.1551                 | 97.877                          | 85.954                             |
| 0.05-0.10                   | 74               | 2.1234               | 14.0465                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=ClassDec Tree B3D6 Summary

Node id = Tree4  
 Node label = ClassDec Tree B3D6  
 Meta path = Ids => Smpl => EMSave => Part => Tree4  
 Notes =

### Node=ClassDec Tree B3D6 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        | 3           | 2       | SampleMethod      | RANDOM     |         |
| CVNIter           | 10             |         | Maxdepth         | 6           |         | SampleSeed        | 12345      |         |
| CVRepeat          | 1              |         | MinCatSize       | 5           |         | SampleSize        | 10000      |         |
| CVSeed            | 12345          |         | MissingValue     | USEINSEARCH |         | ShowNodeld        | 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=ClassDec Tree B3D6 Variable Summary

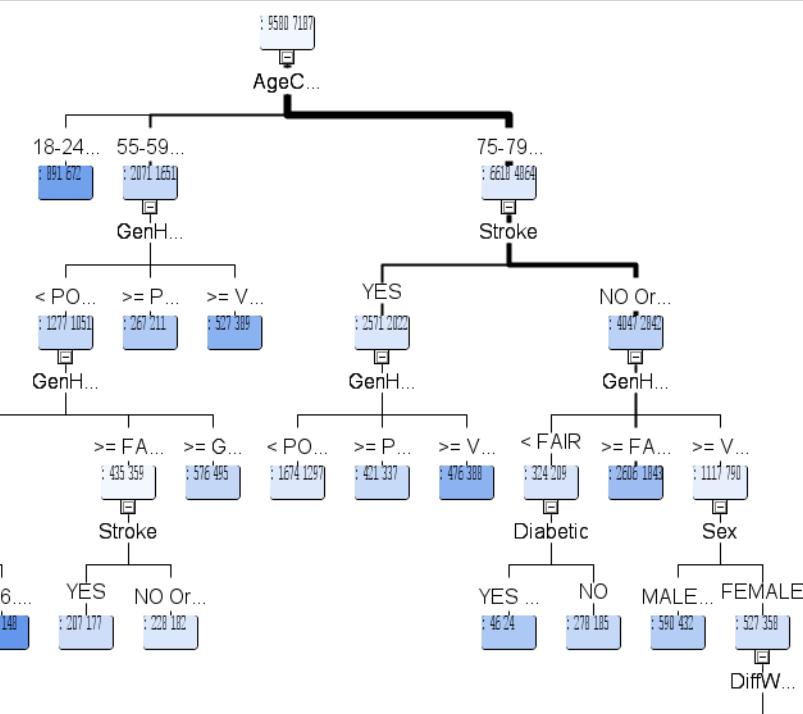
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |
| ID     | INTERVAL | 1               | _dataobs_  |

### Node=ClassDec Tree B3D6 Model Fit Statistics

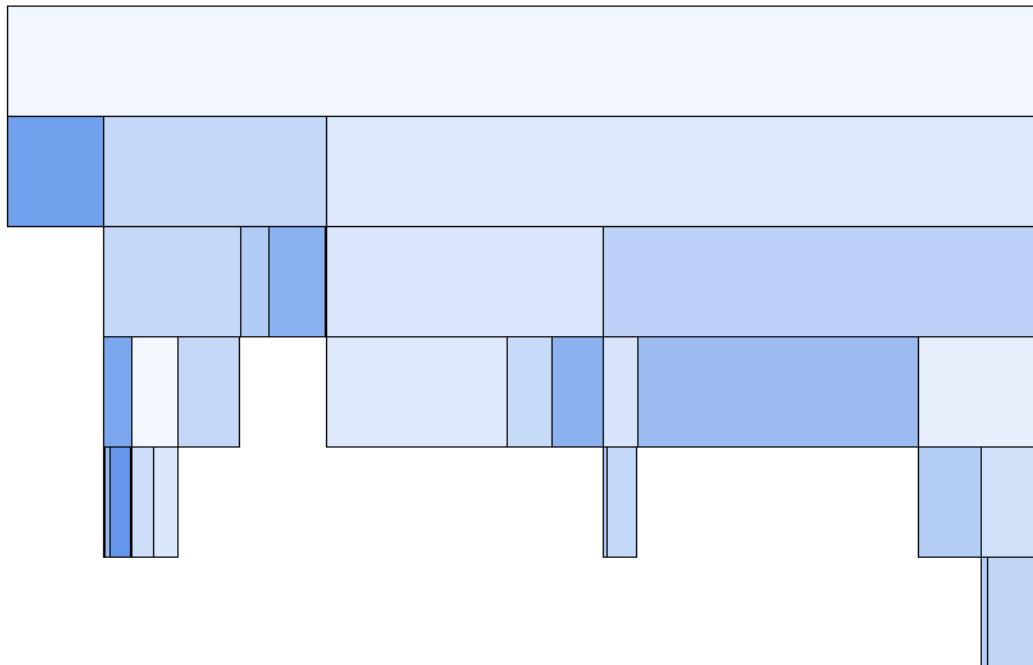
Target=HeartDisease Target Label=HeartDisease

| Label of Statistic         | Train    | Validation | Test     |
|----------------------------|----------|------------|----------|
| Sum of Frequencies         | 9580.00  | 7187.00    | 7188.00  |
| Misclassification Rate     | 0.31     | 0.31       | 0.31     |
| Maximum Absolute Error     | 0.89     | 0.89       | 0.89     |
| Sum of Squared Errors      | 3906.34  | 2976.64    | 2958.73  |
| Average Squared Error      | 0.20     | 0.21       | 0.21     |
| Root Average Squared Error | 0.45     | 0.46       | 0.45     |
| Divisor for ASE            | 19160.00 | 14374.00   | 14376.00 |
| Total Degrees of Freedom   | 9580.00  | .          | .        |

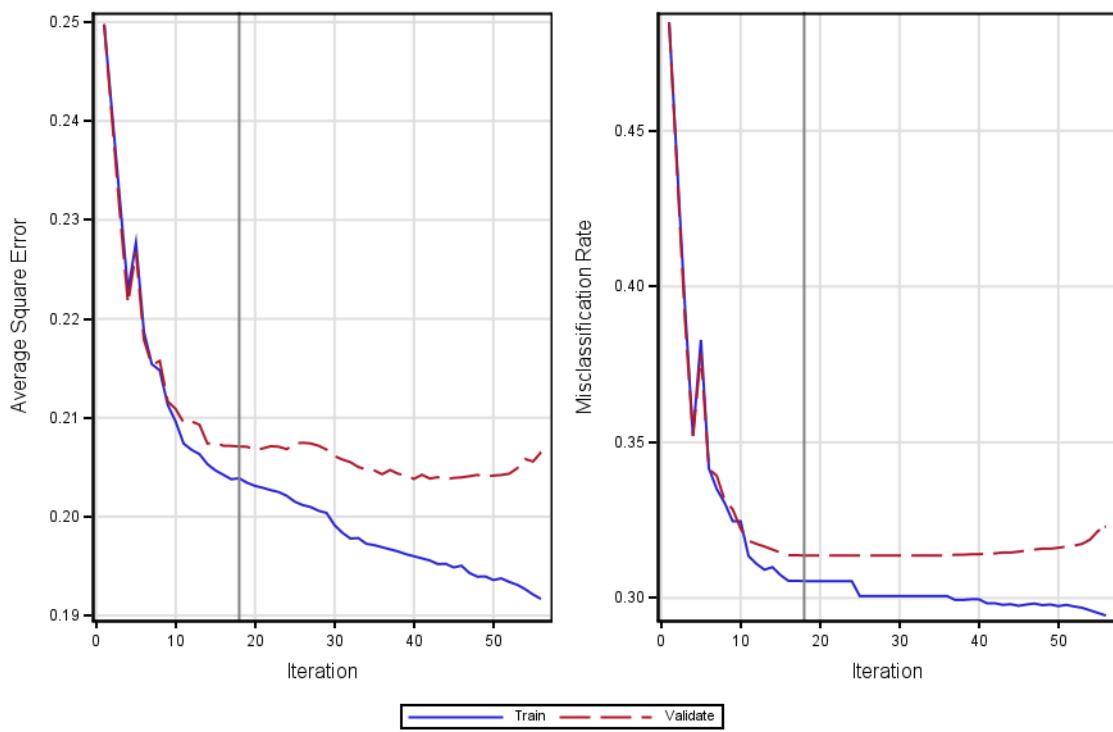
**SAS Enterprise Miner Report**  
**Node=ClassDec Tree B3D6**  
**Tree Diagram**



SAS Enterprise Miner Report  
Node=ClassDec Tree B3D6  
Treemap

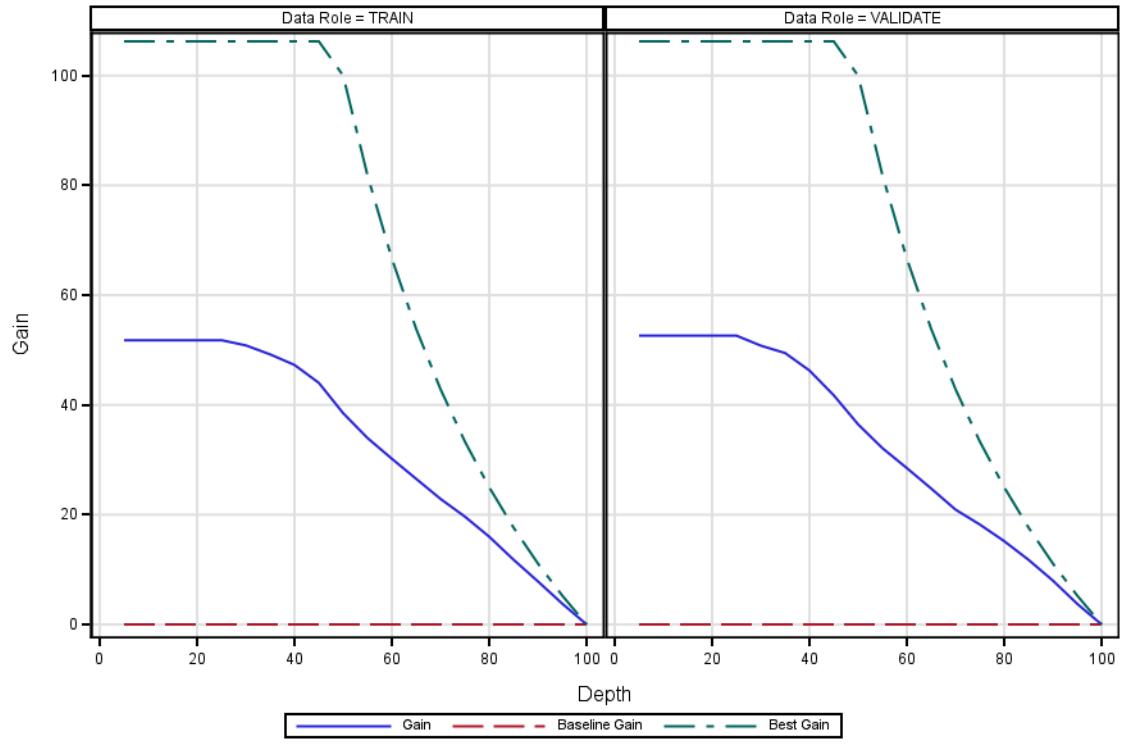


SAS Enterprise Miner Report  
Node=ClassDec Tree B3D6  
Model Iteration Plots



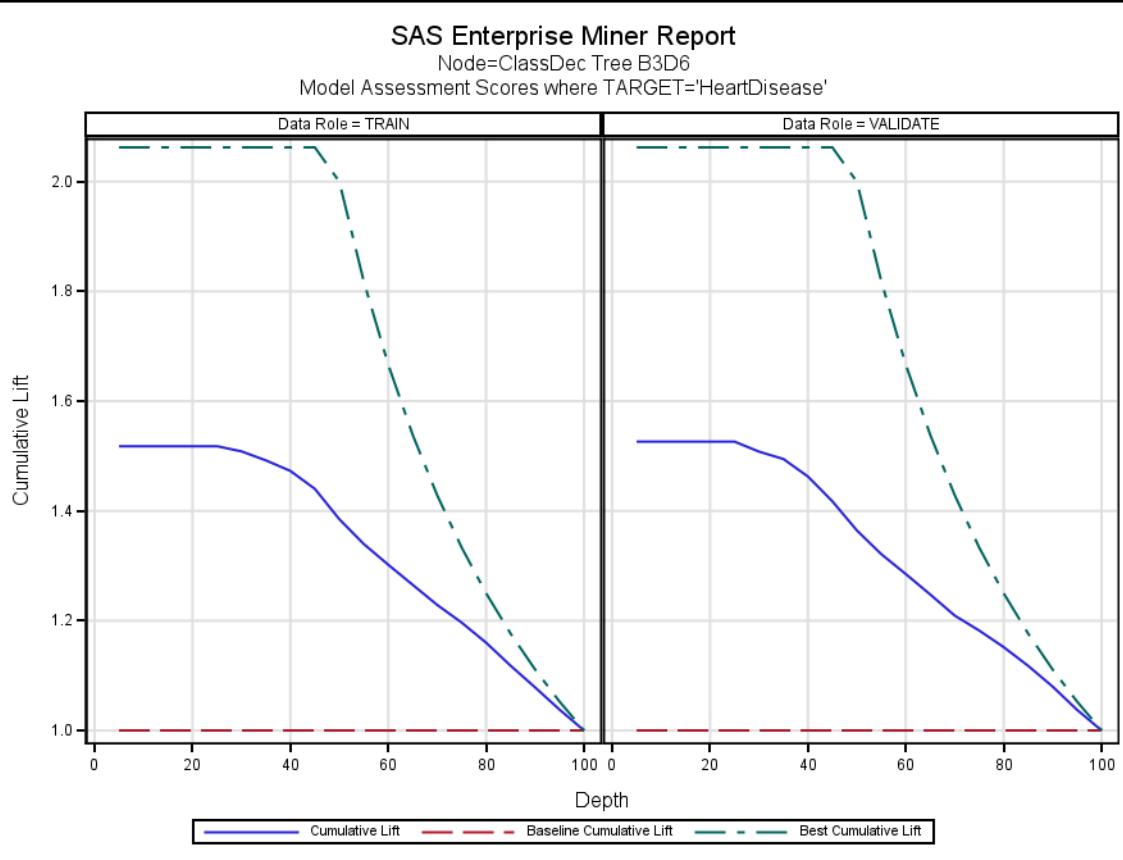
### SAS Enterprise Miner Report

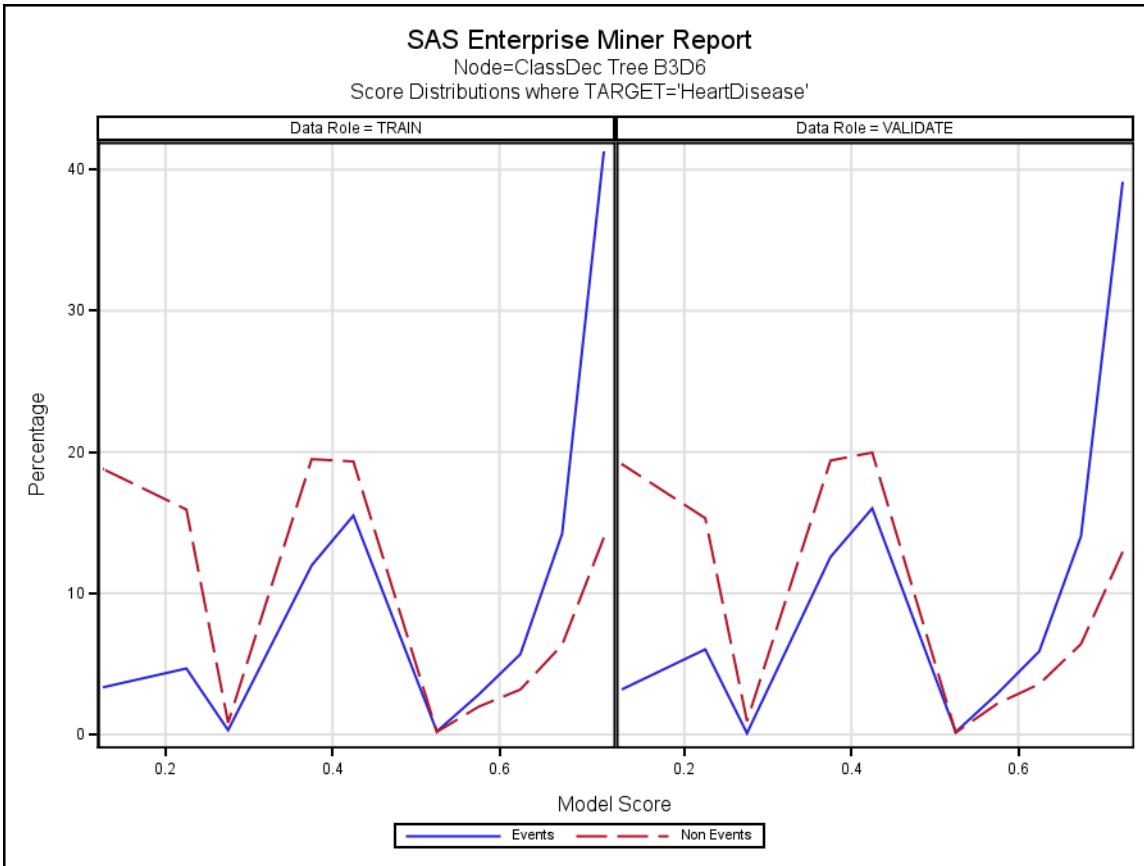
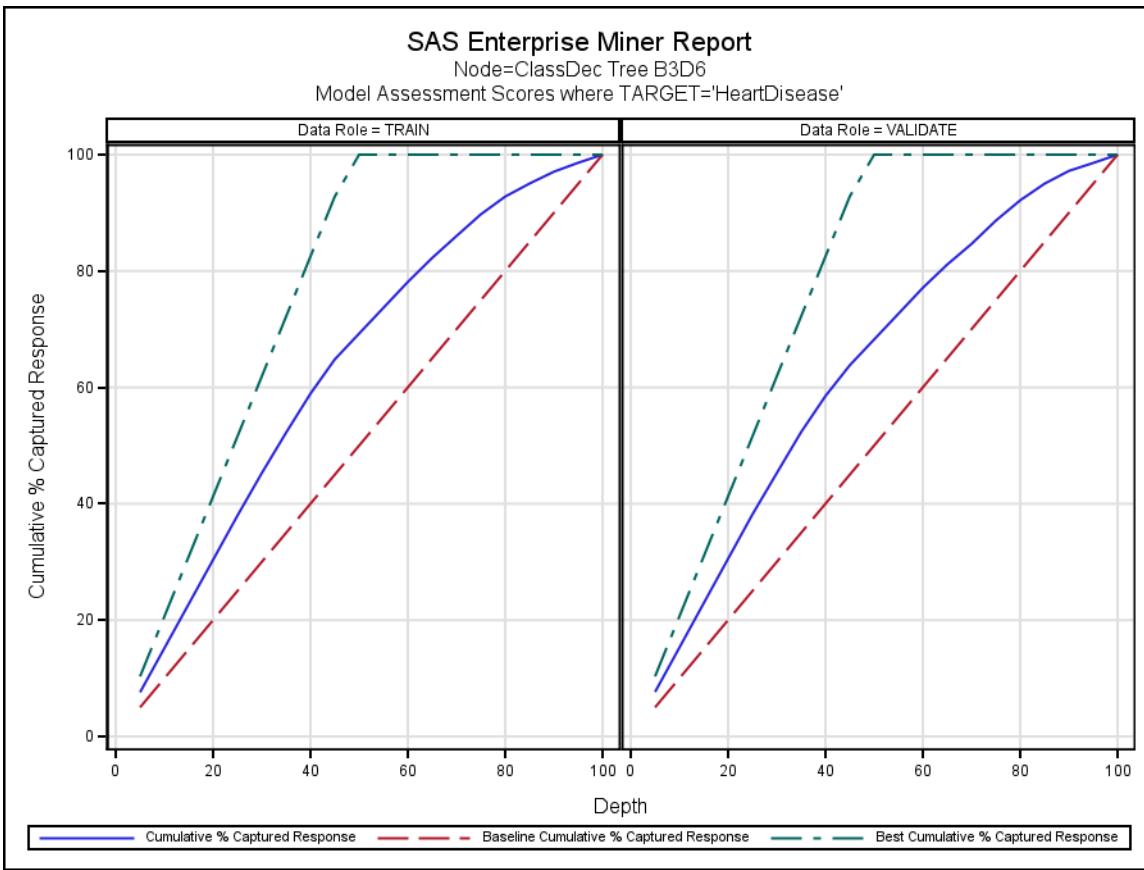
Node=ClassDec Tree B3D6  
Model Assessment Scores where TARGET='HeartDisease'

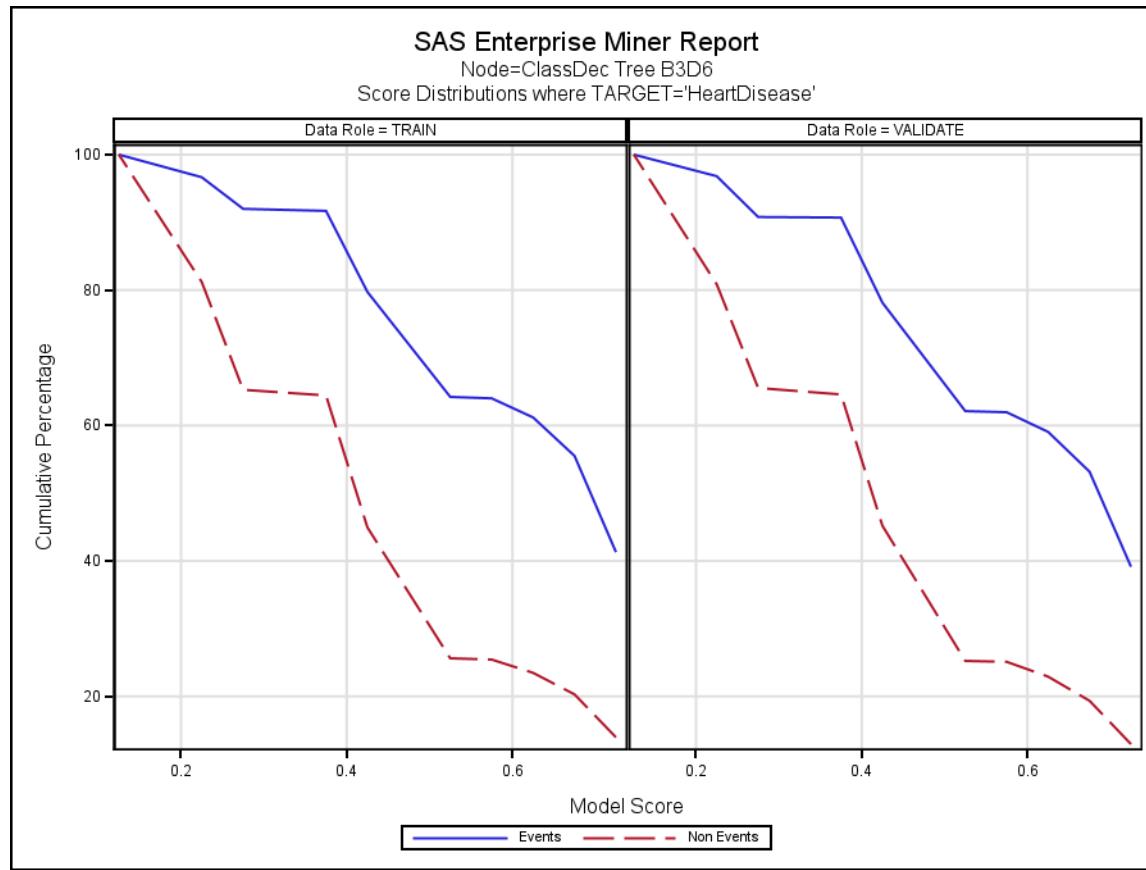


### SAS Enterprise Miner Report

Node=ClassDec Tree B3D6  
Model Assessment Scores where TARGET='HeartDisease'







### Node=ClassDec Tree B3D6

#### Score Distributions

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.70-0.75                   | 1918             | 41.2917              | 13.9412                 | 41.292                          | 13.941                             |
| 0.65-0.70                   | 660              | 14.2088              | 6.3425                  | 55.501                          | 20.284                             |
| 0.60-0.65                   | 264              | 5.6835               | 3.1814                  | 61.184                          | 23.465                             |
| 0.55-0.60                   | 131              | 2.8202               | 1.9656                  | 64.004                          | 25.431                             |
| 0.50-0.55                   | 10               | 0.2153               | 0.1824                  | 64.220                          | 25.613                             |
| 0.40-0.45                   | 720              | 15.5005              | 19.3313                 | 79.720                          | 44.944                             |
| 0.35-0.40                   | 556              | 11.9699              | 19.4934                 | 91.690                          | 64.438                             |
| 0.25-0.30                   | 14               | 0.3014               | 0.8308                  | 91.991                          | 65.268                             |
| 0.20-0.25                   | 217              | 4.6717               | 15.9271                 | 96.663                          | 81.196                             |
| 0.10-0.15                   | 155              | 3.3369               | 18.8045                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.70-0.75                   | 1364             | 39.1392              | 12.9390                 | 39.139                          | 12.939                             |
| 0.65-0.70                   | 489              | 14.0316              | 6.4019                  | 53.171                          | 19.341                             |
| 0.60-0.65                   | 205              | 5.8824               | 3.5656                  | 59.053                          | 22.907                             |
| 0.55-0.60                   | 101              | 2.8981               | 2.1880                  | 61.951                          | 25.095                             |
| 0.50-0.55                   | 6                | 0.1722               | 0.1351                  | 62.123                          | 25.230                             |
| 0.40-0.45                   | 558              | 16.0115              | 19.9622                 | 78.135                          | 45.192                             |
| 0.35-0.40                   | 438              | 12.5681              | 19.3949                 | 90.703                          | 64.587                             |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.25-0.30                   | 3                | 0.0861               | 0.9454                  | 90.789                          | 65.532                             |
| 0.20-0.25                   | 210              | 6.0258               | 15.3160                 | 96.815                          | 80.848                             |
| 0.10-0.15                   | 111              | 3.1851               | 19.1518                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=ClassDec Tree B2D2 Summary

Node id = Tree3  
 Node label = ClassDec Tree B2D2  
 Meta path = Ids => Smpl => EMSave => Part => Tree3  
 Notes =

### Node=ClassDec Tree B2D2 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         | 2           | 6       | SampleSeed        | 12345      |         |
| CVRepeat          | 1              |         | MinCatSize       | 5           |         | SampleSize        | 10000      |         |
| CVSeed            | 12345          |         | MissingValue     | USEINSEARCH |         | ShowNodeld        | 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          |         |

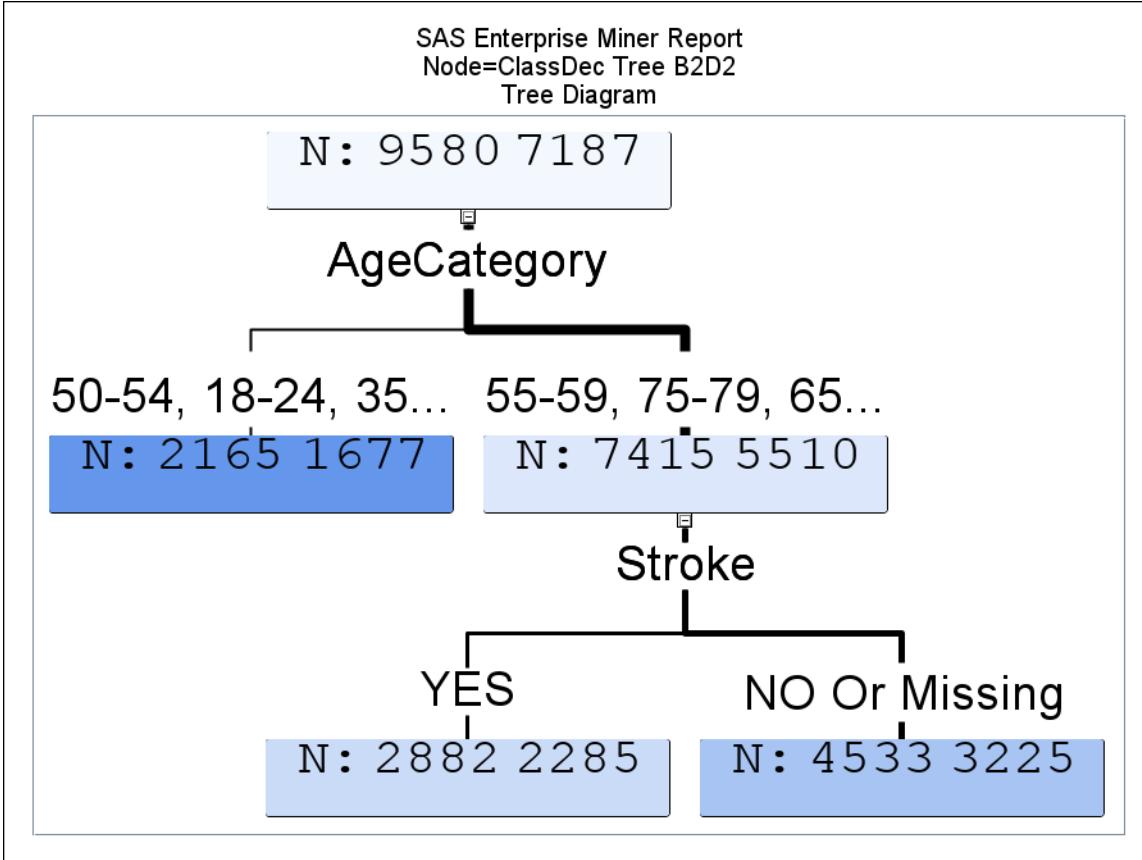
### Node=ClassDec Tree B2D2 Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |
| ID     | INTERVAL | 1               | _dataobs_  |

### Node=ClassDec Tree B2D2 Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

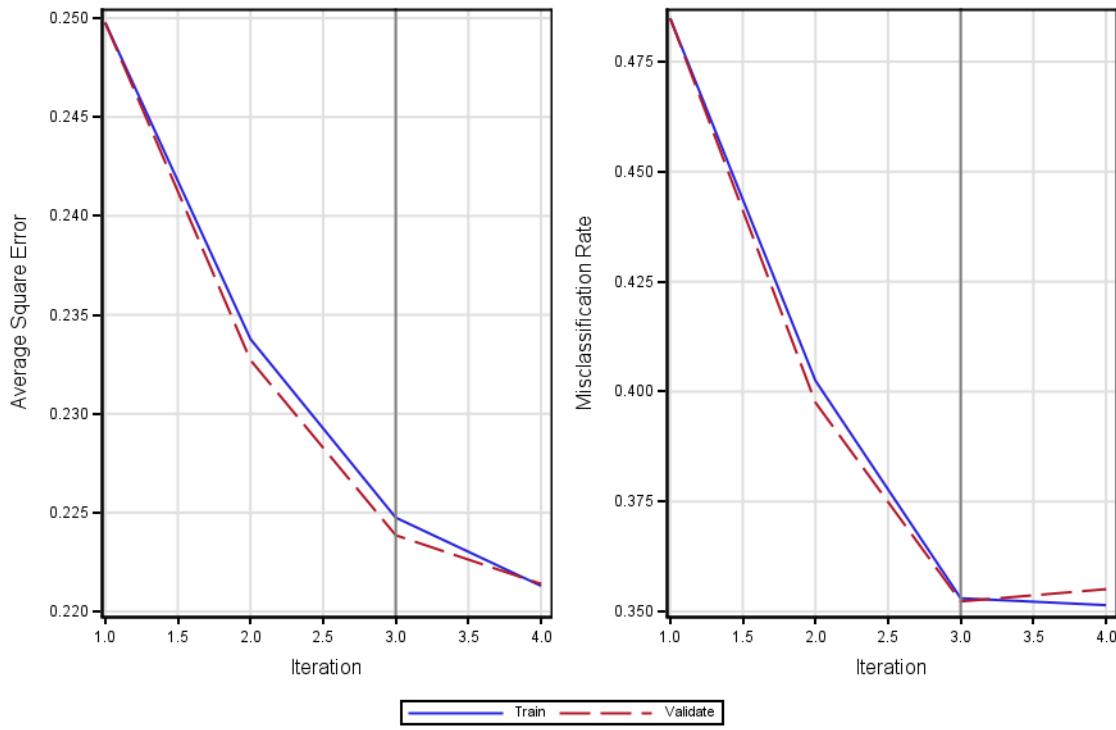
| Label of Statistic         | Train    | Validation | Test     |
|----------------------------|----------|------------|----------|
| Sum of Frequencies         | 9580.00  | 7187.00    | 7188.00  |
| Misclassification Rate     | 0.35     | 0.35       | 0.36     |
| Maximum Absolute Error     | 0.75     | 0.75       | 0.75     |
| Sum of Squared Errors      | 4306.19  | 3217.74    | 3255.87  |
| Average Squared Error      | 0.22     | 0.22       | 0.23     |
| Root Average Squared Error | 0.47     | 0.47       | 0.48     |
| Divisor for ASE            | 19160.00 | 14374.00   | 14376.00 |
| Total Degrees of Freedom   | 9580.00  | .          | .        |



SAS Enterprise Miner Report  
Node=ClassDec Tree B2D2  
Treemap

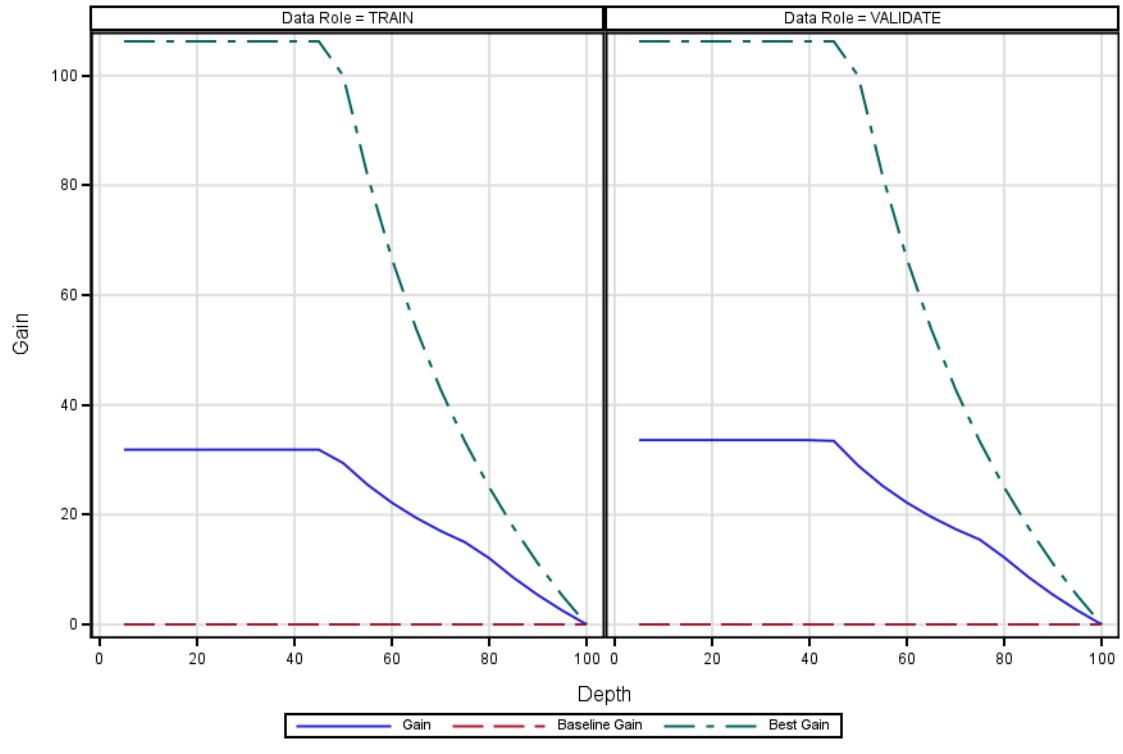


SAS Enterprise Miner Report  
Node=ClassDec Tree B2D2  
Model Iteration Plots



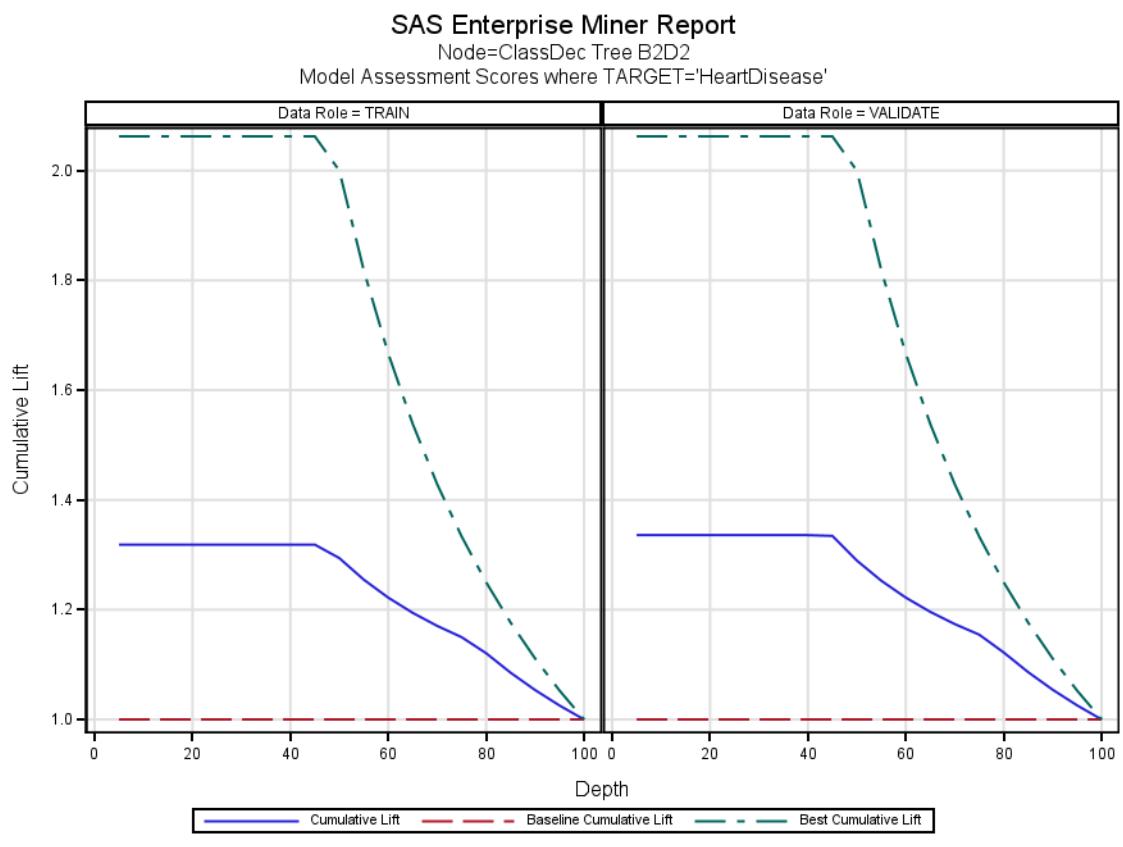
### SAS Enterprise Miner Report

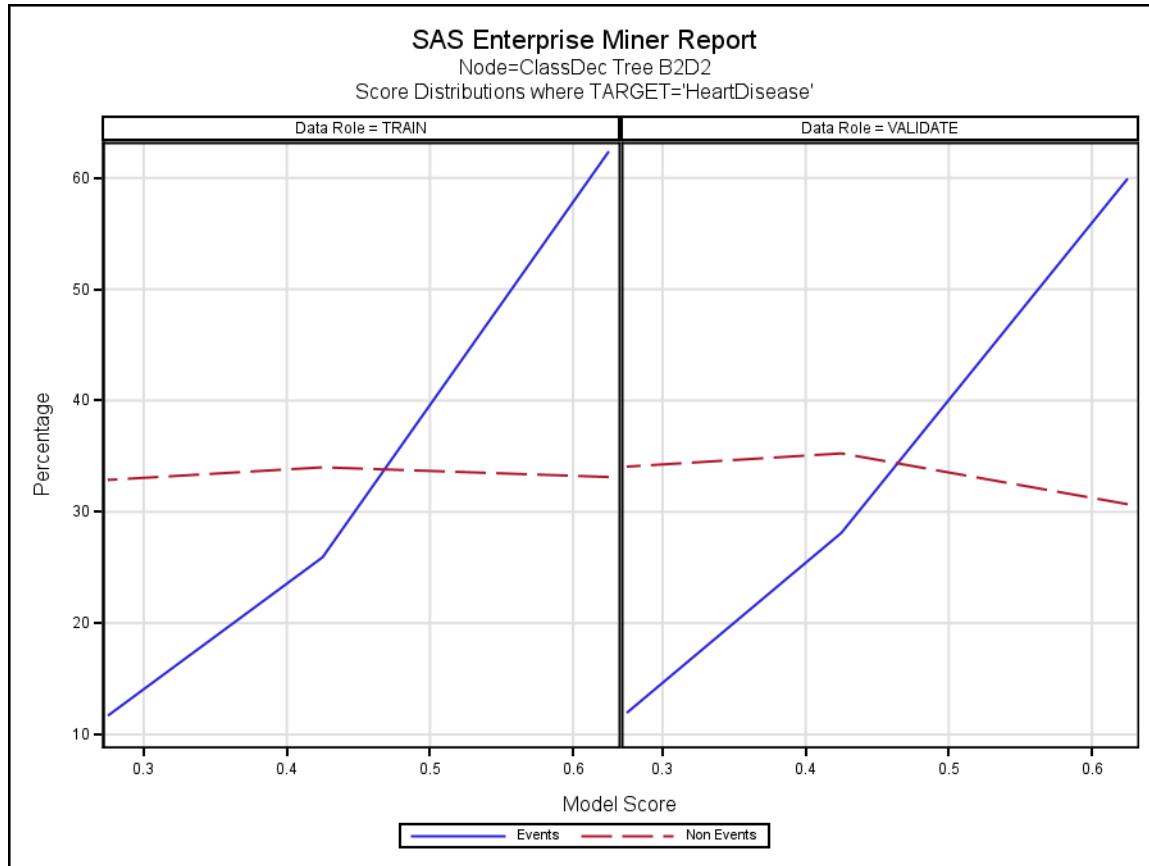
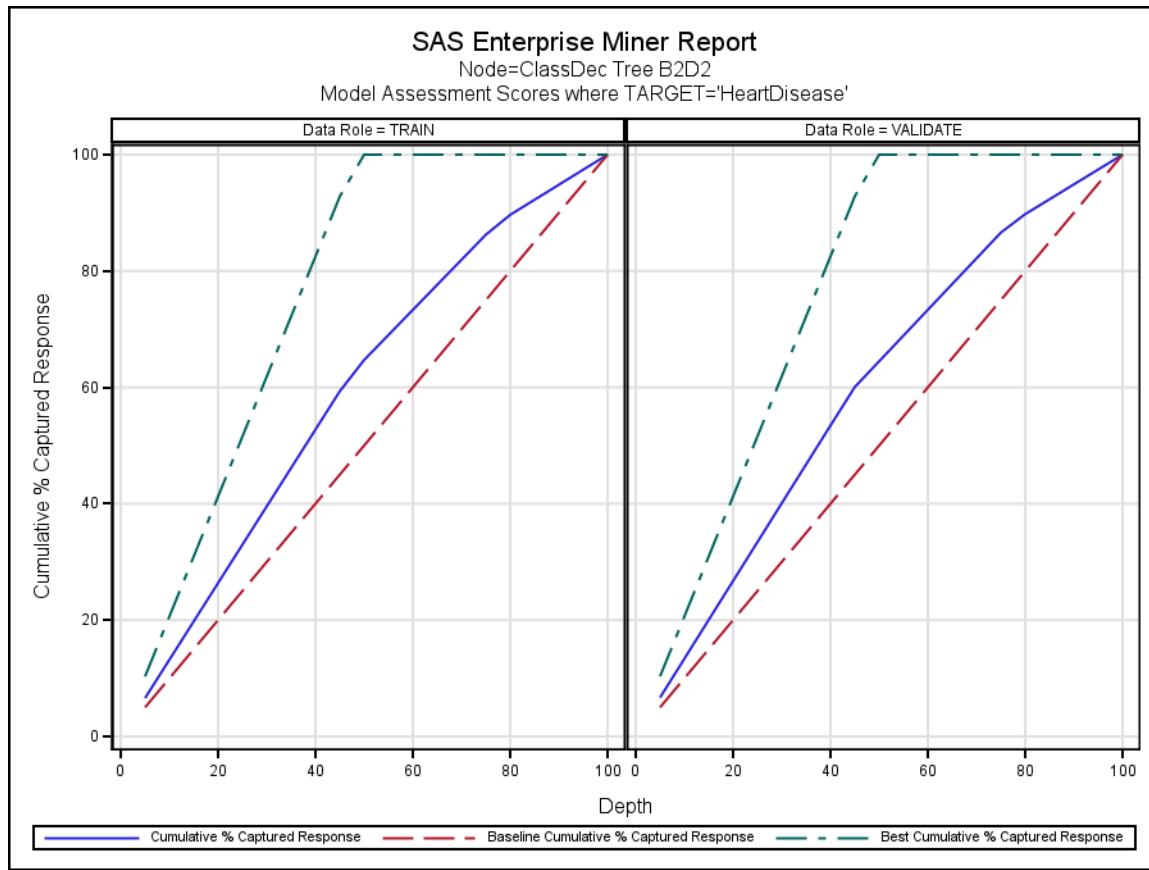
Node=ClassDec Tree B2D2  
Model Assessment Scores where TARGET='HeartDisease'

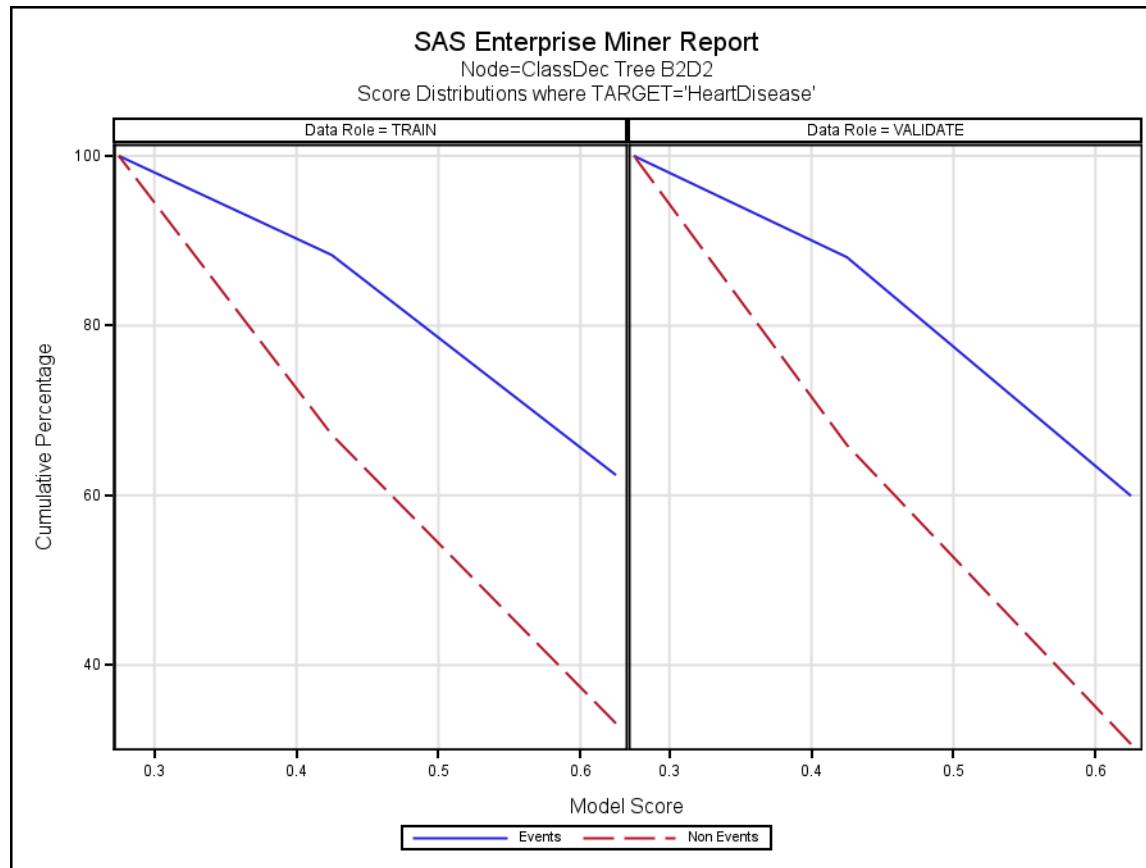


### SAS Enterprise Miner Report

Node=ClassDec Tree B2D2  
Model Assessment Scores where TARGET='HeartDisease'







### Node=ClassDec Tree B2D2

#### Score Distributions

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.60-0.65                   | 2898             | 62.3897              | 33.1307                 | 62.390                          | 33.131                             |
| 0.40-0.45                   | 1204             | 25.9203              | 34.0020                 | 88.310                          | 67.133                             |
| 0.25-0.30                   | 543              | 11.6900              | 32.8673                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.60-0.65                   | 2089             | 59.9426              | 30.6861                 | 59.943                          | 30.686                             |
| 0.40-0.45                   | 980              | 28.1205              | 35.2512                 | 88.063                          | 65.937                             |
| 0.25-0.30                   | 416              | 11.9369              | 34.0627                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=ClassDec Tree B2D4 Summary

Node id = Tree2  
 Node label = ClassDec Tree B2D4  
 Meta path = Ids => Smpl => EMSave => Part => Tree2  
 Notes =

### Node=ClassDec Tree B2D4 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         | 4           | 6       | SampleSeed        | 12345      |         |
| CVRepeat          | 1              |         | MinCatSize       | 5           |         | SampleSize        | 10000      |         |
| CVSeed            | 12345          |         | MissingValue     | USEINSEARCH |         | ShowNodeld        | 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          |         |

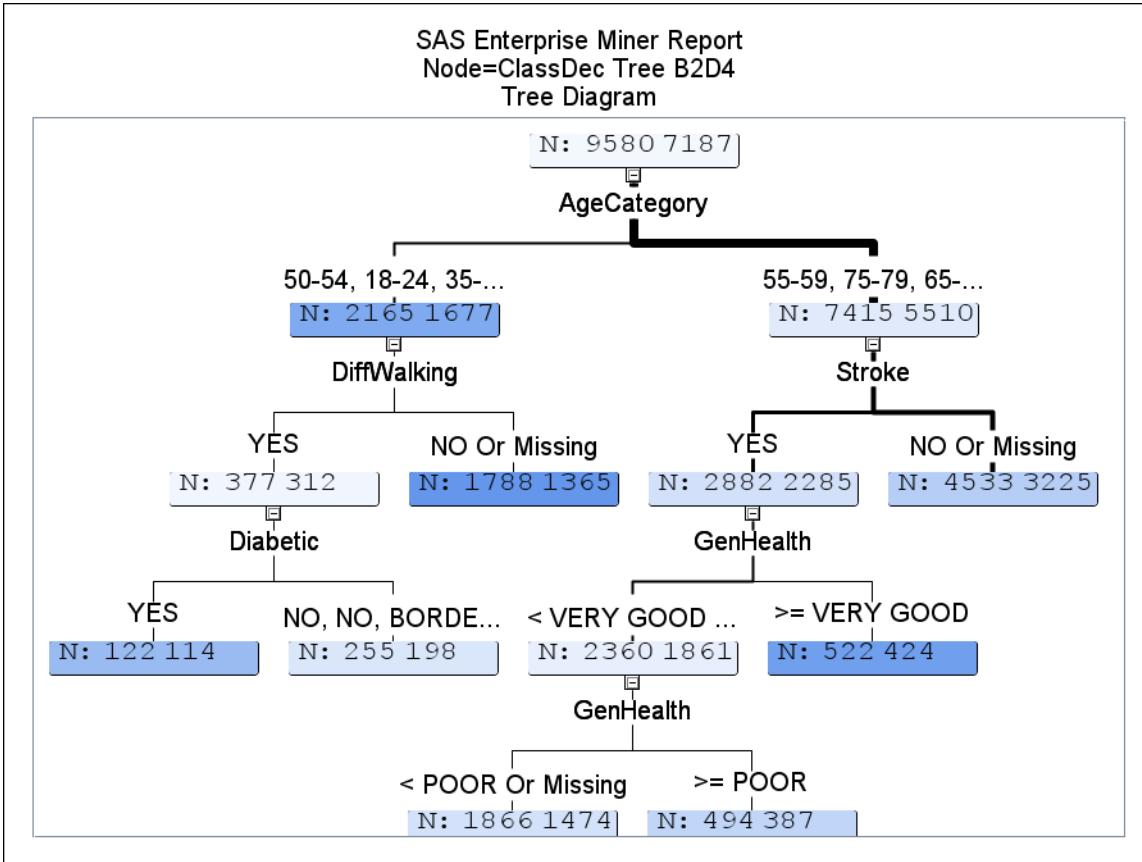
### Node=ClassDec Tree B2D4 Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |
| ID     | INTERVAL | 1               | _dataobs_  |

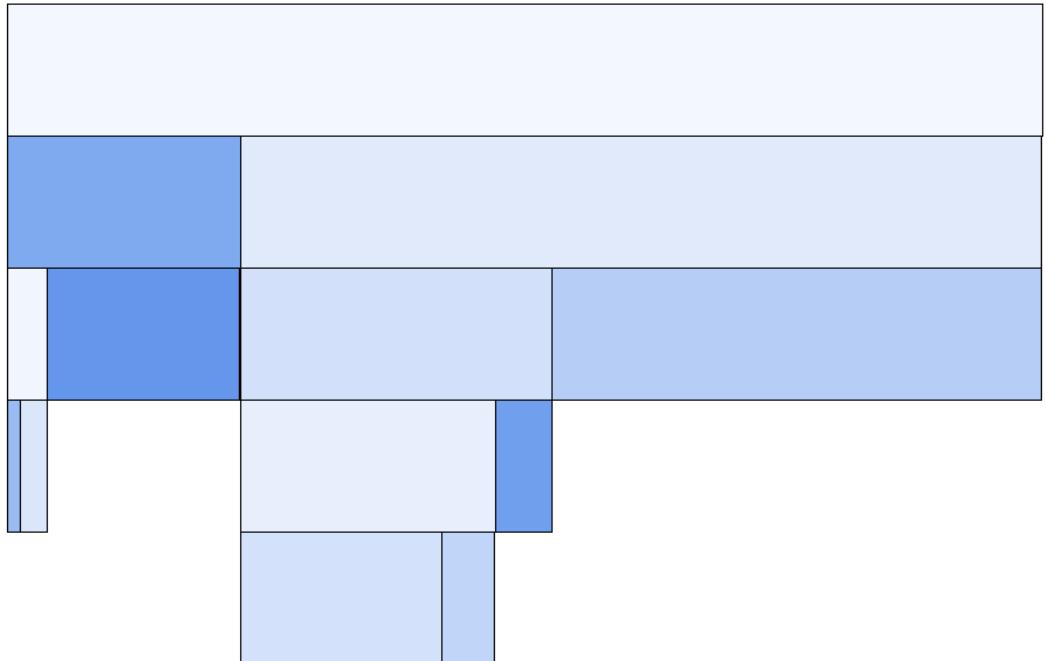
### Node=ClassDec Tree B2D4 Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

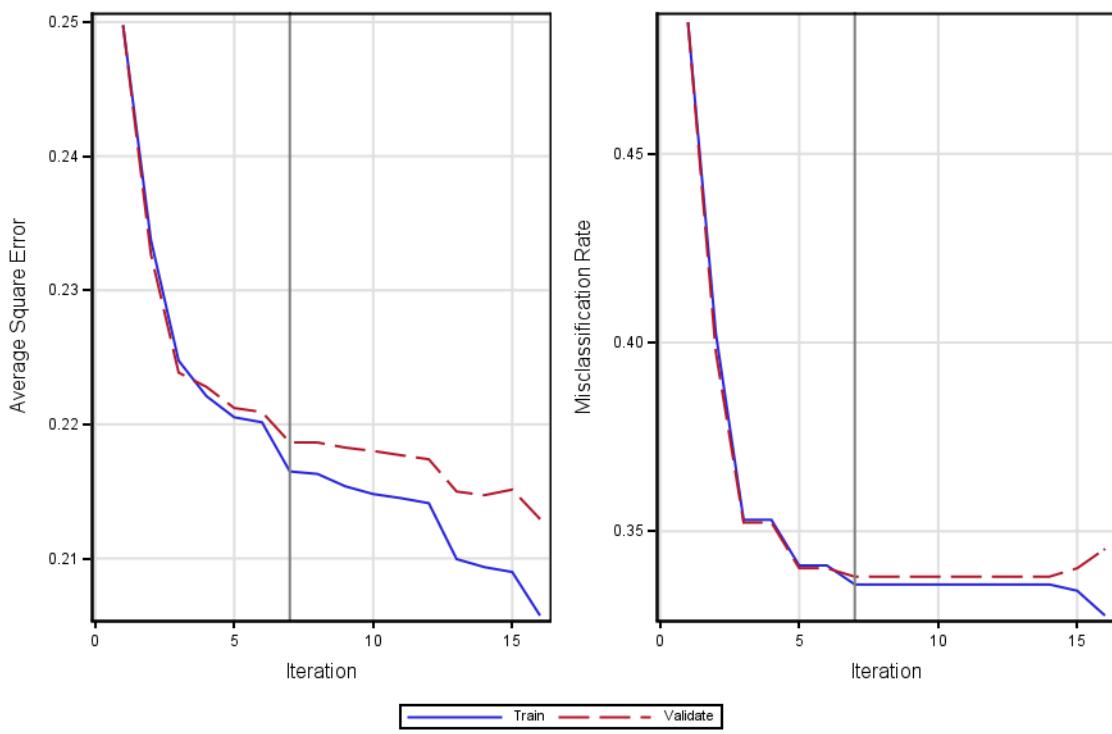
| Label of Statistic         | Train    | Validation | Test     |
|----------------------------|----------|------------|----------|
| Sum of Frequencies         | 9580.00  | 7187.00    | 7188.00  |
| Misclassification Rate     | 0.34     | 0.34       | 0.35     |
| Maximum Absolute Error     | 0.81     | 0.81       | 0.81     |
| Sum of Squared Errors      | 4147.90  | 3142.88    | 3179.13  |
| Average Squared Error      | 0.22     | 0.22       | 0.22     |
| Root Average Squared Error | 0.47     | 0.47       | 0.47     |
| Divisor for ASE            | 19160.00 | 14374.00   | 14376.00 |
| Total Degrees of Freedom   | 9580.00  | .          | .        |



SAS Enterprise Miner Report  
Node=ClassDec Tree B2D4  
Treemap

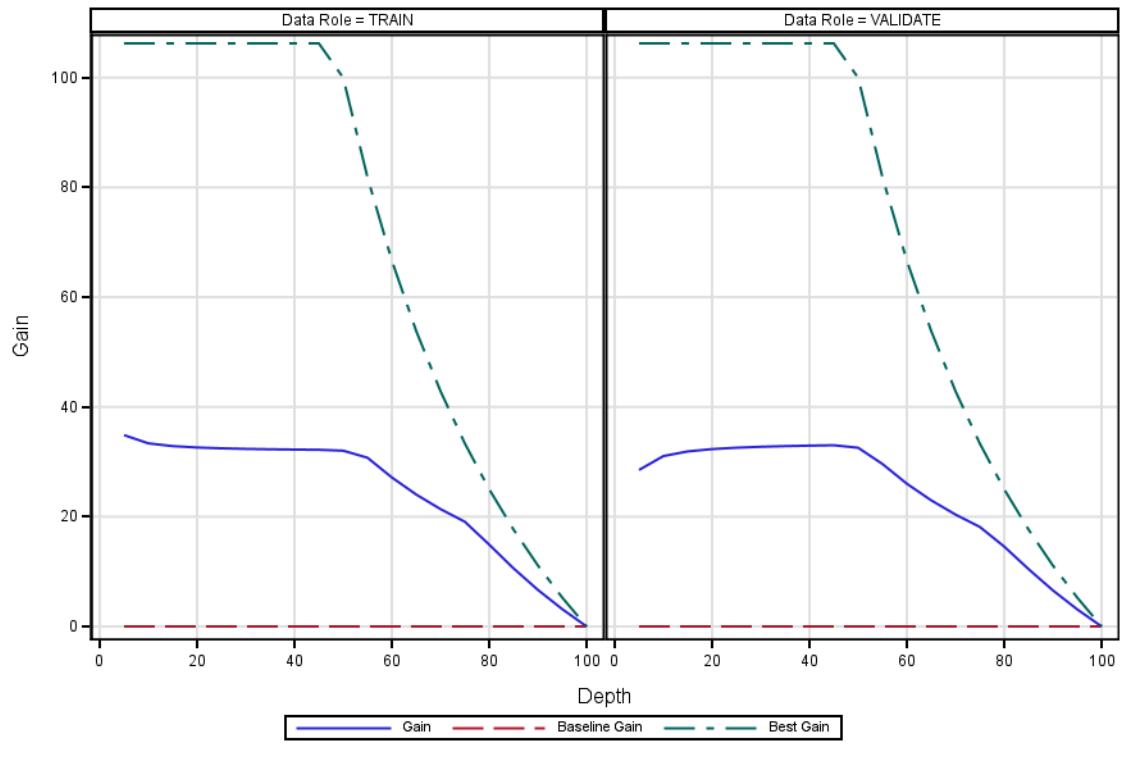


SAS Enterprise Miner Report  
Node=ClassDec Tree B2D4  
Model Iteration Plots



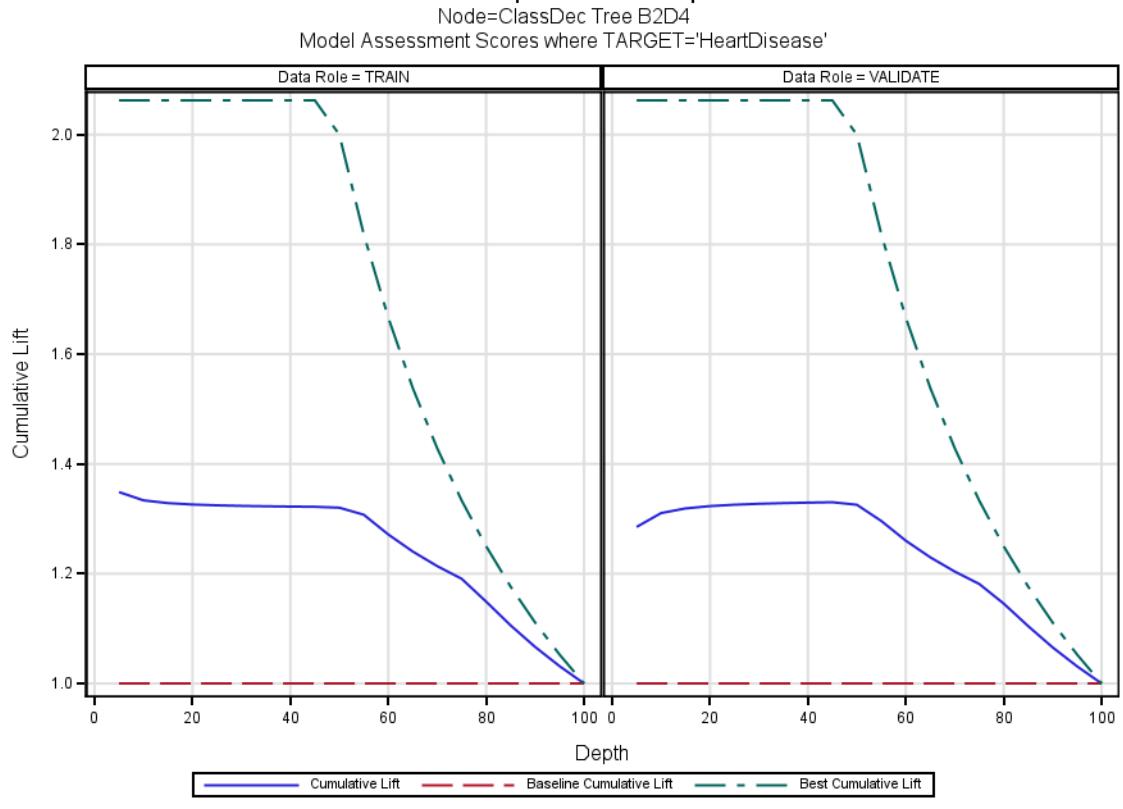
### SAS Enterprise Miner Report

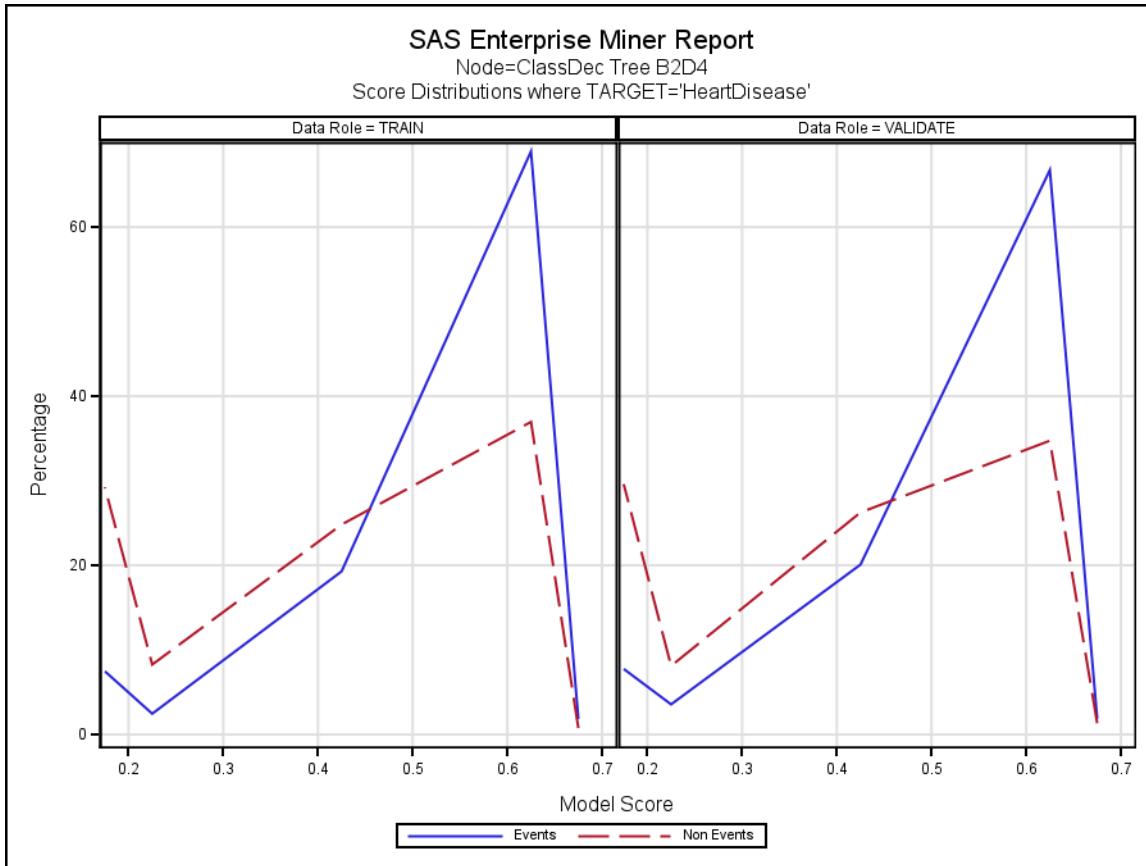
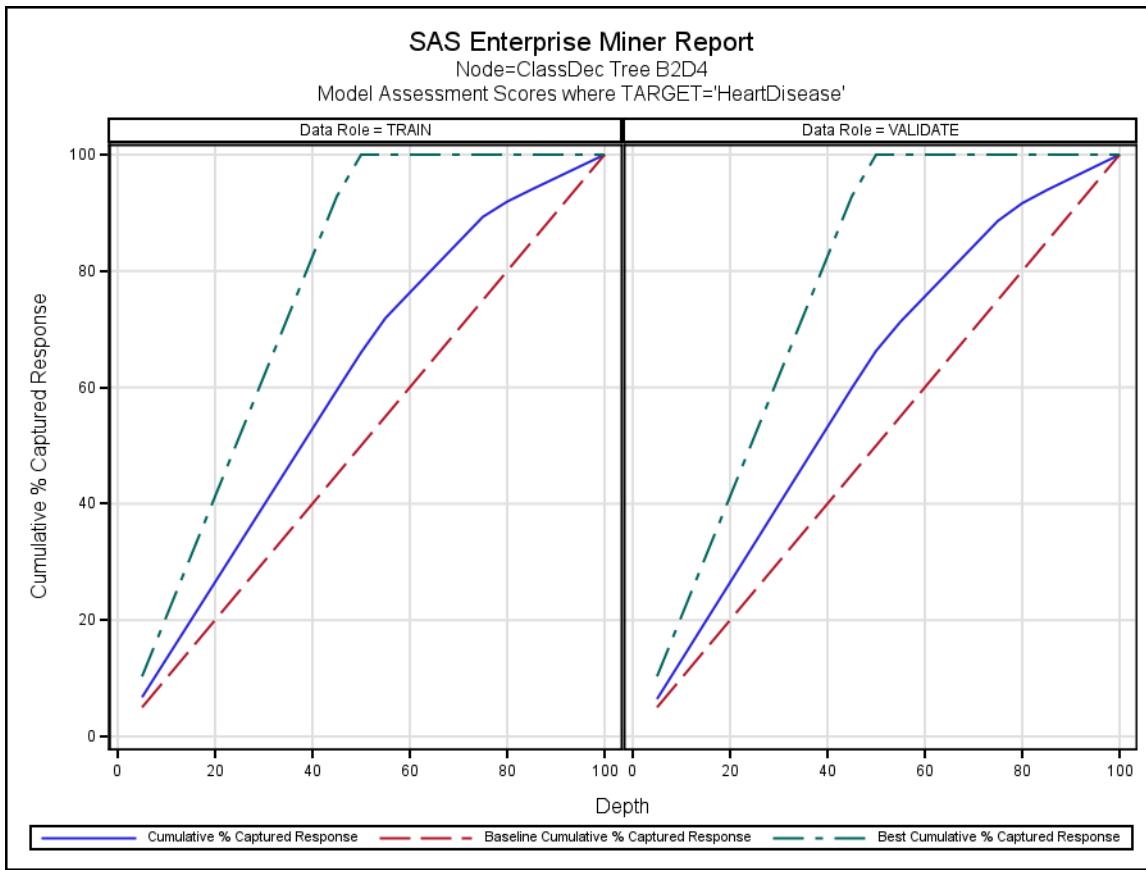
Node=ClassDec Tree B2D4  
Model Assessment Scores where TARGET='HeartDisease'

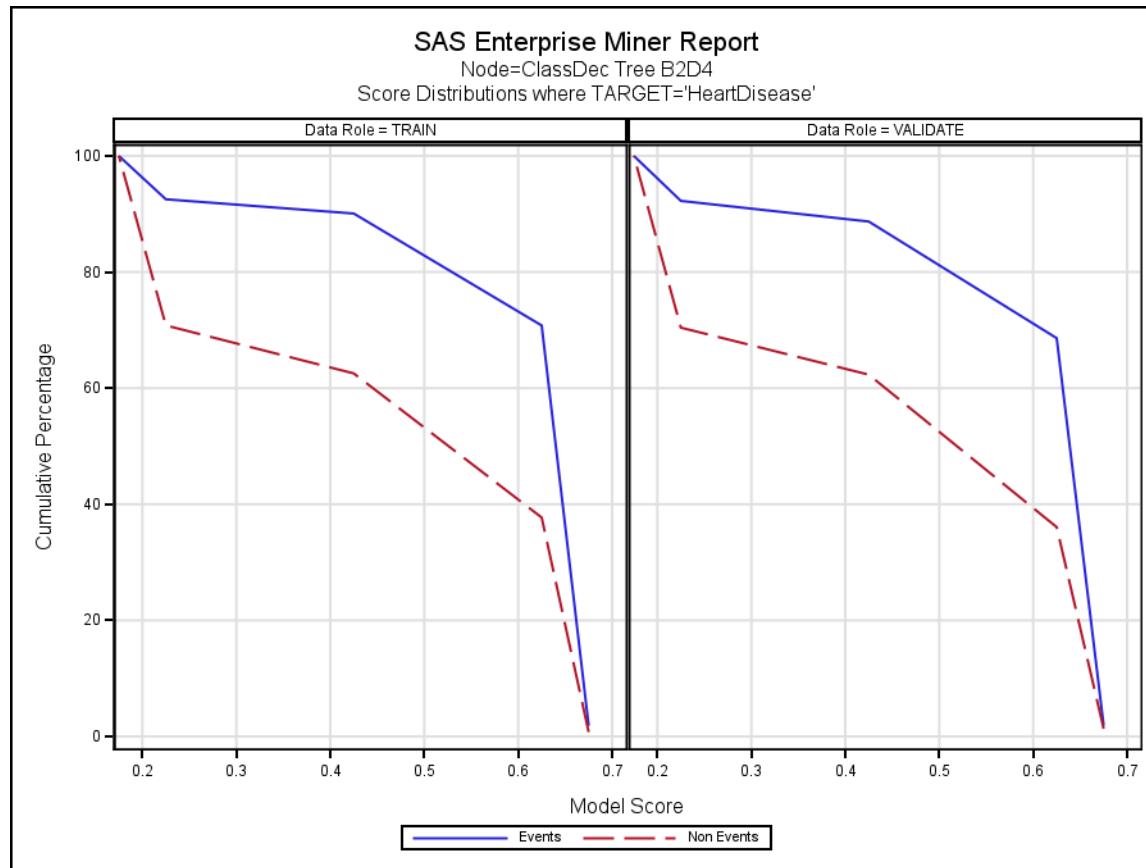


### SAS Enterprise Miner Report

Node=ClassDec Tree B2D4  
Model Assessment Scores where TARGET='HeartDisease'







### Node=ClassDec Tree B2D4

#### Score Distributions

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.65-0.70                   | 85               | 1.8299               | 0.7497                  | 1.830                           | 0.750                              |
| 0.60-0.65                   | 3203             | 68.9559              | 36.9605                 | 70.786                          | 37.710                             |
| 0.40-0.45                   | 896              | 19.2896              | 24.8227                 | 90.075                          | 62.533                             |
| 0.20-0.25                   | 114              | 2.4543               | 8.2675                  | 92.530                          | 70.800                             |
| 0.15-0.20                   | 347              | 7.4704               | 29.1996                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.65-0.70                   | 65               | 1.8651               | 1.3236                  | 1.865                           | 1.324                              |
| 0.60-0.65                   | 2326             | 66.7432              | 34.7380                 | 68.608                          | 36.062                             |
| 0.40-0.45                   | 700              | 20.0861              | 26.2561                 | 88.694                          | 62.318                             |
| 0.20-0.25                   | 124              | 3.5581               | 8.1037                  | 92.253                          | 70.421                             |
| 0.15-0.20                   | 270              | 7.7475               | 29.5786                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=ClassDec Tree B2D6 Summary

Node id = Tree  
 Node label = ClassDec Tree B2D6  
 Meta path = Ids => Smpl => EMSave => Part => Tree  
 Notes =

### Node=ClassDec Tree B2D6 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 |         | ShowNodeld        | 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=ClassDec Tree B2D6 Variable Summary

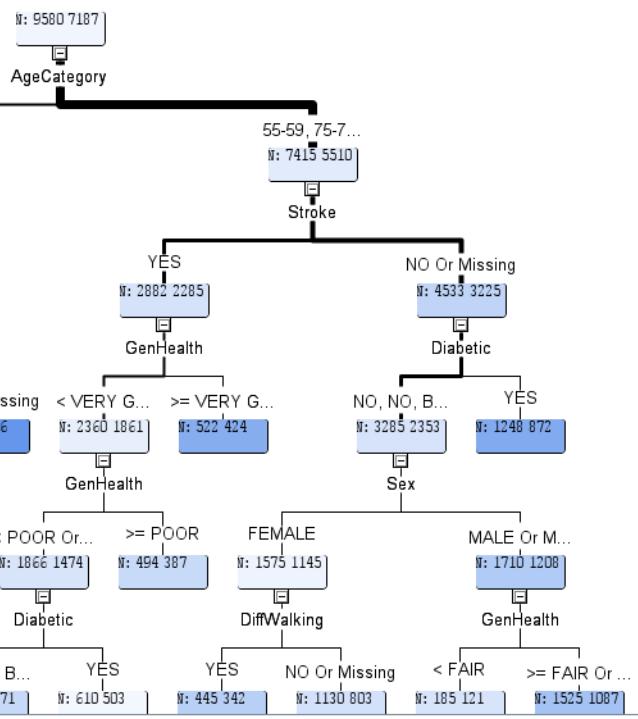
| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |
| ID     | INTERVAL | 1               | _dataobs_  |

### Node=ClassDec Tree B2D6 Model Fit Statistics

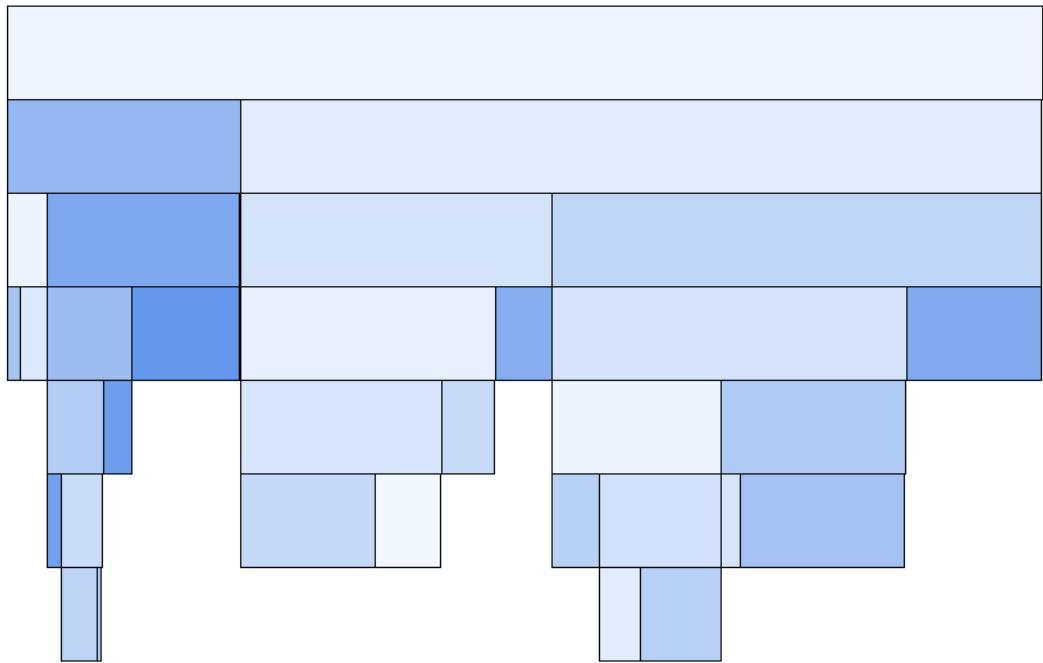
Target=HeartDisease Target Label=HeartDisease

| Label of Statistic         | Train    | Validation | Test     |
|----------------------------|----------|------------|----------|
| Sum of Frequencies         | 9580.00  | 7187.00    | 7188.00  |
| Misclassification Rate     | 0.31     | 0.32       | 0.32     |
| Maximum Absolute Error     | 0.87     | 0.87       | 0.87     |
| Sum of Squared Errors      | 3859.21  | 2989.11    | 2981.25  |
| Average Squared Error      | 0.20     | 0.21       | 0.21     |
| Root Average Squared Error | 0.45     | 0.46       | 0.46     |
| Divisor for ASE            | 19160.00 | 14374.00   | 14376.00 |
| Total Degrees of Freedom   | 9580.00  | .          | .        |

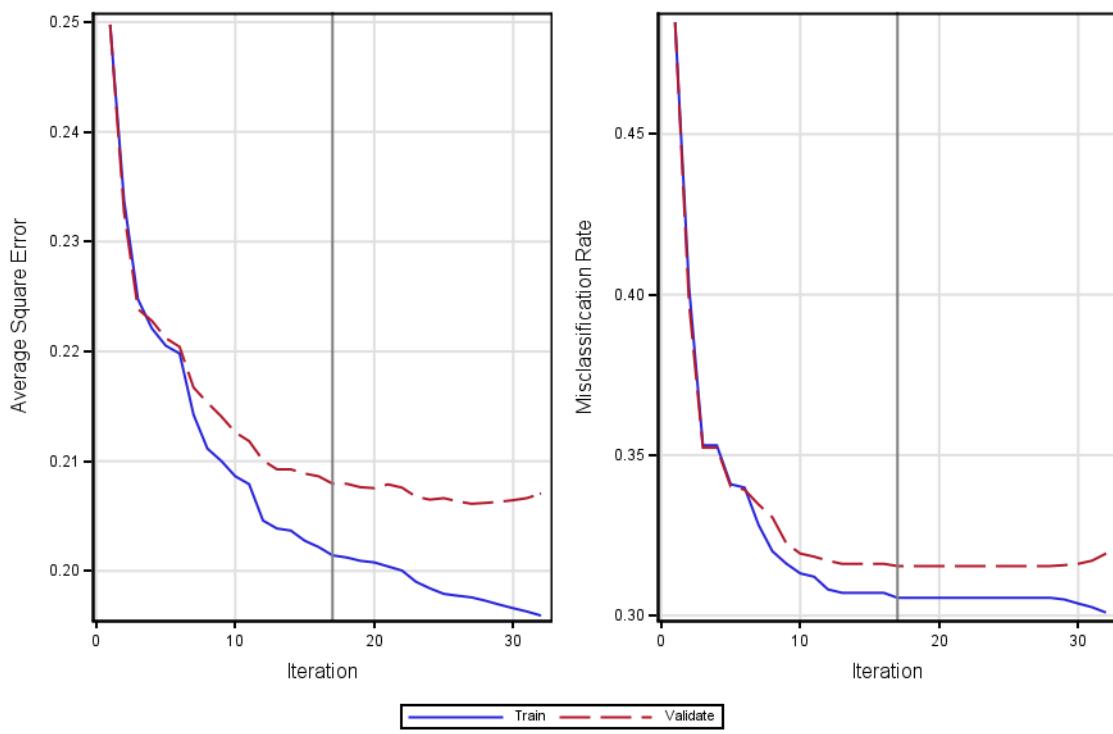
**SAS Enterprise Miner Report**  
**Node=ClassDec Tree B2D6**  
**Tree Diagram**

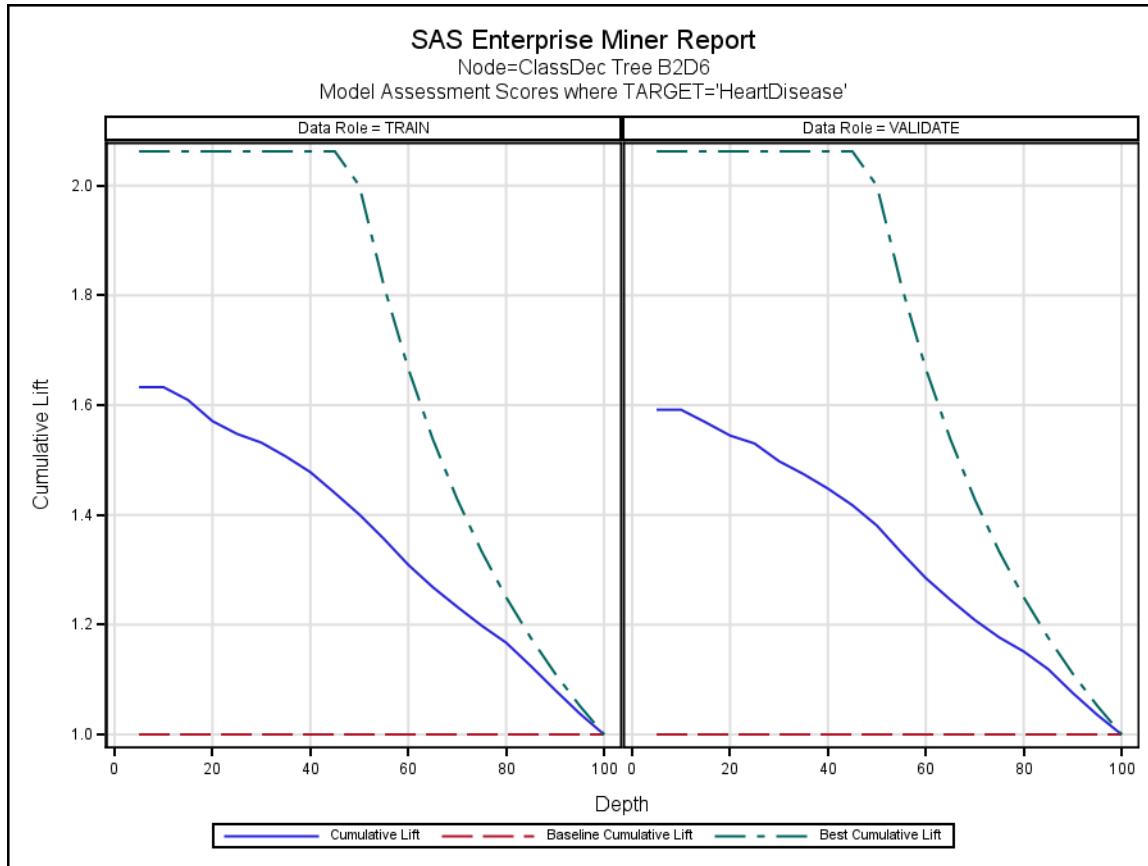
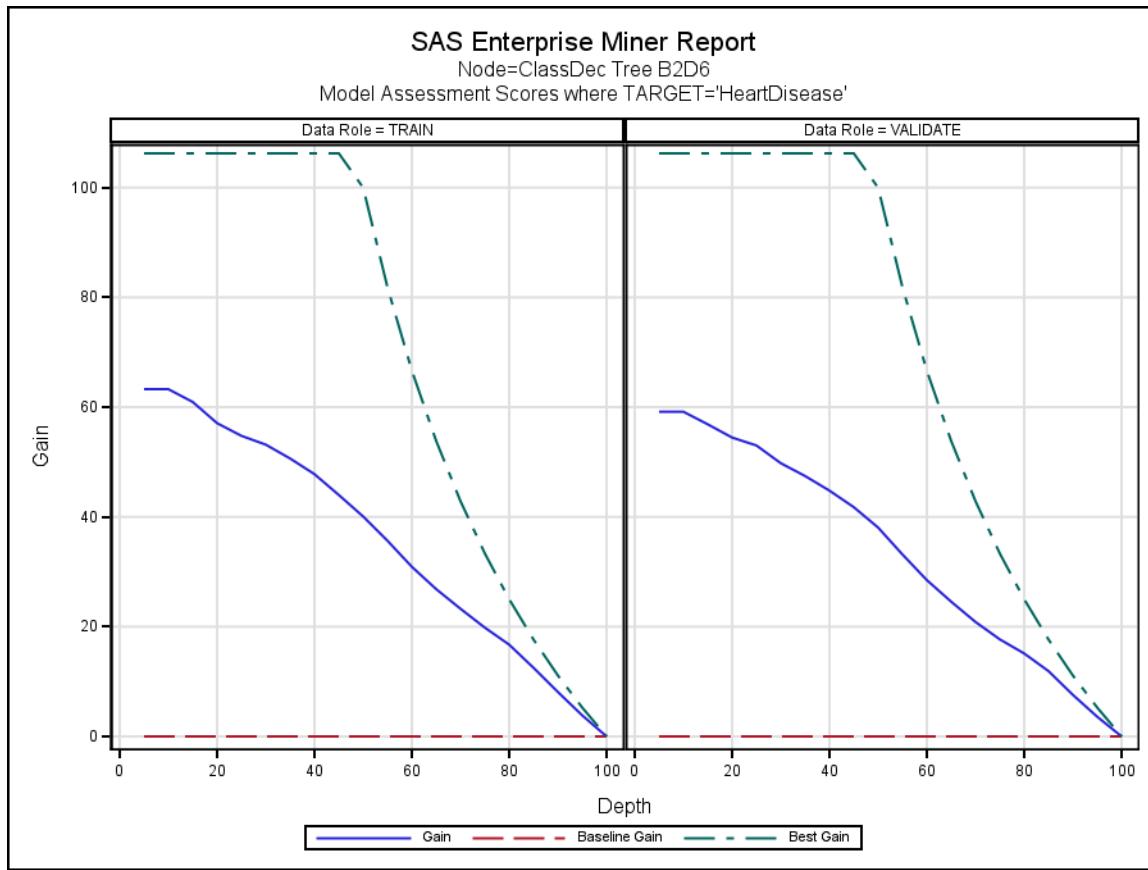


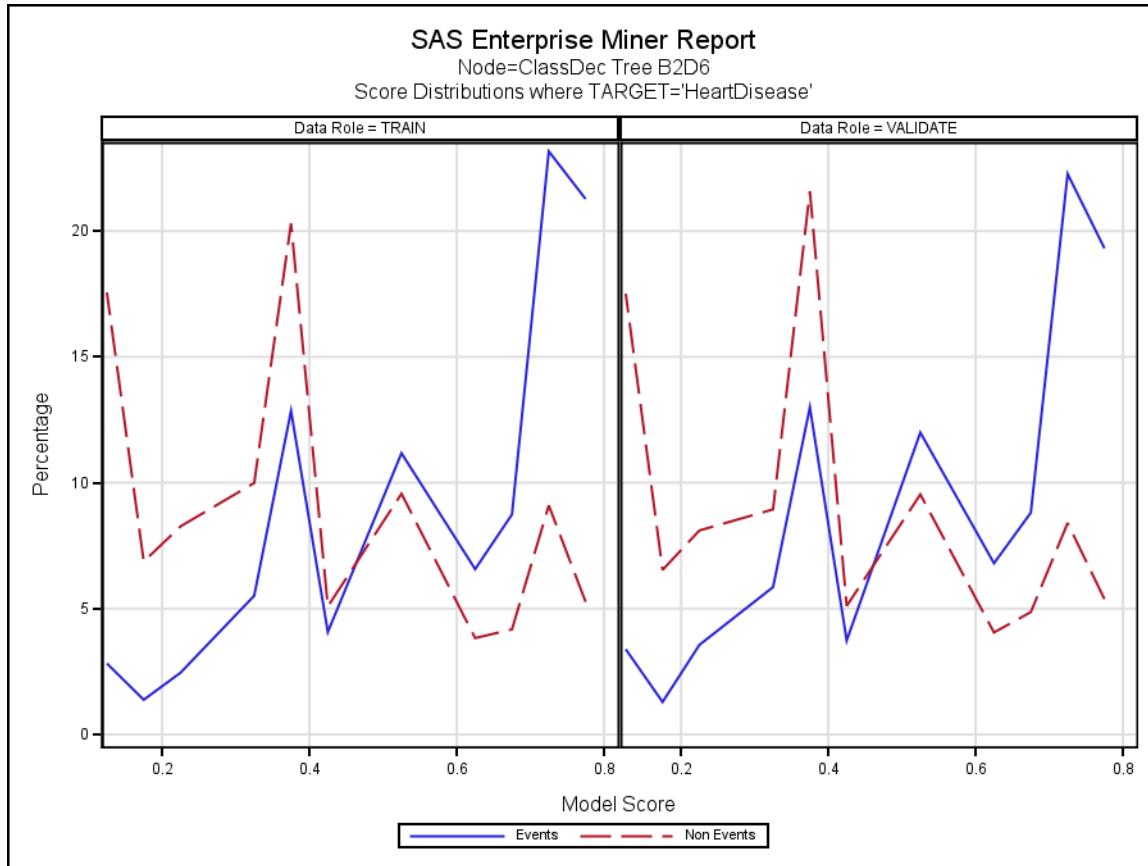
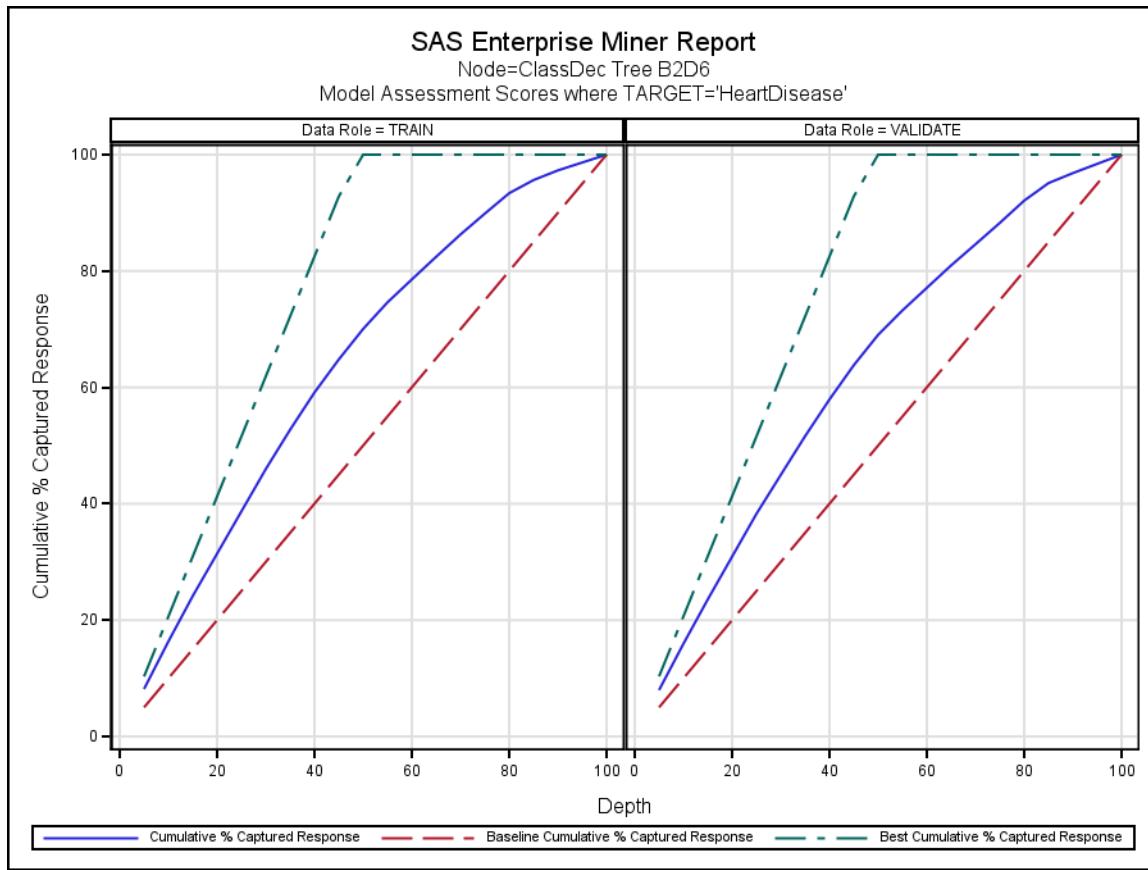
SAS Enterprise Miner Report  
Node=ClassDec Tree B2D6  
Treemap

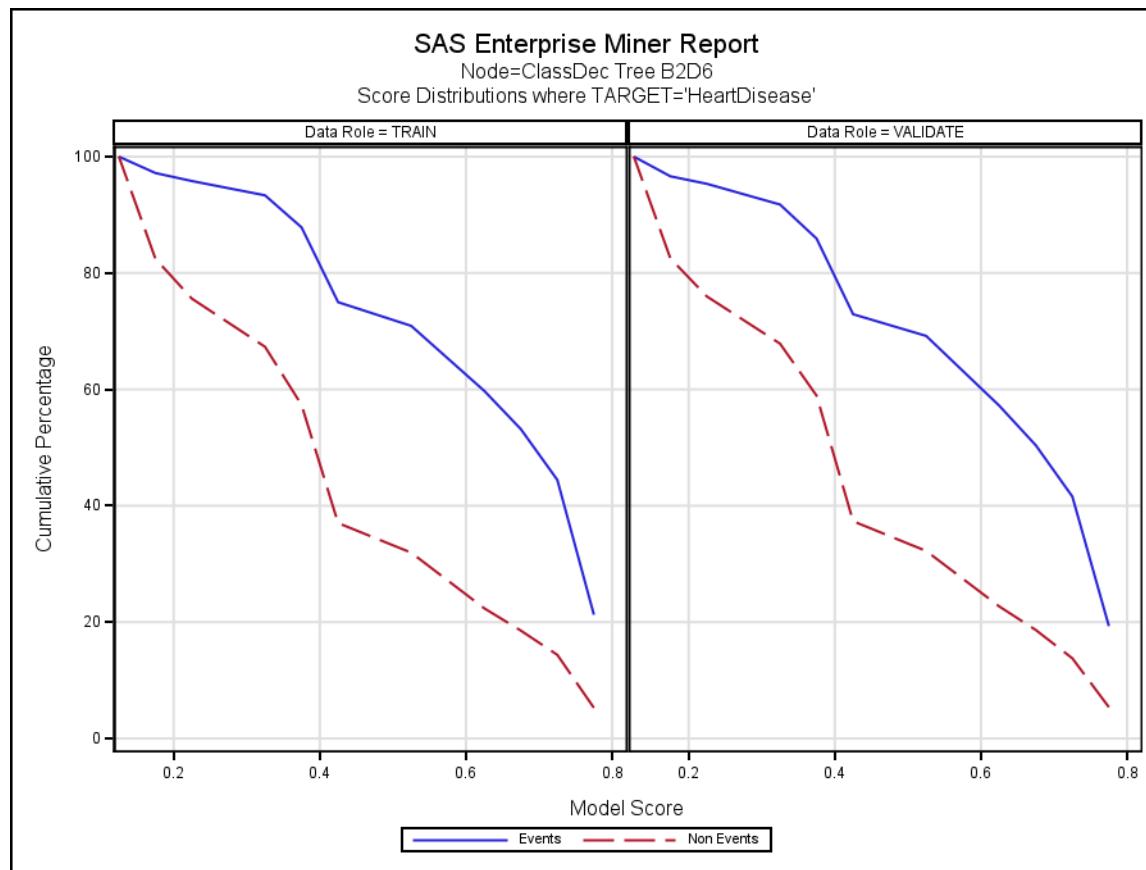


SAS Enterprise Miner Report  
Node=ClassDec Tree B2D6  
Model Iteration Plots









### Node=ClassDec Tree B2D6

#### Score Distributions

Target Variable=HeartDisease Data Role=TRAIN

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.75-0.80                   | 988              | 21.2702              | 5.2685                  | 21.270                          | 5.268                              |
| 0.70-0.75                   | 1076             | 23.1647              | 9.0983                  | 44.435                          | 14.367                             |
| 0.65-0.70                   | 406              | 8.7406               | 4.1743                  | 53.175                          | 18.541                             |
| 0.60-0.65                   | 305              | 6.5662               | 3.8298                  | 59.742                          | 22.371                             |
| 0.50-0.55                   | 519              | 11.1733              | 9.5643                  | 70.915                          | 31.935                             |
| 0.40-0.45                   | 189              | 4.0689               | 5.0861                  | 74.984                          | 37.021                             |
| 0.35-0.40                   | 597              | 12.8525              | 20.3040                 | 87.836                          | 57.325                             |
| 0.30-0.35                   | 256              | 5.5113               | 9.9899                  | 93.348                          | 67.315                             |
| 0.20-0.25                   | 114              | 2.4543               | 8.2675                  | 95.802                          | 75.583                             |
| 0.15-0.20                   | 64               | 1.3778               | 6.8693                  | 97.180                          | 82.452                             |
| 0.10-0.15                   | 131              | 2.8202               | 17.5481                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.75-0.80                   | 673              | 19.3113              | 5.3755                  | 19.311                          | 5.375                              |
| 0.70-0.75                   | 776              | 22.2669              | 8.4009                  | 41.578                          | 13.776                             |
| 0.65-0.70                   | 307              | 8.8092               | 4.8622                  | 50.387                          | 18.639                             |
| 0.60-0.65                   | 237              | 6.8006               | 4.0519                  | 57.188                          | 22.690                             |
| 0.50-0.55                   | 418              | 11.9943              | 9.5354                  | 69.182                          | 32.226                             |
| 0.40-0.45                   | 130              | 3.7303               | 5.1053                  | 72.912                          | 37.331                             |

Target Variable=HeartDisease Data Role=VALIDATE

| Posterior Probability Range | Number of Events | Percentage of Events | Percentage of Nonevents | Cumulative Percentage of Events | Cumulative Percentage of Nonevents |
|-----------------------------|------------------|----------------------|-------------------------|---------------------------------|------------------------------------|
| 0.35-0.40                   | 453              | 12.9986              | 21.5829                 | 85.911                          | 58.914                             |
| 0.30-0.35                   | 204              | 5.8537               | 8.9411                  | 91.765                          | 67.855                             |
| 0.20-0.25                   | 124              | 3.5581               | 8.1037                  | 95.323                          | 75.959                             |
| 0.15-0.20                   | 45               | 1.2912               | 6.5370                  | 96.614                          | 82.496                             |
| 0.10-0.15                   | 118              | 3.3859               | 17.5041                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Stepwise Regression Summary

Node id = Reg4  
 Node label = Stepwise Regression  
 Meta path = Ids => Smpl => EMSave => Part => Reg4  
 Notes =

### Node=Stepwise 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       |         |
| CIParam          | N            |              | MaxCPUTime            | 1 HOUR    |         | SIEntry            | 0.05    |         |
| ConvDefaults     | Y            |              | MaxFunctionCalls      | .         |         | SISStay            | 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        | STEPWISE  | NONE    | SuppressOutput     | N       |         |
| ExcludedVariable | REJECT       |              | OptimizationTechnique | DEFAULT   |         | Terms              | N       |         |
| FConvTimes       | 1            |              | Performance           | N         |         | TwoFactor          | N       |         |
| FConvValue       | 0            |              | Polynomial            | N         |         |                    |         |         |

### Node=Stepwise Regression Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Stepwise Regression Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

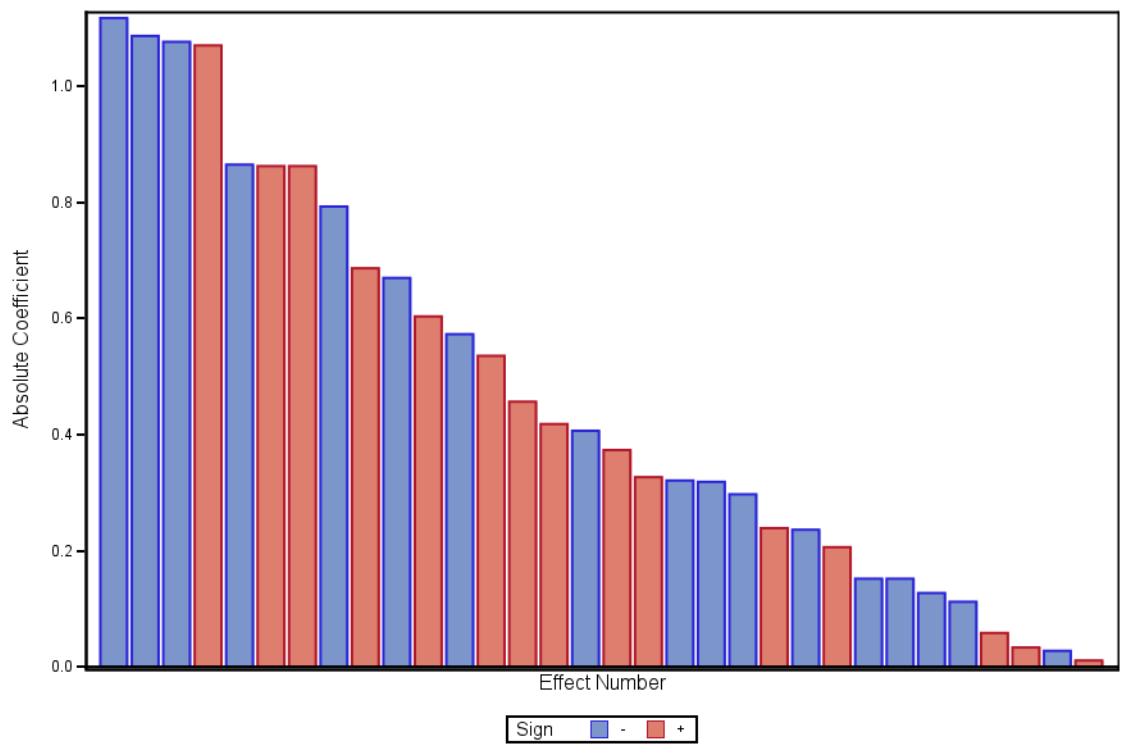
| Label of Statistic             | Train    | Validation | Test |
|--------------------------------|----------|------------|------|
| Akaike's Information Criterion | 10903.14 | .          | .    |
| Average Squared Error          | 0.19     | 0.20       | 0.19 |
| Average Error Function         | 0.57     | 0.58       | 0.56 |
| Degrees of Freedom for Error   | 9548.00  | .          | .    |

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic             | Train    | Validation | Test     |
|--------------------------------|----------|------------|----------|
| Model Degrees of Freedom       | 32.00    | .          | .        |
| Total Degrees of Freedom       | 9580.00  | .          | .        |
| Divisor for ASE                | 19160.00 | 14374.00   | 14376.00 |
| Error Function                 | 10839.14 | 8322.32    | 8084.42  |
| Final Prediction Error         | 0.19     | .          | .        |
| Maximum Absolute Error         | 0.99     | 0.98       | 0.98     |
| Mean Square Error              | 0.19     | 0.20       | 0.19     |
| Sum of Frequencies             | 9580.00  | 7187.00    | 7188.00  |
| Number of Estimate Weights     | 32.00    | .          | .        |
| Root Average Sum of Squares    | 0.44     | 0.44       | 0.44     |
| Root Final Prediction Error    | 0.44     | .          | .        |
| Root Mean Squared Error        | 0.44     | 0.44       | 0.44     |
| Schwarz's Bayesian Criterion   | 11132.50 | .          | .        |
| Sum of Squared Errors          | 3664.51  | 2833.17    | 2730.68  |
| Sum of Case Weights Times Freq | 19160.00 | 14374.00   | 14376.00 |
| Misclassification Rate         | 0.29     | 0.30       | 0.29     |

### SAS Enterprise Miner Report

Node=Stepwise Regression  
Regression Model Effects



**SAS Enterprise Miner Report**  
**Node=Stepwise Regression**  
**Regression Model Effects**

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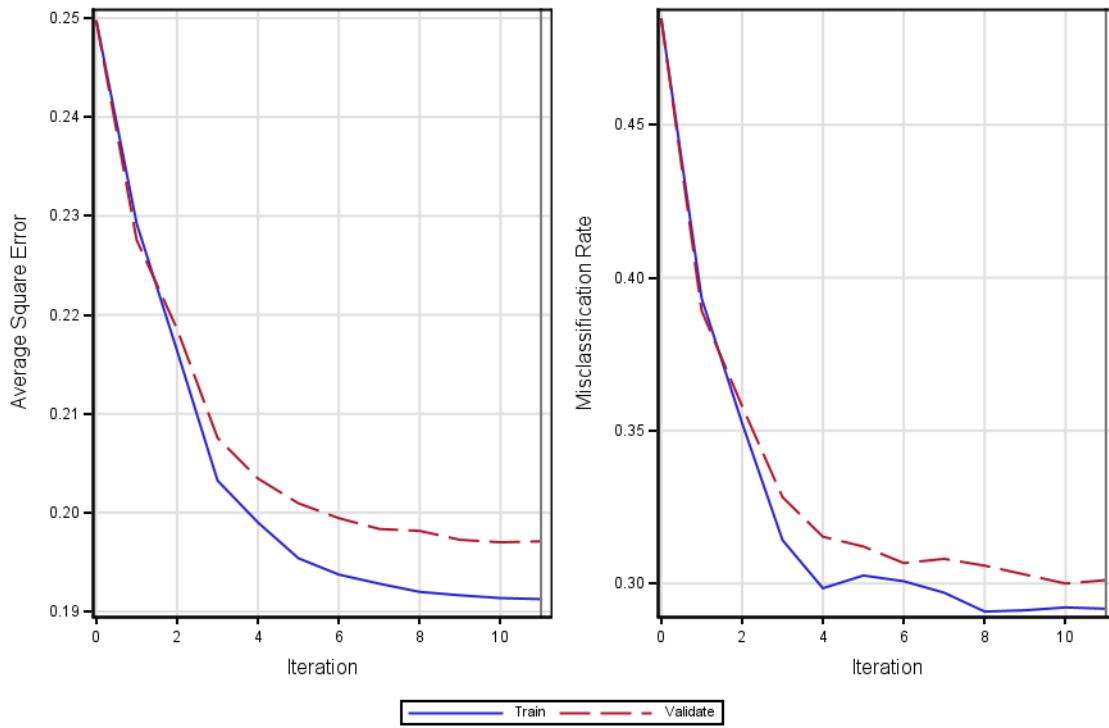
| Effect Number | Variable    | Level                        | Coefficient | T-value  | P Value    | Effect Number | Variable     |
|---------------|-------------|------------------------------|-------------|----------|------------|---------------|--------------|
| 1             | AgeCategory | 18N24                        | -1.11818    | -5.1642  | .000000241 | 17            | Race         |
| 2             | AgeCategory | 25N29                        | -1.08726    | -5.0961  | .000000347 | 18            | AgeCategory  |
| 3             | AgeCategory | 30N34                        | -1.07714    | -6.1534  | 7.5851E-10 | 19            | AgeCategory  |
| 4             | AgeCategory | 75N79                        | 1.07088     | 14.8771  | 4.6408E-50 | 20            | Sex          |
| 5             | AgeCategory | 35N39                        | -0.86546    | -5.4257  | .000000058 | 21            | Race         |
| 6             | GenHealth   | POOR                         | 0.86291     | 12.2980  | 9.2798E-35 | 22            | Race         |
| 7             | AgeCategory | 70N74                        | 0.86291     | 12.7607  | 2.7169E-37 | 23            | Diabetic     |
| 8             | GenHealth   | EXCELLENT                    | -0.79324    | -10.9184 | 9.4167E-28 | 24            | Race         |
| 9             | AgeCategory | 65N69                        | 0.68687     | 10.1148  | 4.7521E-24 | 25            | DiffWalking  |
| 10            | Race        | ERICAN_INDIAN_ALASKAN_NATIVE | -0.67017    | -5.1241  | .000000299 | 26            | Smoking      |
| 11            | Stroke      | NO                           | 0.60381     | 22.8729  | 8.641E-116 | 27            | Asthma       |
| 12            | Intercept   | YES                          | -0.57321    | -3.9487  | .000078581 | 28            | Diabetic     |
| 13            | AgeCategory | 60N64                        | 0.53590     | 7.5629   | 3.941E-14  | 29            | GenHealth    |
| 14            | Diabetic    | YES                          | 0.45687     | 4.5977   | .000004271 | 30            | AgeCategory  |
| 15            | GenHealth   | FAIR                         | 0.41832     | 8.5400   | 1.3427E-17 | 31            | SleepTime    |
| 16            | AgeCategory | 40N44                        | -0.40672    | -3.0828  | .002050782 | 32            | MentalHealth |

| Level                  | Coefficient | T-value  | P Value |
|------------------------|-------------|----------|---------|
| SPANIC                 | 0.37346     | 3.5018   | 0.00046 |
| 55N59                  | 0.32680     | 3.9874   | 0.00007 |
| 45N49                  | -0.32097    | -2.7350  | 0.00624 |
| FEMALE                 | -0.31866    | -13.2023 | 0.00000 |
| ACK                    | -0.29726    | -3.6516  | 0.00026 |
| HER                    | 0.23887     | 2.0592   | 0.03947 |
| NO                     | -0.23614    | -2.4711  | 0.01347 |
| IAN                    | 0.20608     | 1.1291   | 0.25885 |
| NO                     | -0.15172    | -5.2204  | 0.00000 |
| NO                     | -0.15171    | -6.3344  | 0.00000 |
| NO                     | -0.12703    | -3.9420  | 0.00008 |
| NO_BORDERLINE_DIABETES | -0.11194    | -0.8258  | 0.40889 |
| GOOD                   | 0.05816     | 1.4000   | 0.16153 |
| 50N54                  | 0.03315     | 0.3491   | 0.72699 |
|                        | -0.02736    | -2.0167  | 0.04372 |
|                        | 0.01077     | 3.7005   | 0.00022 |

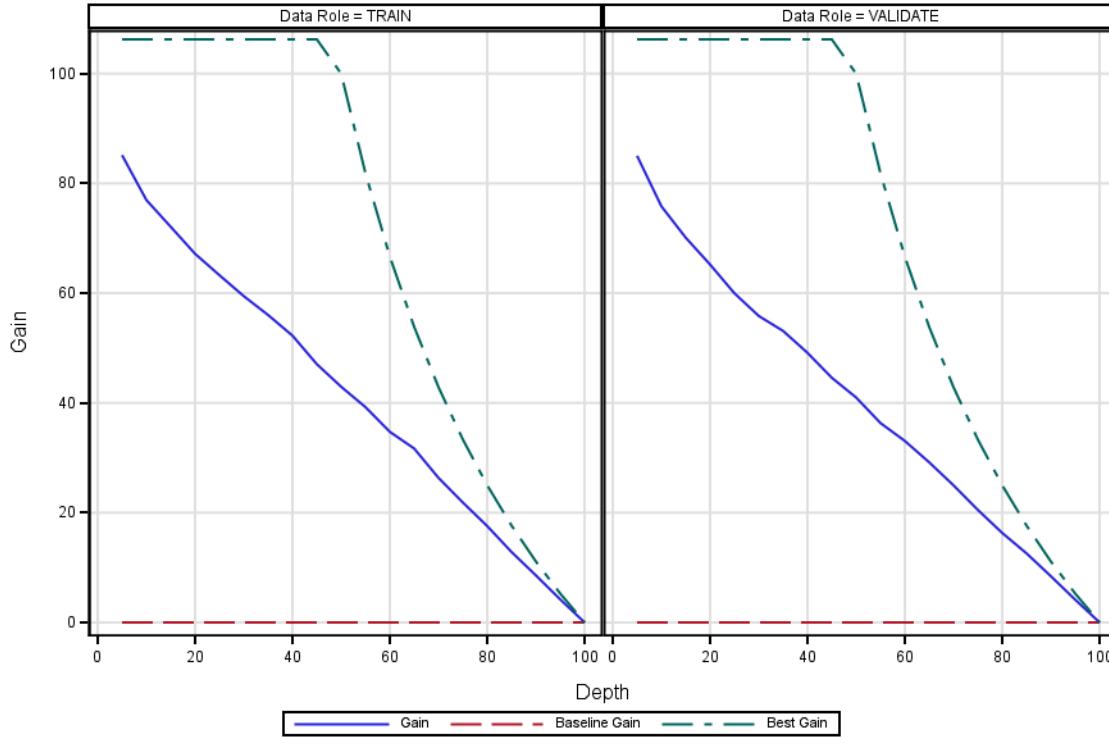
**SAS Enterprise Miner Report**  
**Node=Stepwise Regression**  
**Model Iteration Plots**

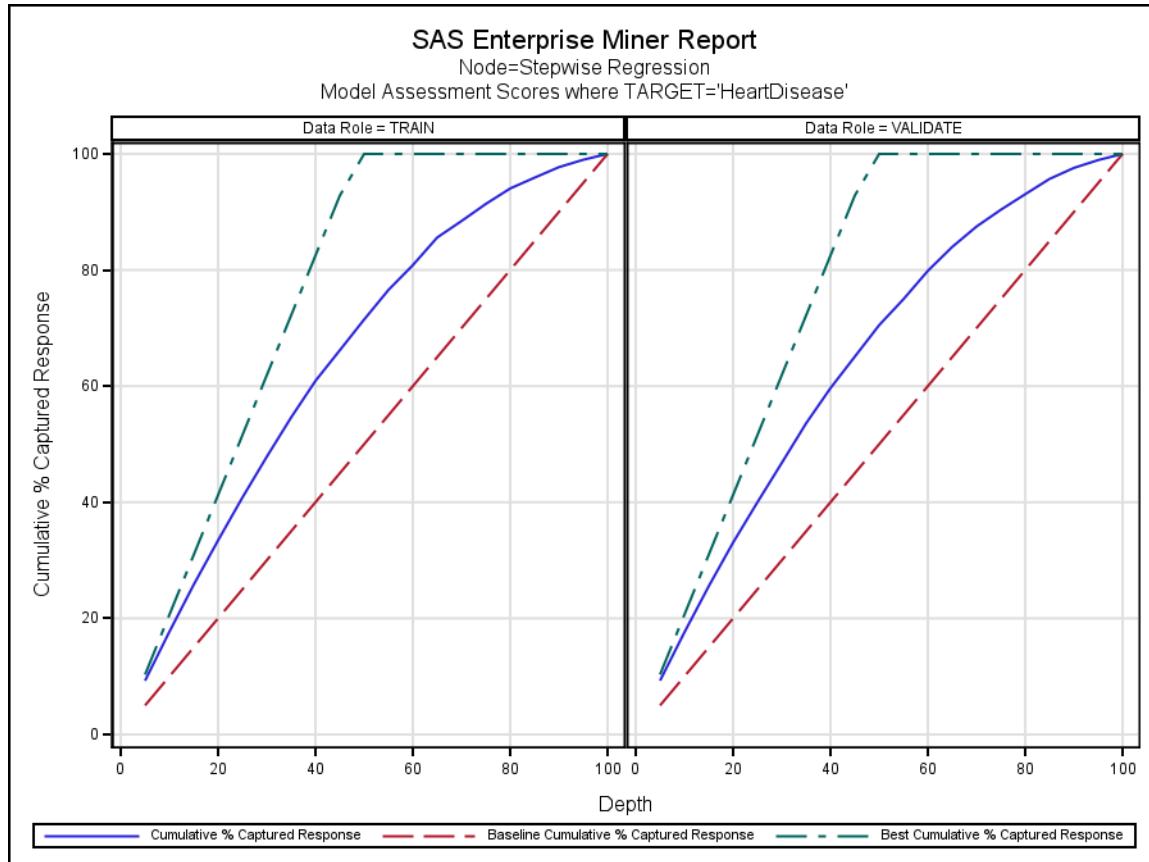
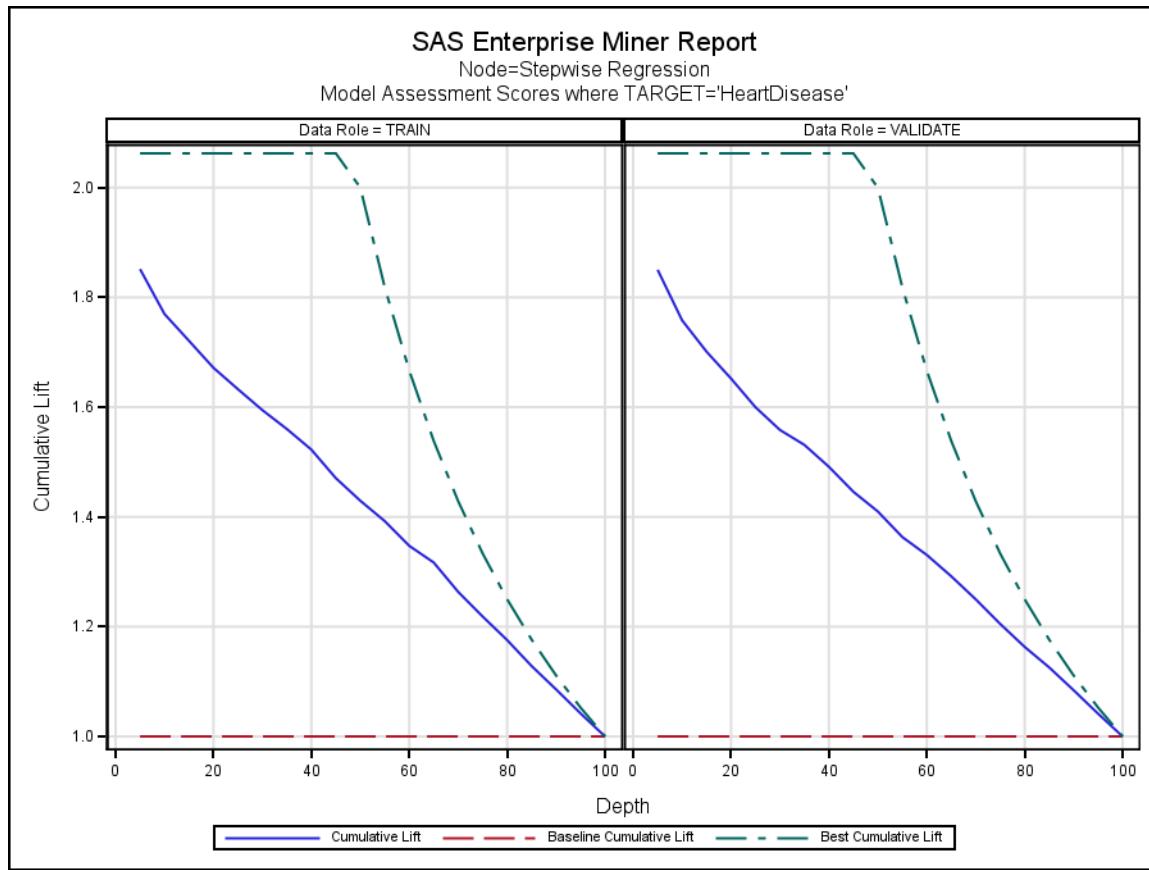
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**SAS Enterprise Miner Report**  
**Node=Stepwise Regression**  
**Model Iteration Plots**

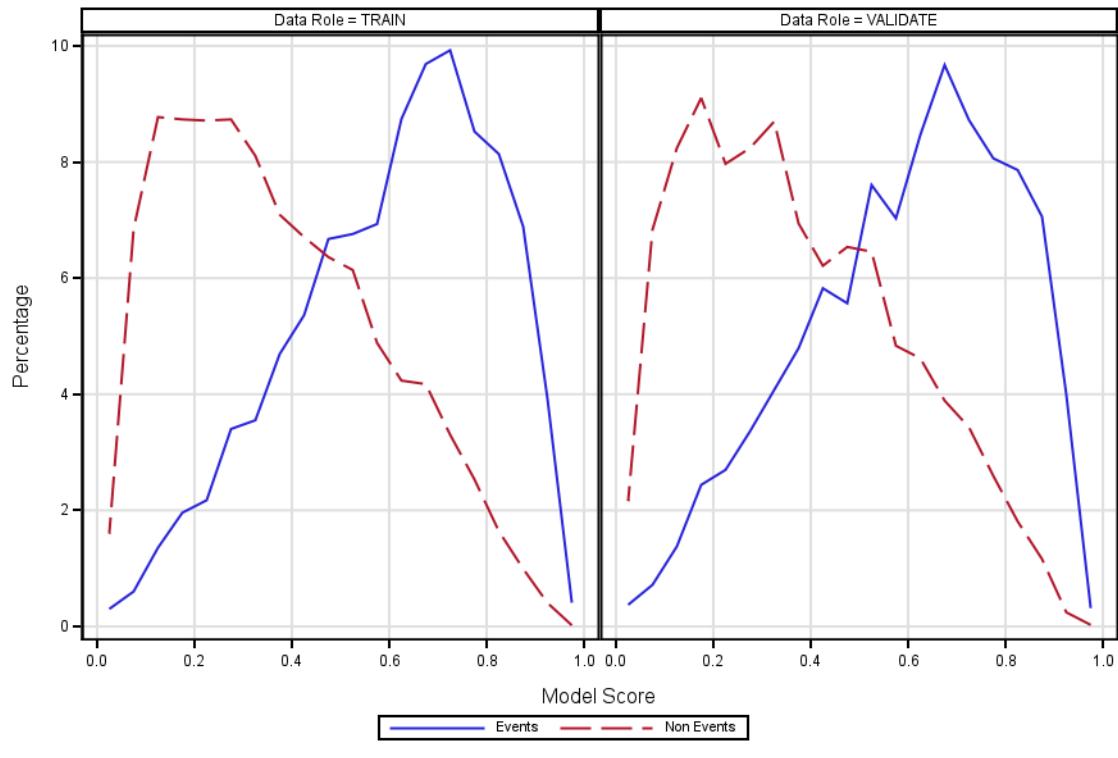


**SAS Enterprise Miner Report**  
**Node=Stepwise Regression**  
**Model Assessment Scores where TARGET='HeartDisease'**

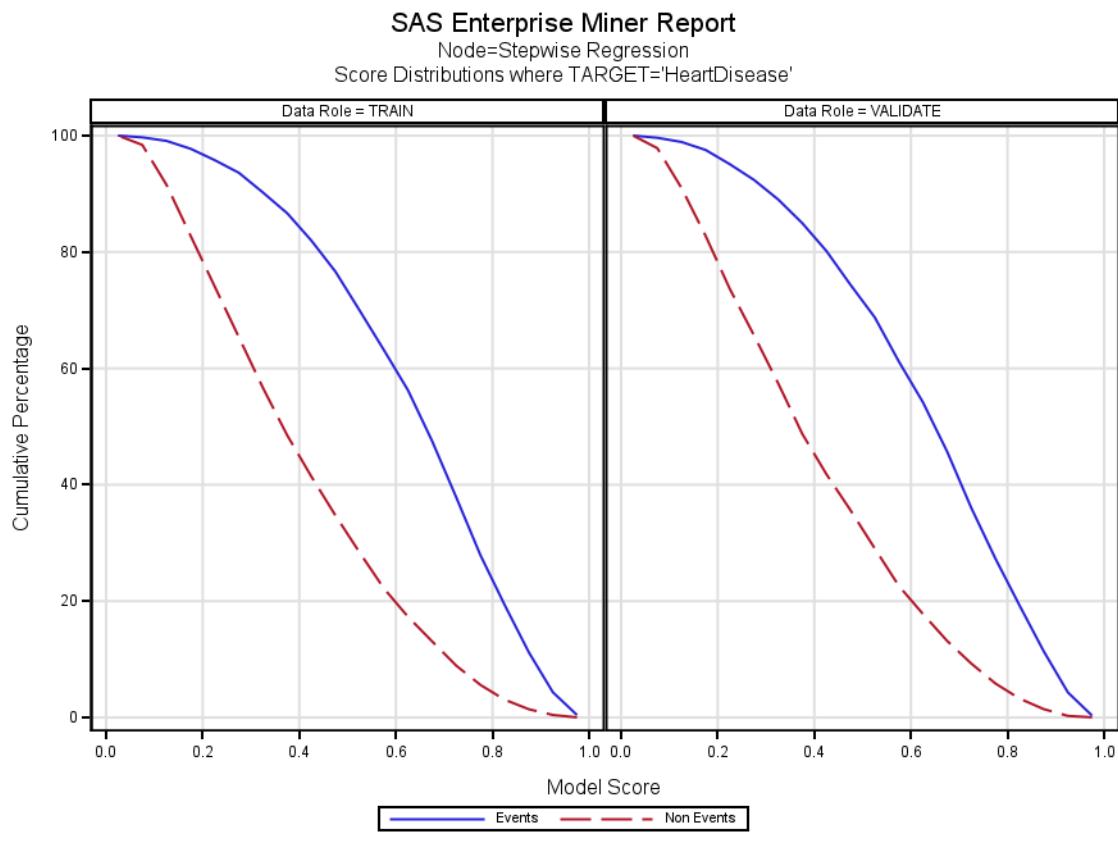




**SAS Enterprise Miner Report**  
 Node=Stepwise Regression  
 Score Distributions where TARGET='HeartDisease'



**SAS Enterprise Miner Report**  
 Node=Stepwise Regression  
 Score Distributions where TARGET='HeartDisease'



**Node=Stepwise Regression  
 Score Distributions**

Target Variable=HeartDisease 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                   | 19               | 0.40904              | 0.02026                 | 0.409                           | 0.020                              |
| 0.90-0.95                   | 182              | 3.91819              | 0.40527                 | 4.327                           | 0.426                              |
| 0.85-0.90                   | 320              | 6.88913              | 0.99291                 | 11.216                          | 1.418                              |
| 0.80-0.85                   | 378              | 8.13778              | 1.64134                 | 19.354                          | 3.060                              |
| 0.75-0.80                   | 396              | 8.52530              | 2.53293                 | 27.879                          | 5.593                              |
| 0.70-0.75                   | 461              | 9.92465              | 3.30294                 | 37.804                          | 8.896                              |
| 0.65-0.70                   | 450              | 9.68784              | 4.17427                 | 47.492                          | 13.070                             |
| 0.60-0.65                   | 406              | 8.74058              | 4.23506                 | 56.233                          | 17.305                             |
| 0.55-0.60                   | 322              | 6.93219              | 4.88349                 | 63.165                          | 22.188                             |
| 0.50-0.55                   | 314              | 6.75996              | 6.13982                 | 69.925                          | 28.328                             |
| 0.45-0.50                   | 310              | 6.67384              | 6.36272                 | 76.598                          | 34.691                             |
| 0.40-0.45                   | 249              | 5.36060              | 6.70719                 | 81.959                          | 41.398                             |
| 0.35-0.40                   | 218              | 4.69322              | 7.09220                 | 86.652                          | 48.490                             |
| 0.30-0.35                   | 165              | 3.55221              | 8.10537                 | 90.205                          | 56.596                             |
| 0.25-0.30                   | 158              | 3.40151              | 8.73354                 | 93.606                          | 65.329                             |
| 0.20-0.25                   | 101              | 2.17438              | 8.71327                 | 95.780                          | 74.043                             |
| 0.15-0.20                   | 91               | 1.95910              | 8.73354                 | 97.740                          | 82.776                             |
| 0.10-0.15                   | 63               | 1.35630              | 8.77406                 | 99.096                          | 91.550                             |
| 0.05-0.10                   | 28               | 0.60280              | 6.84904                 | 99.699                          | 98.399                             |
| 0.00-0.05                   | 14               | 0.30140              | 1.60081                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| 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               | 0.31564              | 0.02701                 | 0.316                           | 0.027                              |
| 0.90-0.95                   | 139              | 3.98852              | 0.24311                 | 4.304                           | 0.270                              |
| 0.85-0.90                   | 246              | 7.05882              | 1.16153                 | 11.363                          | 1.432                              |
| 0.80-0.85                   | 274              | 7.86227              | 1.80983                 | 19.225                          | 3.241                              |
| 0.75-0.80                   | 281              | 8.06313              | 2.59319                 | 27.288                          | 5.835                              |
| 0.70-0.75                   | 304              | 8.72310              | 3.43058                 | 36.011                          | 9.265                              |
| 0.65-0.70                   | 337              | 9.67001              | 3.88979                 | 45.681                          | 13.155                             |
| 0.60-0.65                   | 295              | 8.46485              | 4.61912                 | 54.146                          | 17.774                             |
| 0.55-0.60                   | 245              | 7.03013              | 4.83522                 | 61.176                          | 22.609                             |
| 0.50-0.55                   | 265              | 7.60402              | 6.45597                 | 68.780                          | 29.065                             |
| 0.45-0.50                   | 194              | 5.56671              | 6.53701                 | 74.347                          | 35.602                             |
| 0.40-0.45                   | 203              | 5.82496              | 6.21286                 | 80.172                          | 41.815                             |
| 0.35-0.40                   | 167              | 4.79197              | 6.94219                 | 84.964                          | 48.757                             |
| 0.30-0.35                   | 142              | 4.07461              | 8.69800                 | 89.039                          | 57.455                             |
| 0.25-0.30                   | 117              | 3.35725              | 8.23879                 | 92.396                          | 65.694                             |
| 0.20-0.25                   | 94               | 2.69727              | 7.96867                 | 95.093                          | 73.663                             |
| 0.15-0.20                   | 85               | 2.43902              | 9.10319                 | 97.532                          | 82.766                             |
| 0.10-0.15                   | 48               | 1.37733              | 8.23879                 | 98.910                          | 91.005                             |
| 0.05-0.10                   | 25               | 0.71736              | 6.83414                 | 99.627                          | 97.839                             |
| 0.00-0.05                   | 13               | 0.37303              | 2.16099                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Backward Regression Summary

Node id = Reg3  
 Node label = Backward Regression  
 Meta path = Ids => Smpl => EMSave => Part => Reg3  
 Notes =

### Node=Backward 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       |         |
| CIParam          | N            |              | MaxCPUTime            | 1 HOUR    |         | SIEntry            | 0.05    |         |
| ConvDefaults     | Y            |              | MaxFunctionCalls      | .         |         | SISStay            | 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        | BACKWARD  | NONE    | SuppressOutput     | N       |         |
| ExcludedVariable | REJECT       |              | OptimizationTechnique | DEFAULT   |         | Terms              | N       |         |
| FConvTimes       | 1            |              | Performance           | N         |         | TwoFactor          | N       |         |
| FConvValue       | 0            |              | Polynomial            | N         |         |                    |         |         |

### Node=Backward Regression Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Backward Regression Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

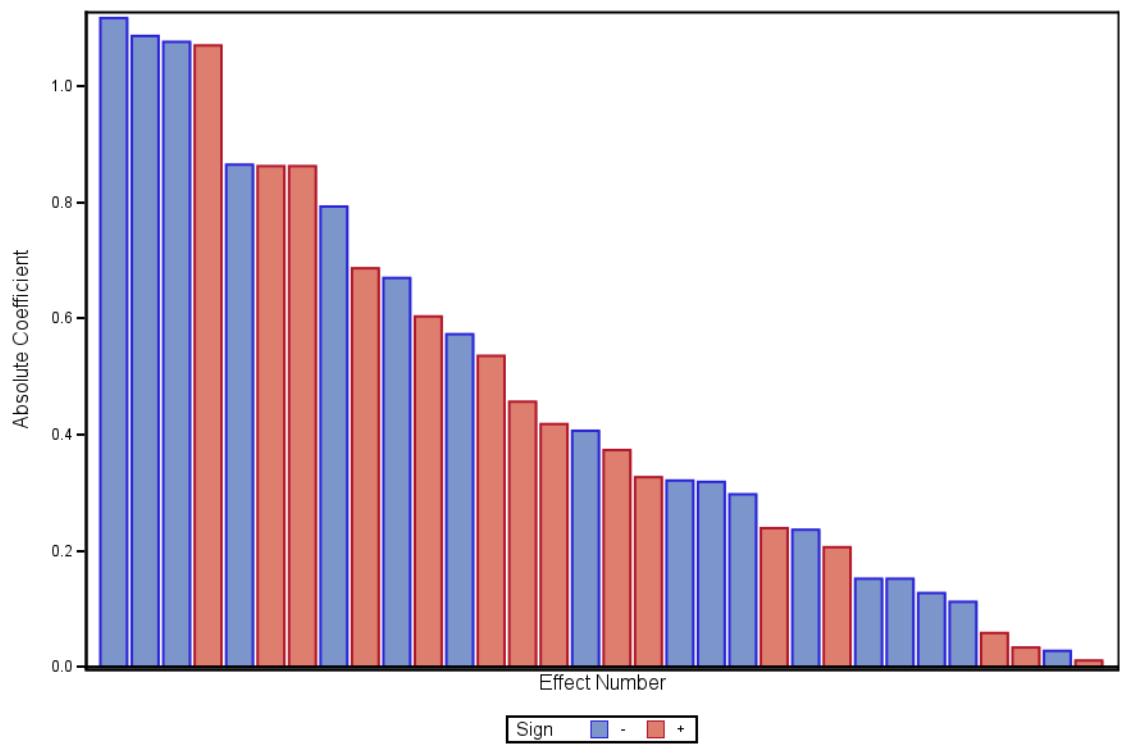
| Label of Statistic             | Train    | Validation | Test |
|--------------------------------|----------|------------|------|
| Akaike's Information Criterion | 10903.14 | .          | .    |
| Average Squared Error          | 0.19     | 0.20       | 0.19 |
| Average Error Function         | 0.57     | 0.58       | 0.56 |
| Degrees of Freedom for Error   | 9548.00  | .          | .    |

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic             | Train    | Validation | Test     |
|--------------------------------|----------|------------|----------|
| Model Degrees of Freedom       | 32.00    | .          | .        |
| Total Degrees of Freedom       | 9580.00  | .          | .        |
| Divisor for ASE                | 19160.00 | 14374.00   | 14376.00 |
| Error Function                 | 10839.14 | 8322.32    | 8084.42  |
| Final Prediction Error         | 0.19     | .          | .        |
| Maximum Absolute Error         | 0.99     | 0.98       | 0.98     |
| Mean Square Error              | 0.19     | 0.20       | 0.19     |
| Sum of Frequencies             | 9580.00  | 7187.00    | 7188.00  |
| Number of Estimate Weights     | 32.00    | .          | .        |
| Root Average Sum of Squares    | 0.44     | 0.44       | 0.44     |
| Root Final Prediction Error    | 0.44     | .          | .        |
| Root Mean Squared Error        | 0.44     | 0.44       | 0.44     |
| Schwarz's Bayesian Criterion   | 11132.50 | .          | .        |
| Sum of Squared Errors          | 3664.51  | 2833.17    | 2730.68  |
| Sum of Case Weights Times Freq | 19160.00 | 14374.00   | 14376.00 |
| Misclassification Rate         | 0.29     | 0.30       | 0.29     |

### SAS Enterprise Miner Report

Node=Backward Regression  
Regression Model Effects



**SAS Enterprise Miner Report**  
**Node=Backward Regression**  
**Regression Model Effects**

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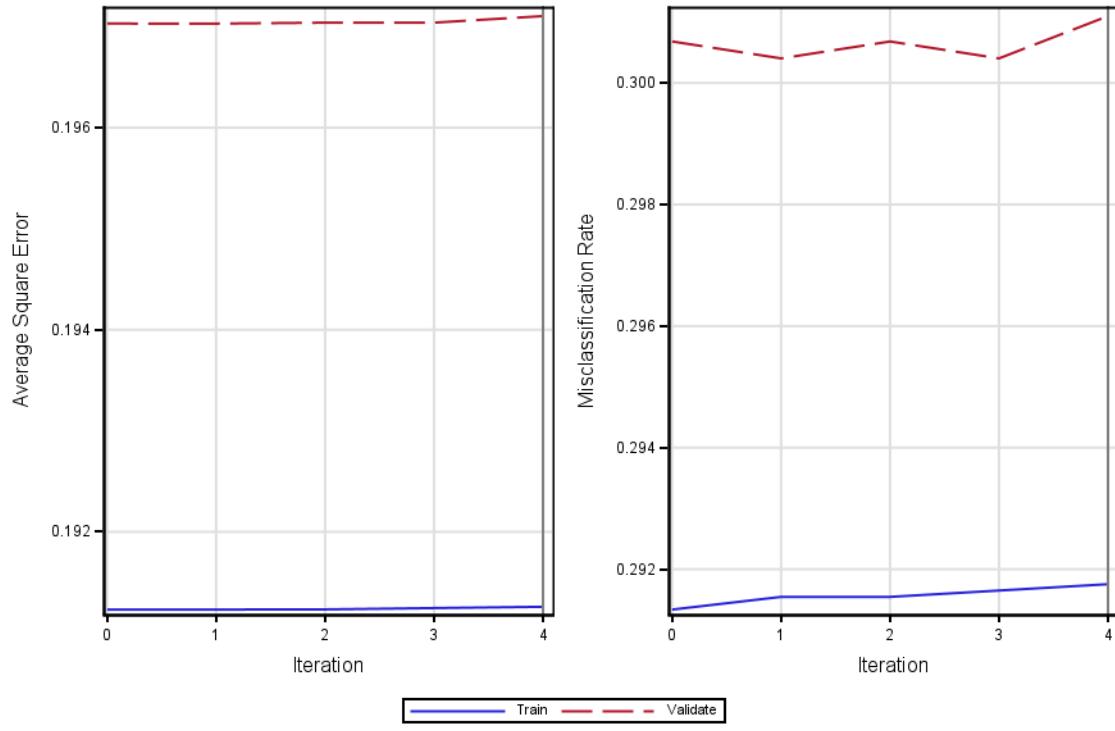
| Effect Number | Variable    | Level                        | Coefficient | T-value  | P Value    | Effect Number | Variable     |
|---------------|-------------|------------------------------|-------------|----------|------------|---------------|--------------|
| 1             | AgeCategory | 18N24                        | -1.11818    | -5.1642  | .000000241 | 17            | Race         |
| 2             | AgeCategory | 25N29                        | -1.08726    | -5.0961  | .000000347 | 18            | AgeCategory  |
| 3             | AgeCategory | 30N34                        | -1.07714    | -6.1534  | 7.5851E-10 | 19            | AgeCategory  |
| 4             | AgeCategory | 75N79                        | 1.07088     | 14.8771  | 4.6408E-50 | 20            | Sex          |
| 5             | AgeCategory | 35N39                        | -0.86546    | -5.4257  | .000000058 | 21            | Race         |
| 6             | GenHealth   | POOR                         | 0.86291     | 12.2980  | 9.2798E-35 | 22            | Race         |
| 7             | AgeCategory | 70N74                        | 0.86291     | 12.7607  | 2.7169E-37 | 23            | Diabetic     |
| 8             | GenHealth   | EXCELLENT                    | -0.79324    | -10.9184 | 9.4167E-28 | 24            | Race         |
| 9             | AgeCategory | 65N69                        | 0.68687     | 10.1148  | 4.7521E-24 | 25            | DiffWalking  |
| 10            | Race        | ERICAN_INDIAN_ALASKAN_NATIVE | -0.67017    | -5.1241  | .000000299 | 26            | Smoking      |
| 11            | Stroke      | NO                           | 0.60381     | 22.8729  | 8.641E-116 | 27            | Asthma       |
| 12            | Intercept   | YES                          | -0.57321    | -3.9487  | .000078581 | 28            | Diabetic     |
| 13            | AgeCategory | 60N64                        | 0.53590     | 7.5629   | 3.941E-14  | 29            | GenHealth    |
| 14            | Diabetic    | YES                          | 0.45687     | 4.5977   | .000004271 | 30            | AgeCategory  |
| 15            | GenHealth   | FAIR                         | 0.41832     | 8.5400   | 1.3427E-17 | 31            | SleepTime    |
| 16            | AgeCategory | 40N44                        | -0.40672    | -3.0828  | .002050782 | 32            | MentalHealth |

| Level                  | Coefficient | T-value  | P Value |
|------------------------|-------------|----------|---------|
| SPANIC                 | 0.37346     | 3.5018   | 0.00046 |
| 55N59                  | 0.32680     | 3.9874   | 0.00007 |
| 45N49                  | -0.32097    | -2.7350  | 0.00624 |
| FEMALE                 | -0.31866    | -13.2023 | 0.00000 |
| ACK                    | -0.29726    | -3.6516  | 0.00026 |
| HER                    | 0.23887     | 2.0592   | 0.03947 |
| NO                     | -0.23614    | -2.4711  | 0.01347 |
| IAN                    | 0.20608     | 1.1291   | 0.25885 |
| NO                     | -0.15172    | -5.2204  | 0.00000 |
| NO                     | -0.15171    | -6.3344  | 0.00000 |
| NO                     | -0.12703    | -3.9420  | 0.00008 |
| NO_BORDERLINE_DIABETES | -0.11194    | -0.8258  | 0.40889 |
| GOOD                   | 0.05816     | 1.4000   | 0.16153 |
| 50N54                  | 0.03315     | 0.3491   | 0.72699 |
|                        | -0.02736    | -2.0167  | 0.04372 |
|                        | 0.01077     | 3.7005   | 0.00022 |

**SAS Enterprise Miner Report**  
**Node=Backward Regression**  
**Model Iteration Plots**

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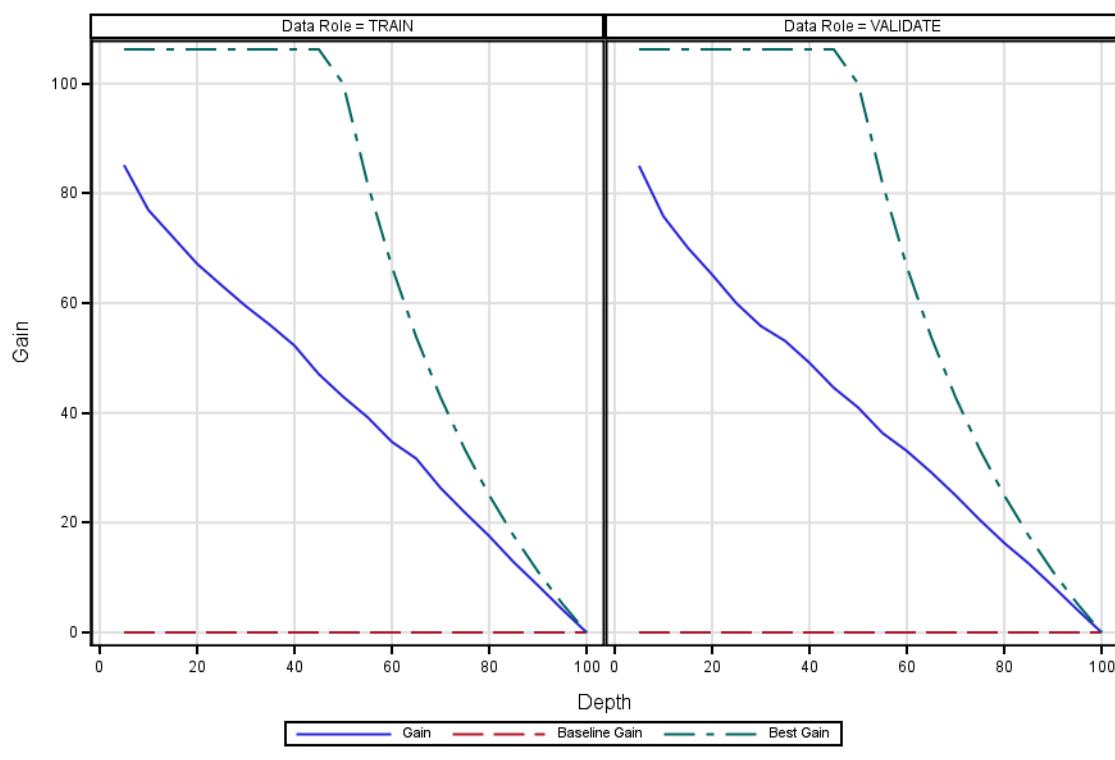
SAS Enterprise Miner Report  
Node=Backward Regression  
Model Iteration Plots

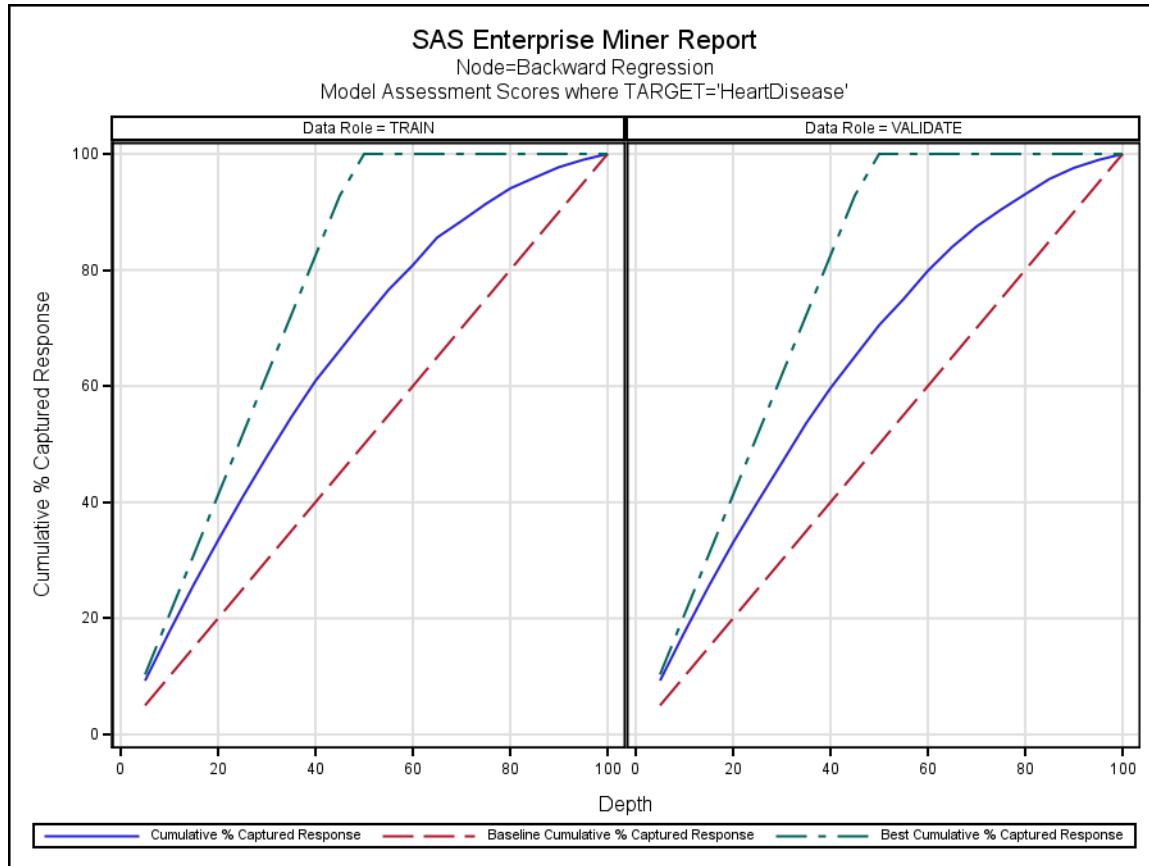
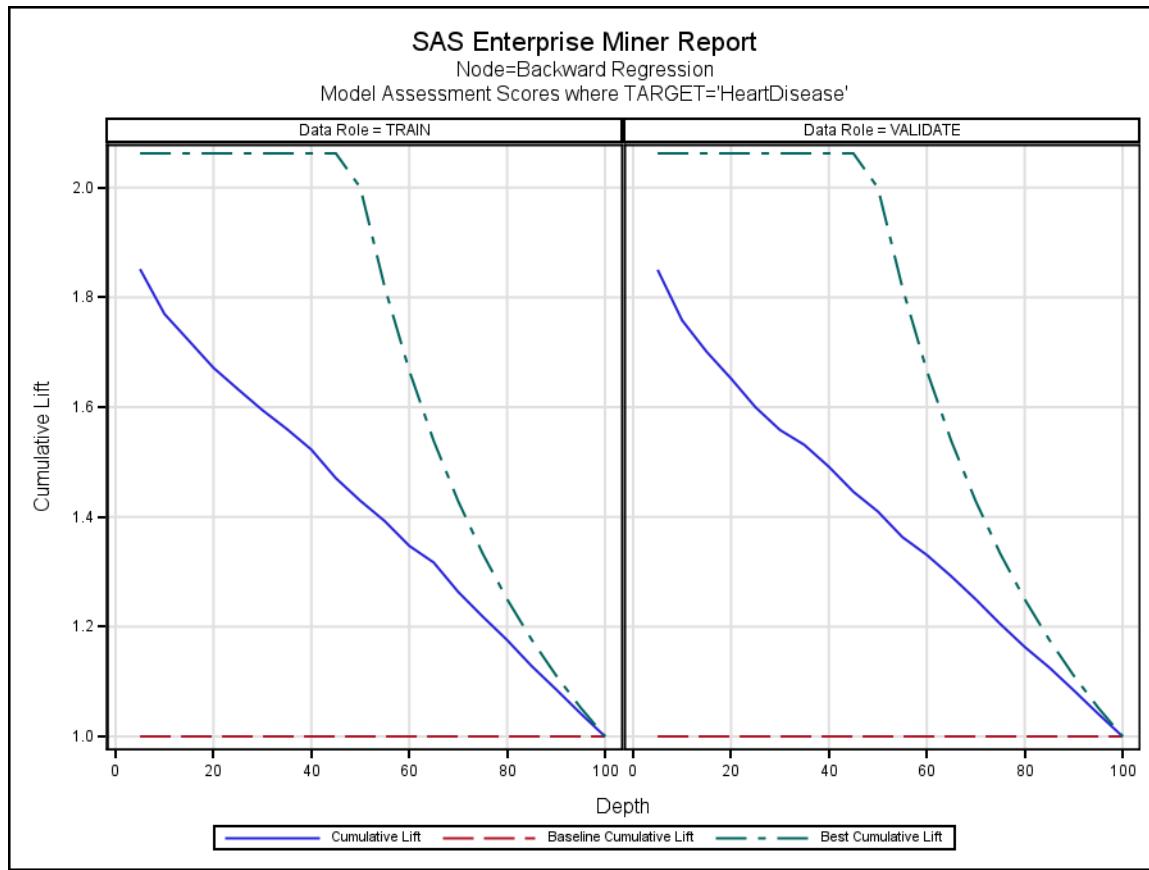


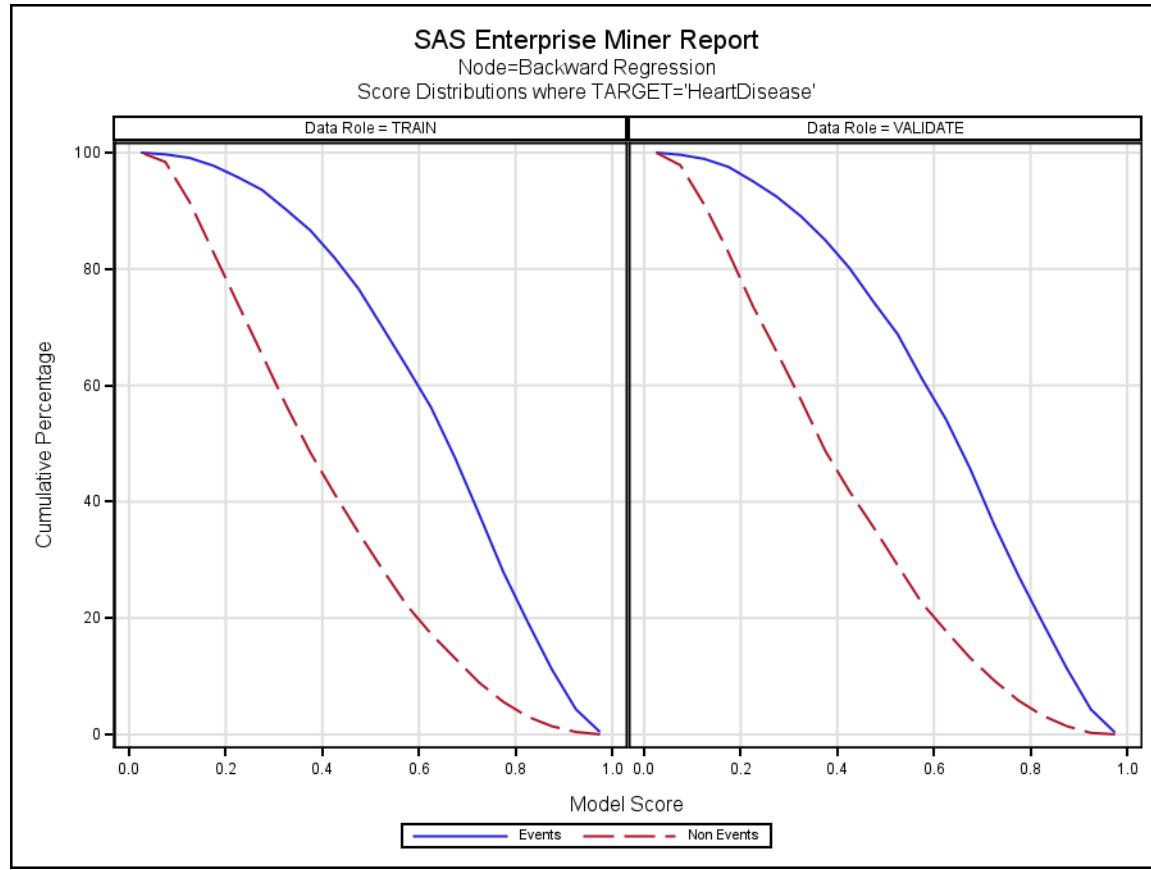
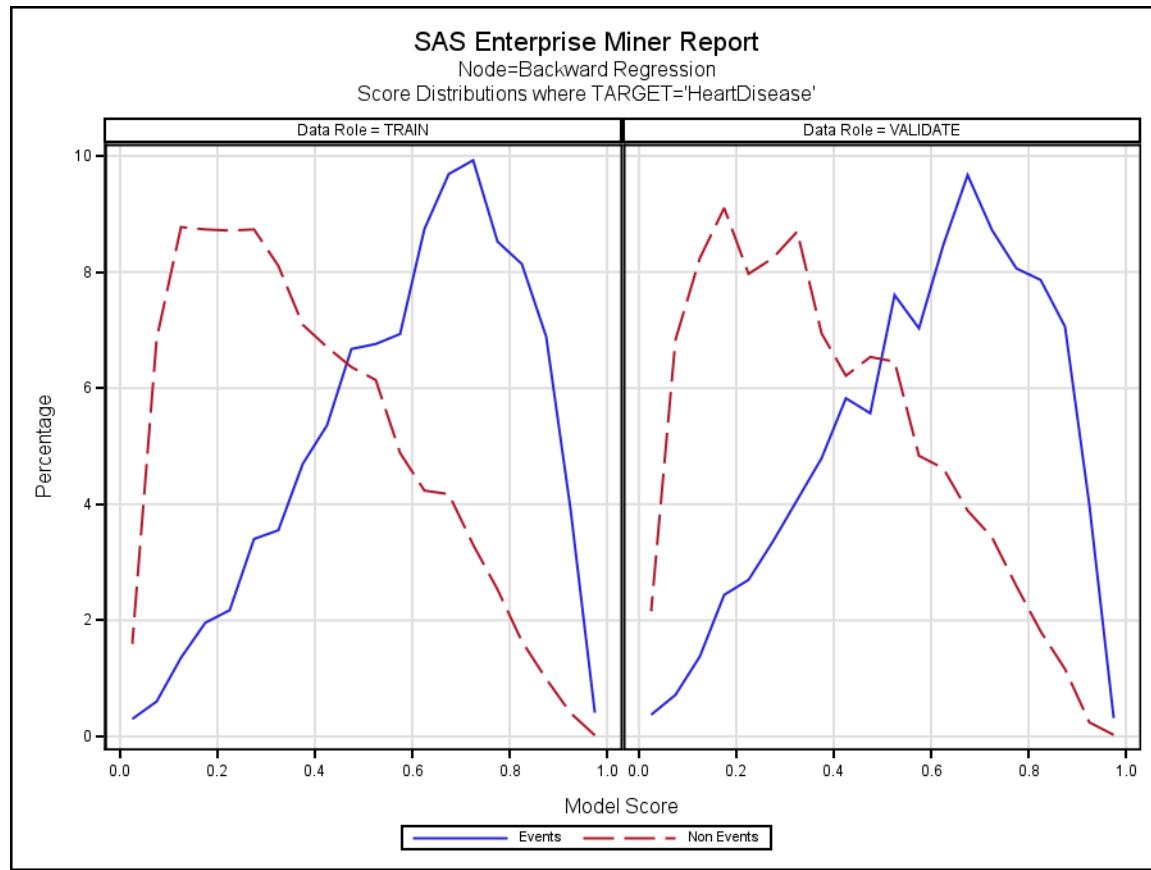
SAS Enterprise Miner Report

Node=Backward Regression

Model Assessment Scores where TARGET='HeartDisease'







**Node=Backward Regression**  
**Score Distributions**

Target Variable=HeartDisease 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                   | 19               | 0.40904              | 0.02026                 | 0.409                           | 0.020                              |
| 0.90-0.95                   | 182              | 3.91819              | 0.40527                 | 4.327                           | 0.426                              |
| 0.85-0.90                   | 320              | 6.88913              | 0.99291                 | 11.216                          | 1.418                              |
| 0.80-0.85                   | 378              | 8.13778              | 1.64134                 | 19.354                          | 3.060                              |
| 0.75-0.80                   | 396              | 8.52530              | 2.53293                 | 27.879                          | 5.593                              |
| 0.70-0.75                   | 461              | 9.92465              | 3.30294                 | 37.804                          | 8.896                              |
| 0.65-0.70                   | 450              | 9.68784              | 4.17427                 | 47.492                          | 13.070                             |
| 0.60-0.65                   | 406              | 8.74058              | 4.23506                 | 56.233                          | 17.305                             |
| 0.55-0.60                   | 322              | 6.93219              | 4.88349                 | 63.165                          | 22.188                             |
| 0.50-0.55                   | 314              | 6.75996              | 6.13982                 | 69.925                          | 28.328                             |
| 0.45-0.50                   | 310              | 6.67384              | 6.36272                 | 76.598                          | 34.691                             |
| 0.40-0.45                   | 249              | 5.36060              | 6.70719                 | 81.959                          | 41.398                             |
| 0.35-0.40                   | 218              | 4.69322              | 7.09220                 | 86.652                          | 48.490                             |
| 0.30-0.35                   | 165              | 3.55221              | 8.10537                 | 90.205                          | 56.596                             |
| 0.25-0.30                   | 158              | 3.40151              | 8.73354                 | 93.606                          | 65.329                             |
| 0.20-0.25                   | 101              | 2.17438              | 8.71327                 | 95.780                          | 74.043                             |
| 0.15-0.20                   | 91               | 1.95910              | 8.73354                 | 97.740                          | 82.776                             |
| 0.10-0.15                   | 63               | 1.35630              | 8.77406                 | 99.096                          | 91.550                             |
| 0.05-0.10                   | 28               | 0.60280              | 6.84904                 | 99.699                          | 98.399                             |
| 0.00-0.05                   | 14               | 0.30140              | 1.60081                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| 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               | 0.31564              | 0.02701                 | 0.316                           | 0.027                              |
| 0.90-0.95                   | 139              | 3.98852              | 0.24311                 | 4.304                           | 0.270                              |
| 0.85-0.90                   | 246              | 7.05882              | 1.16153                 | 11.363                          | 1.432                              |
| 0.80-0.85                   | 274              | 7.86227              | 1.80983                 | 19.225                          | 3.241                              |
| 0.75-0.80                   | 281              | 8.06313              | 2.59319                 | 27.288                          | 5.835                              |
| 0.70-0.75                   | 304              | 8.72310              | 3.43058                 | 36.011                          | 9.265                              |
| 0.65-0.70                   | 337              | 9.67001              | 3.88979                 | 45.681                          | 13.155                             |
| 0.60-0.65                   | 295              | 8.46485              | 4.61912                 | 54.146                          | 17.774                             |
| 0.55-0.60                   | 245              | 7.03013              | 4.83522                 | 61.176                          | 22.609                             |
| 0.50-0.55                   | 265              | 7.60402              | 6.45597                 | 68.780                          | 29.065                             |
| 0.45-0.50                   | 194              | 5.56671              | 6.53701                 | 74.347                          | 35.602                             |
| 0.40-0.45                   | 203              | 5.82496              | 6.21286                 | 80.172                          | 41.815                             |
| 0.35-0.40                   | 167              | 4.79197              | 6.94219                 | 84.964                          | 48.757                             |
| 0.30-0.35                   | 142              | 4.07461              | 8.69800                 | 89.039                          | 57.455                             |
| 0.25-0.30                   | 117              | 3.35725              | 8.23879                 | 92.396                          | 65.694                             |
| 0.20-0.25                   | 94               | 2.69727              | 7.96867                 | 95.093                          | 73.663                             |
| 0.15-0.20                   | 85               | 2.43902              | 9.10319                 | 97.532                          | 82.766                             |
| 0.10-0.15                   | 48               | 1.37733              | 8.23879                 | 98.910                          | 91.005                             |
| 0.05-0.10                   | 25               | 0.71736              | 6.83414                 | 99.627                          | 97.839                             |
| 0.00-0.05                   | 13               | 0.37303              | 2.16099                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Forward Regression Summary

Node id = Reg2  
 Node label = Forward Regression  
 Meta path = Ids => Smpl => EMSave => Part => Reg2  
 Notes =

### Node=Forward 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       |         |
| CIParam          | N            |              | MaxCPUTime            | 1 HOUR    |         | SIEntry            | 0.05    |         |
| ConvDefaults     | Y            |              | MaxFunctionCalls      | .         |         | SISStay            | 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        | FORWARD   | NONE    | SuppressOutput     | N       |         |
| ExcludedVariable | REJECT       |              | OptimizationTechnique | DEFAULT   |         | Terms              | N       |         |
| FConvTimes       | 1            |              | Performance           | N         |         | TwoFactor          | N       |         |
| FConvValue       | 0            |              | Polynomial            | N         |         |                    |         |         |

### Node=Forward Regression Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Forward Regression Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

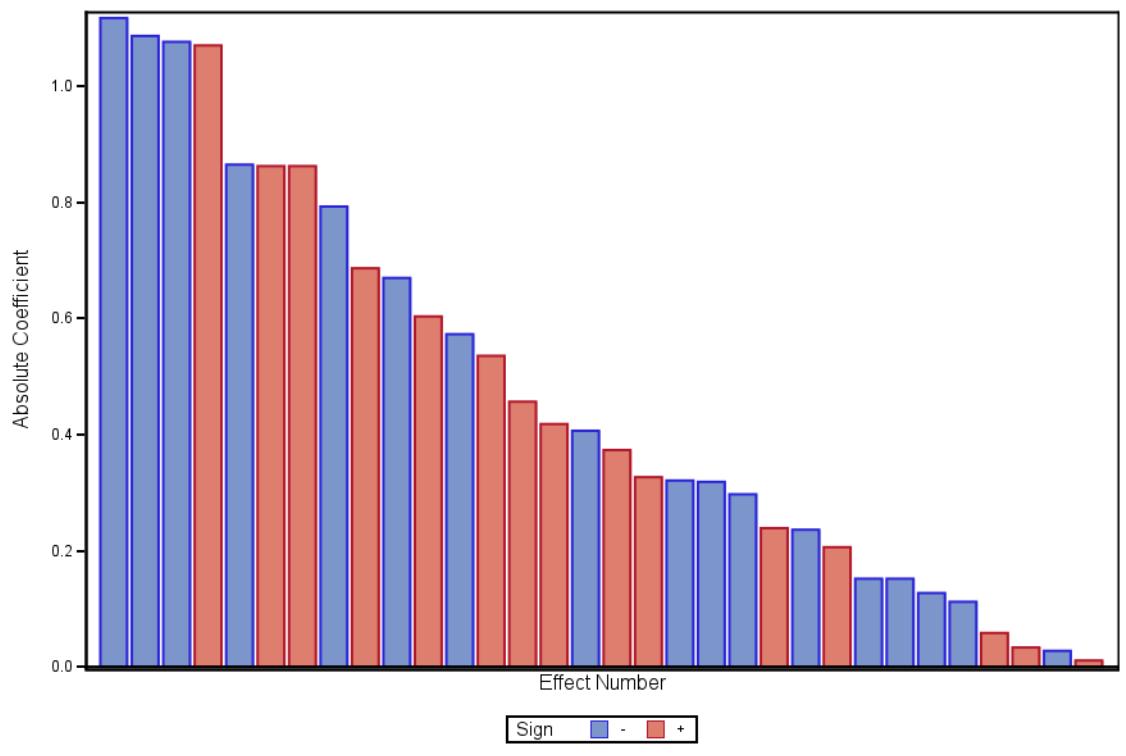
| Label of Statistic             | Train    | Validation | Test |
|--------------------------------|----------|------------|------|
| Akaike's Information Criterion | 10903.14 | .          | .    |
| Average Squared Error          | 0.19     | 0.20       | 0.19 |
| Average Error Function         | 0.57     | 0.58       | 0.56 |
| Degrees of Freedom for Error   | 9548.00  | .          | .    |

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic             | Train    | Validation | Test     |
|--------------------------------|----------|------------|----------|
| Model Degrees of Freedom       | 32.00    | .          | .        |
| Total Degrees of Freedom       | 9580.00  | .          | .        |
| Divisor for ASE                | 19160.00 | 14374.00   | 14376.00 |
| Error Function                 | 10839.14 | 8322.32    | 8084.42  |
| Final Prediction Error         | 0.19     | .          | .        |
| Maximum Absolute Error         | 0.99     | 0.98       | 0.98     |
| Mean Square Error              | 0.19     | 0.20       | 0.19     |
| Sum of Frequencies             | 9580.00  | 7187.00    | 7188.00  |
| Number of Estimate Weights     | 32.00    | .          | .        |
| Root Average Sum of Squares    | 0.44     | 0.44       | 0.44     |
| Root Final Prediction Error    | 0.44     | .          | .        |
| Root Mean Squared Error        | 0.44     | 0.44       | 0.44     |
| Schwarz's Bayesian Criterion   | 11132.50 | .          | .        |
| Sum of Squared Errors          | 3664.51  | 2833.17    | 2730.68  |
| Sum of Case Weights Times Freq | 19160.00 | 14374.00   | 14376.00 |
| Misclassification Rate         | 0.29     | 0.30       | 0.29     |

### SAS Enterprise Miner Report

Node=Forward Regression  
Regression Model Effects



**SAS Enterprise Miner Report**  
**Node=Forward Regression**  
**Regression Model Effects**

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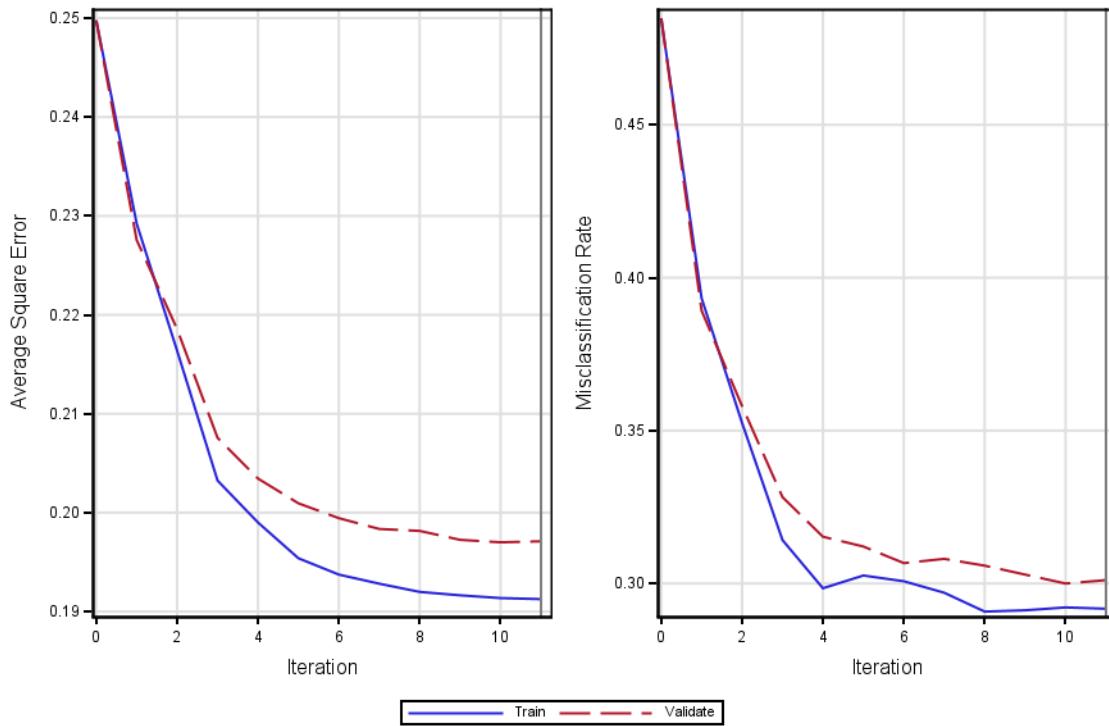
| Effect Number | Variable    | Level                        | Coefficient | T-value  | P Value    | Effect Number | Variable     |
|---------------|-------------|------------------------------|-------------|----------|------------|---------------|--------------|
| 1             | AgeCategory | 18N24                        | -1.11818    | -5.1642  | .000000241 | 17            | Race         |
| 2             | AgeCategory | 25N29                        | -1.08726    | -5.0961  | .000000347 | 18            | AgeCategory  |
| 3             | AgeCategory | 30N34                        | -1.07714    | -6.1534  | 7.5851E-10 | 19            | AgeCategory  |
| 4             | AgeCategory | 75N79                        | 1.07088     | 14.8771  | 4.6408E-50 | 20            | Sex          |
| 5             | AgeCategory | 35N39                        | -0.86546    | -5.4257  | .000000058 | 21            | Race         |
| 6             | GenHealth   | POOR                         | 0.86291     | 12.2980  | 9.2798E-35 | 22            | Race         |
| 7             | AgeCategory | 70N74                        | 0.86291     | 12.7607  | 2.7169E-37 | 23            | Diabetic     |
| 8             | GenHealth   | EXCELLENT                    | -0.79324    | -10.9184 | 9.4167E-28 | 24            | Race         |
| 9             | AgeCategory | 65N69                        | 0.68687     | 10.1148  | 4.7521E-24 | 25            | DiffWalking  |
| 10            | Race        | ERICAN_INDIAN_ALASKAN_NATIVE | -0.67017    | -5.1241  | .000000299 | 26            | Smoking      |
| 11            | Stroke      | NO                           | 0.60381     | 22.8729  | 8.641E-116 | 27            | Asthma       |
| 12            | Intercept   | YES                          | -0.57321    | -3.9487  | .000078581 | 28            | Diabetic     |
| 13            | AgeCategory | 60N64                        | 0.53590     | 7.5629   | 3.941E-14  | 29            | GenHealth    |
| 14            | Diabetic    | YES                          | 0.45687     | 4.5977   | .000004271 | 30            | AgeCategory  |
| 15            | GenHealth   | FAIR                         | 0.41832     | 8.5400   | 1.3427E-17 | 31            | SleepTime    |
| 16            | AgeCategory | 40N44                        | -0.40672    | -3.0828  | .002050782 | 32            | MentalHealth |

| Level                  | Coefficient | T-value  | P Value |
|------------------------|-------------|----------|---------|
| SPANIC                 | 0.37346     | 3.5018   | 0.00046 |
| 55N59                  | 0.32680     | 3.9874   | 0.00007 |
| 45N49                  | -0.32097    | -2.7350  | 0.00624 |
| FEMALE                 | -0.31866    | -13.2023 | 0.00000 |
| ACK                    | -0.29726    | -3.6516  | 0.00026 |
| HER                    | 0.23887     | 2.0592   | 0.03947 |
| NO                     | -0.23614    | -2.4711  | 0.01347 |
| IAN                    | 0.20608     | 1.1291   | 0.25885 |
| NO                     | -0.15172    | -5.2204  | 0.00000 |
| NO                     | -0.15171    | -6.3344  | 0.00000 |
| NO                     | -0.12703    | -3.9420  | 0.00008 |
| NO_BORDERLINE_DIABETES | -0.11194    | -0.8258  | 0.40889 |
| GOOD                   | 0.05816     | 1.4000   | 0.16153 |
| 50N54                  | 0.03315     | 0.3491   | 0.72699 |
|                        | -0.02736    | -2.0167  | 0.04372 |
|                        | 0.01077     | 3.7005   | 0.00022 |

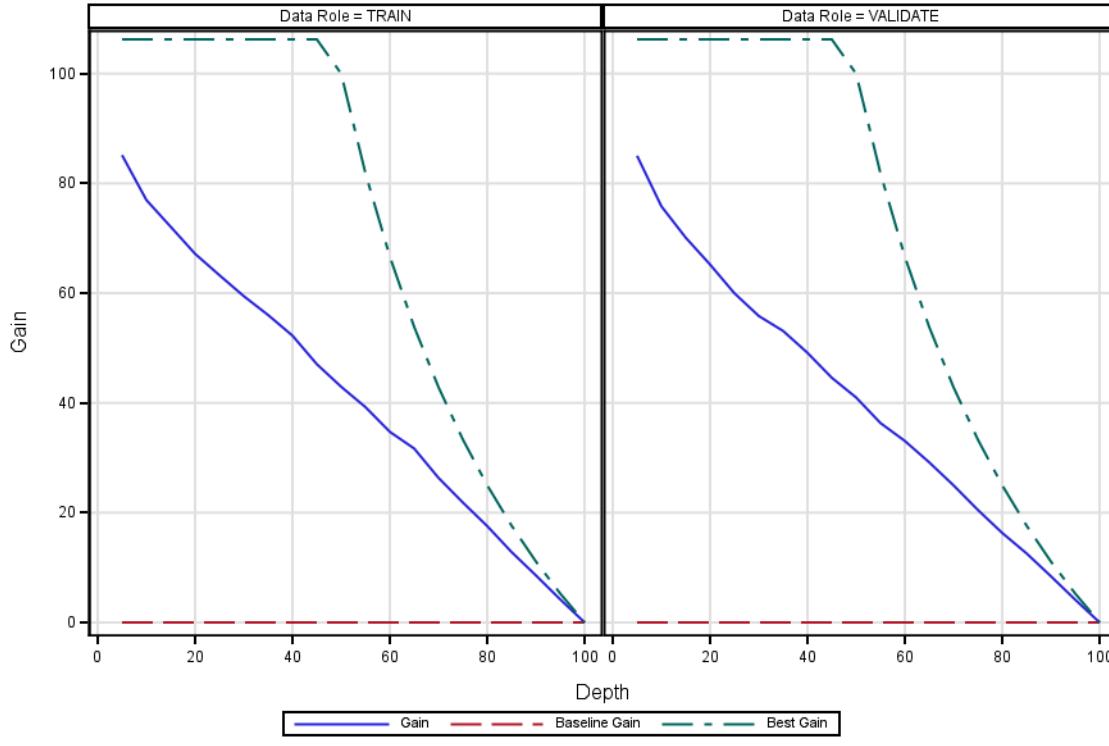
**SAS Enterprise Miner Report**  
**Node=Forward Regression**  
**Model Iteration Plots**

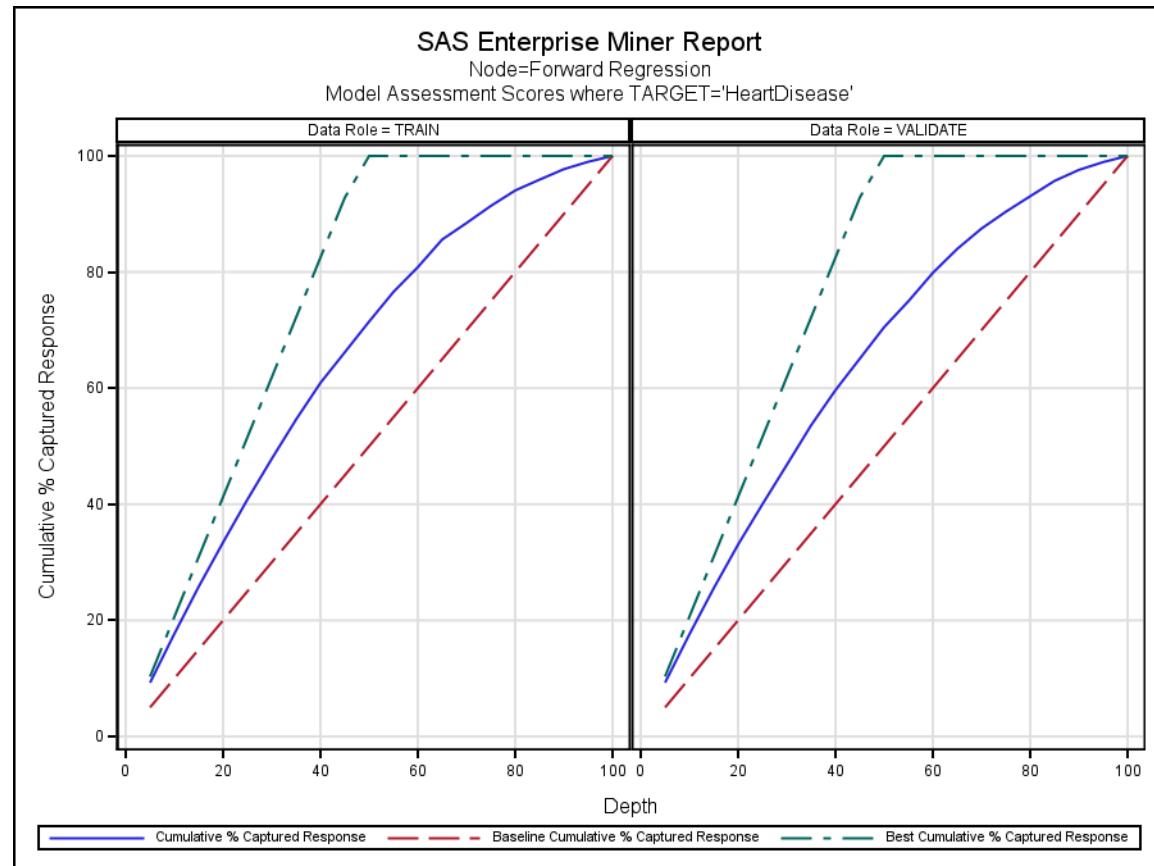
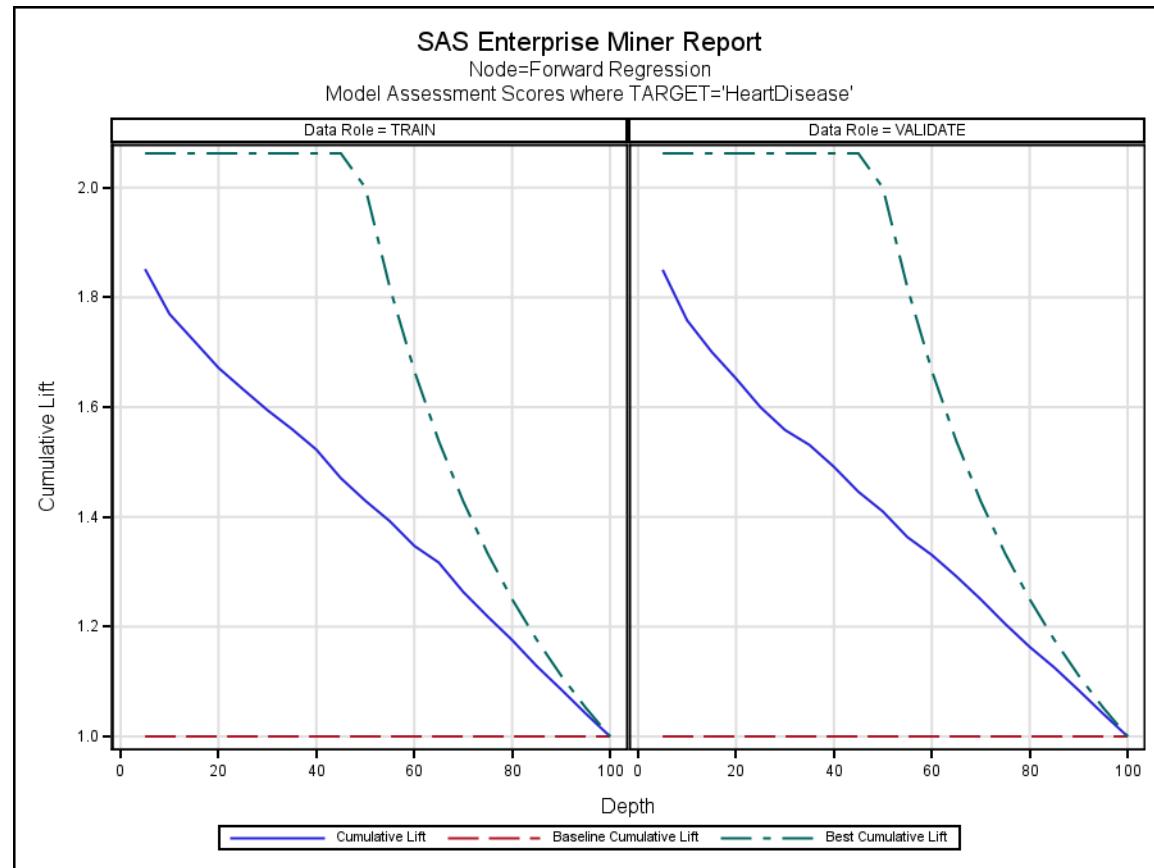
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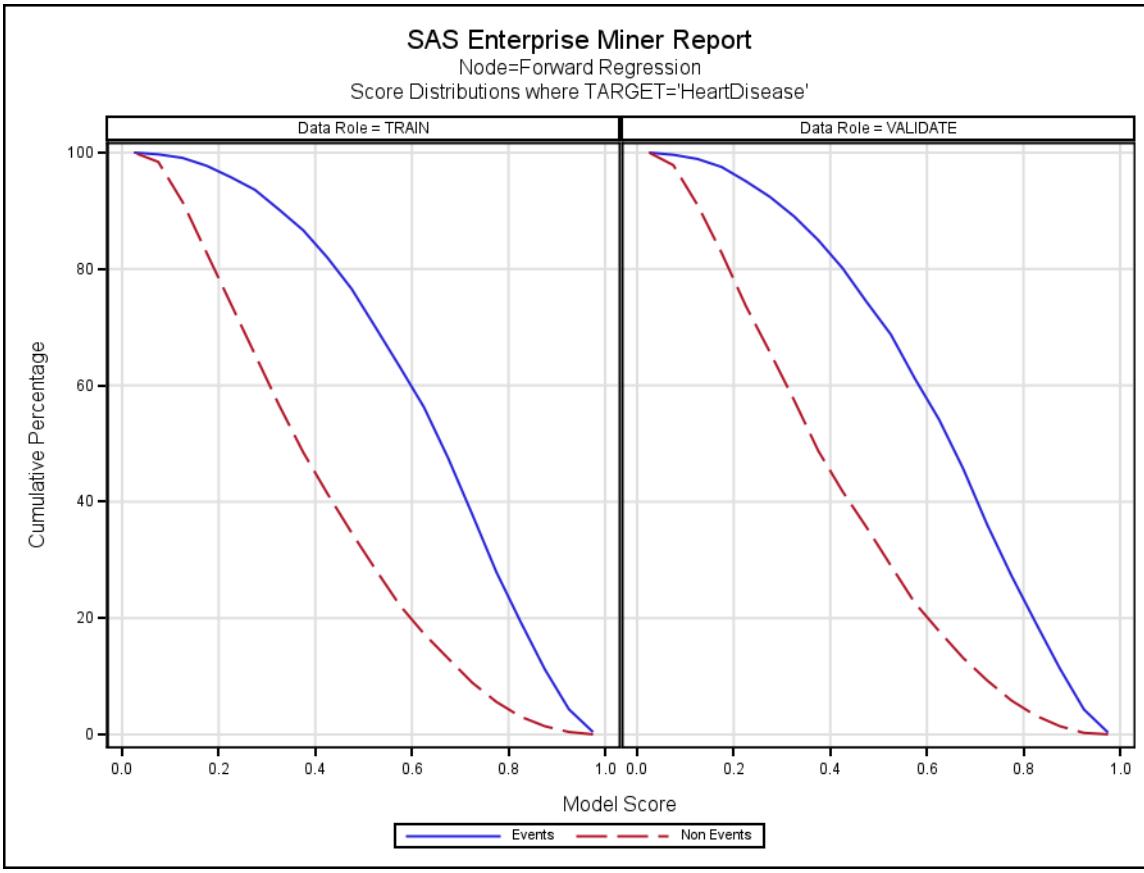
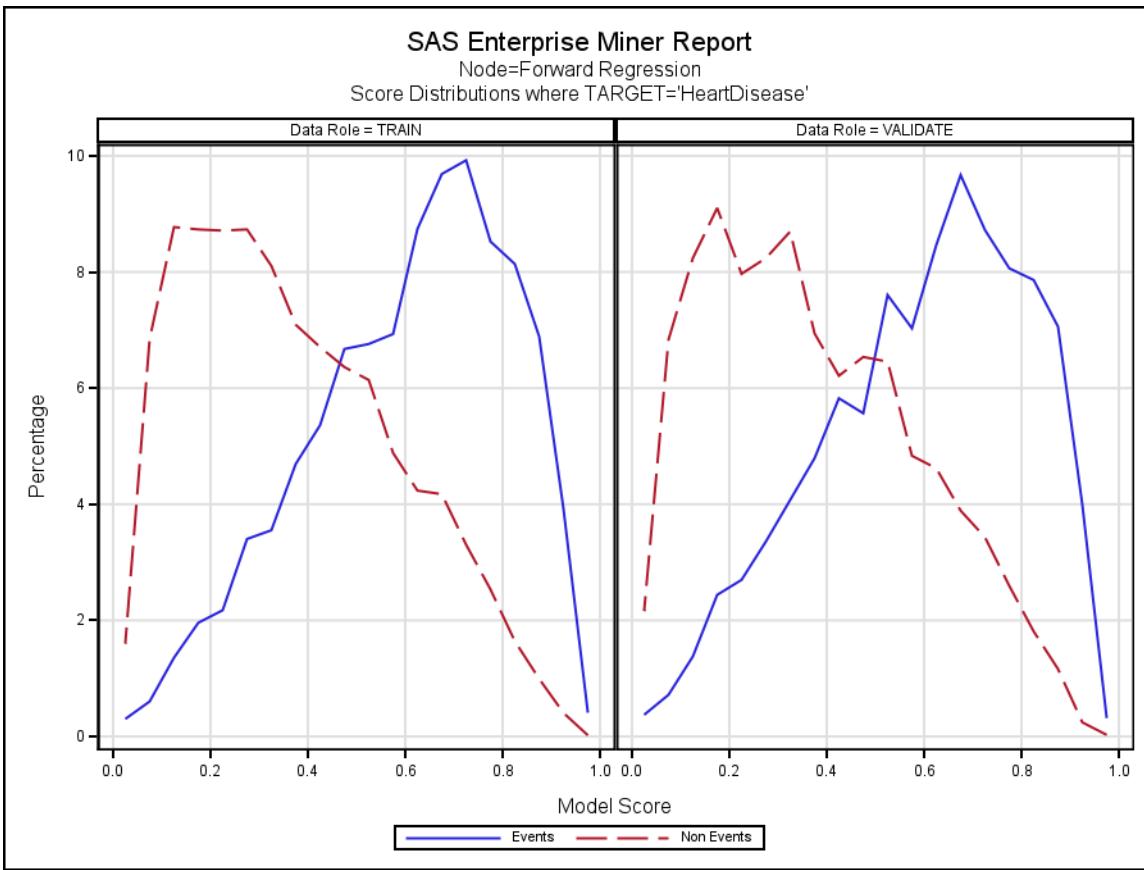
SAS Enterprise Miner Report  
Node=Forward Regression  
Model Iteration Plots



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







### Node=Forward Regression Score Distributions

Target Variable=HeartDisease 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                   | 19               | 0.40904              | 0.02026                 | 0.409                           | 0.020                              |
| 0.90-0.95                   | 182              | 3.91819              | 0.40527                 | 4.327                           | 0.426                              |
| 0.85-0.90                   | 320              | 6.88913              | 0.99291                 | 11.216                          | 1.418                              |
| 0.80-0.85                   | 378              | 8.13778              | 1.64134                 | 19.354                          | 3.060                              |
| 0.75-0.80                   | 396              | 8.52530              | 2.53293                 | 27.879                          | 5.593                              |
| 0.70-0.75                   | 461              | 9.92465              | 3.30294                 | 37.804                          | 8.896                              |
| 0.65-0.70                   | 450              | 9.68784              | 4.17427                 | 47.492                          | 13.070                             |
| 0.60-0.65                   | 406              | 8.74058              | 4.23506                 | 56.233                          | 17.305                             |
| 0.55-0.60                   | 322              | 6.93219              | 4.88349                 | 63.165                          | 22.188                             |
| 0.50-0.55                   | 314              | 6.75996              | 6.13982                 | 69.925                          | 28.328                             |
| 0.45-0.50                   | 310              | 6.67384              | 6.36272                 | 76.598                          | 34.691                             |
| 0.40-0.45                   | 249              | 5.36060              | 6.70719                 | 81.959                          | 41.398                             |
| 0.35-0.40                   | 218              | 4.69322              | 7.09220                 | 86.652                          | 48.490                             |
| 0.30-0.35                   | 165              | 3.55221              | 8.10537                 | 90.205                          | 56.596                             |
| 0.25-0.30                   | 158              | 3.40151              | 8.73354                 | 93.606                          | 65.329                             |
| 0.20-0.25                   | 101              | 2.17438              | 8.71327                 | 95.780                          | 74.043                             |
| 0.15-0.20                   | 91               | 1.95910              | 8.73354                 | 97.740                          | 82.776                             |
| 0.10-0.15                   | 63               | 1.35630              | 8.77406                 | 99.096                          | 91.550                             |
| 0.05-0.10                   | 28               | 0.60280              | 6.84904                 | 99.699                          | 98.399                             |
| 0.00-0.05                   | 14               | 0.30140              | 1.60081                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| 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               | 0.31564              | 0.02701                 | 0.316                           | 0.027                              |
| 0.90-0.95                   | 139              | 3.98852              | 0.24311                 | 4.304                           | 0.270                              |
| 0.85-0.90                   | 246              | 7.05882              | 1.16153                 | 11.363                          | 1.432                              |
| 0.80-0.85                   | 274              | 7.86227              | 1.80983                 | 19.225                          | 3.241                              |
| 0.75-0.80                   | 281              | 8.06313              | 2.59319                 | 27.288                          | 5.835                              |
| 0.70-0.75                   | 304              | 8.72310              | 3.43058                 | 36.011                          | 9.265                              |
| 0.65-0.70                   | 337              | 9.67001              | 3.88979                 | 45.681                          | 13.155                             |
| 0.60-0.65                   | 295              | 8.46485              | 4.61912                 | 54.146                          | 17.774                             |
| 0.55-0.60                   | 245              | 7.03013              | 4.83522                 | 61.176                          | 22.609                             |
| 0.50-0.55                   | 265              | 7.60402              | 6.45597                 | 68.780                          | 29.065                             |
| 0.45-0.50                   | 194              | 5.56671              | 6.53701                 | 74.347                          | 35.602                             |
| 0.40-0.45                   | 203              | 5.82496              | 6.21286                 | 80.172                          | 41.815                             |
| 0.35-0.40                   | 167              | 4.79197              | 6.94219                 | 84.964                          | 48.757                             |
| 0.30-0.35                   | 142              | 4.07461              | 8.69800                 | 89.039                          | 57.455                             |
| 0.25-0.30                   | 117              | 3.35725              | 8.23879                 | 92.396                          | 65.694                             |
| 0.20-0.25                   | 94               | 2.69727              | 7.96867                 | 95.093                          | 73.663                             |
| 0.15-0.20                   | 85               | 2.43902              | 9.10319                 | 97.532                          | 82.766                             |
| 0.10-0.15                   | 48               | 1.37733              | 8.23879                 | 98.910                          | 91.005                             |
| 0.05-0.10                   | 25               | 0.71736              | 6.83414                 | 99.627                          | 97.839                             |
| 0.00-0.05                   | 13               | 0.37303              | 2.16099                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Exhaustive Regression Summary

Node id = Reg  
 Node label = Exhaustive Regression  
 Meta path = Ids => Smpl => EMSave => Part => Reg  
 Notes =

### Node=Exhaustive 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       |         |
| CIParam          | N            |              | MaxCPUTime            | 1 HOUR    |         | SIEntry            | 0.05    |         |
| ConvDefaults     | Y            |              | MaxFunctionCalls      | .         |         | SISStay            | 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=Exhaustive Regression Variable Summary

| Role   | Level    | Frequency Count | Name   |
|--------|----------|-----------------|--|
| TARGET | BINARY   | 1               | HeartDisease   |
| INPUT  | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT  | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT  | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT  | ORDINAL  | 1               | GenHealth  |

### Node=Exhaustive Regression Model Fit Statistics

Target=HeartDisease Target Label=HeartDisease

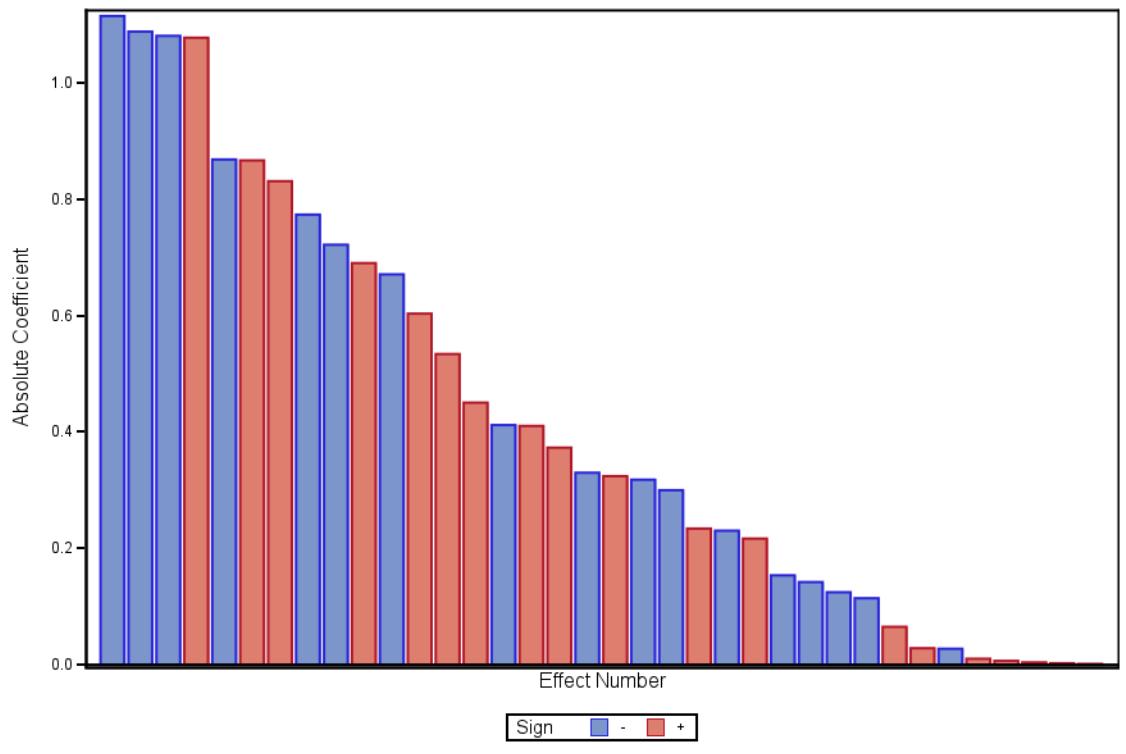
| Label of Statistic             | Train    | Validation | Test |
|--------------------------------|----------|------------|------|
| Akaike's Information Criterion | 10909.22 | .          | .    |
| Average Squared Error          | 0.19     | 0.20       | 0.19 |
| Average Error Function         | 0.57     | 0.58       | 0.56 |
| Degrees of Freedom for Error   | 9544.00  | .          | .    |

Target=HeartDisease Target Label=HeartDisease

| Label of Statistic             | Train    | Validation | Test     |
|--------------------------------|----------|------------|----------|
| Model Degrees of Freedom       | 36.00    | .          | .        |
| Total Degrees of Freedom       | 9580.00  | .          | .        |
| Divisor for ASE                | 19160.00 | 14374.00   | 14376.00 |
| Error Function                 | 10837.22 | 8320.04    | 8081.80  |
| Final Prediction Error         | 0.19     | .          | .        |
| Maximum Absolute Error         | 0.99     | 0.98       | 0.98     |
| Mean Square Error              | 0.19     | 0.20       | 0.19     |
| Sum of Frequencies             | 9580.00  | 7187.00    | 7188.00  |
| Number of Estimate Weights     | 36.00    | .          | .        |
| Root Average Sum of Squares    | 0.44     | 0.44       | 0.44     |
| Root Final Prediction Error    | 0.44     | .          | .        |
| Root Mean Squared Error        | 0.44     | 0.44       | 0.44     |
| Schwarz's Bayesian Criterion   | 11167.25 | .          | .        |
| Sum of Squared Errors          | 3663.98  | 2832.11    | 2729.43  |
| Sum of Case Weights Times Freq | 19160.00 | 14374.00   | 14376.00 |
| Misclassification Rate         | 0.29     | 0.30       | 0.29     |

### SAS Enterprise Miner Report

Node=Exhaustive Regression  
Regression Model Effects



**SAS Enterprise Miner Report**  
**Node=Exhaustive Regression**  
**Regression Model Effects**

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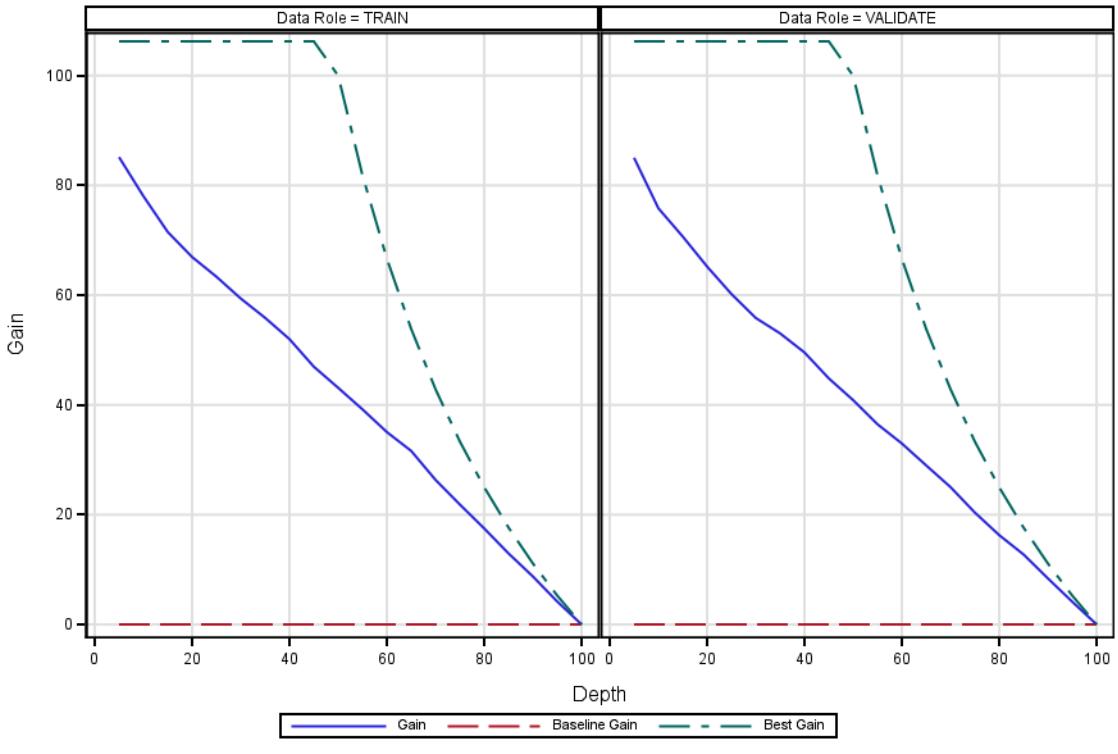
| Effect Number | Variable    | Level                        | Coefficient | T-value  | P Value    | Effect Number | Variable         |
|---------------|-------------|------------------------------|-------------|----------|------------|---------------|------------------|
| 1             | AgeCategory | 18N24                        | -1.11457    | -5.1447  | .000000268 | 19            | AgeCategory      |
| 2             | AgeCategory | 25N29                        | -1.08772    | -5.0950  | .000000349 | 20            | Sex              |
| 3             | AgeCategory | 30N34                        | -1.08050    | -6.1656  | 7.0195E-10 | 21            | Race             |
| 4             | AgeCategory | 75N79                        | 1.07729     | 14.8774  | 4.6215E-50 | 22            | Race             |
| 5             | AgeCategory | 35N39                        | -0.86811    | -5.4340  | .000000055 | 23            | Diabetic         |
| 6             | AgeCategory | 70N74                        | 0.86647     | 12.7714  | 2.3675E-37 | 24            | Race             |
| 7             | GenHealth   | POOR                         | 0.83076     | 10.5214  | 6.8842E-26 | 25            | Smoking          |
| 8             | GenHealth   | EXCELLENT                    | -0.77335    | -10.3460 | 4.3653E-25 | 26            | DiffWalking      |
| 9             | Intercept   | YES                          | -0.72156    | -3.6935  | .000221211 | 27            | Asthma           |
| 10            | AgeCategory | 65N69                        | 0.69004     | 10.1408  | 3.6419E-24 | 28            | Diabetic         |
| 11            | Race        | ERICAN_INDIAN_ALASKAN_NATIVE | -0.67070    | -5.1264  | .000000295 | 29            | GenHealth        |
| 12            | Stroke      | NO                           | 0.60319     | 22.8309  | 2.264E-115 | 30            | AgeCategory      |
| 13            | AgeCategory | 60N64                        | 0.53382     | 7.5225   | 5.3719E-14 | 31            | SleepTime        |
| 14            | Diabetic    | YES                          | 0.45027     | 4.5225   | .000006110 | 32            | MentalHealth     |
| 15            | AgeCategory | 40N44                        | -0.41180    | -3.1167  | .001828862 | 33            | AlcoholDrinking  |
| 16            | GenHealth   | FAIR                         | 0.41024     | 8.2930   | 1.1041E-16 | 34            | BMI              |
| 17            | Race        | SPANIC                       | 0.37295     | 3.4961   | .000472196 | 35            | PhysicalHealth   |
| 18            | AgeCategory | 45N49                        | -0.32988    | -2.8026  | .005068652 | 36            | PhysicalActivity |

| Level                  | Coefficient | T-value  | P Value |
|------------------------|-------------|----------|---------|
| 55N59                  | 0.32396     | 3.9490   | 0.00008 |
| FEMALE                 | -0.31792    | -13.1267 | 0.00000 |
| ACK                    | -0.29988    | -3.6778  | 0.00024 |
| HER                    | 0.23395     | 2.0147   | 0.04394 |
| NO                     | -0.23031    | -2.4059  | 0.01613 |
| IAN                    | 0.21672     | 1.1860   | 0.23563 |
| NO                     | -0.15359    | -6.3603  | 0.00000 |
| NO                     | -0.14200    | -4.6774  | 0.00000 |
| NO                     | -0.12456    | -3.8562  | 0.00012 |
| NO_BORDERLINE_DIABETES | -0.11427    | -0.8429  | 0.39930 |
| GOOD                   | 0.06512     | 1.5073   | 0.13172 |
| 50N54                  | 0.02838     | 0.2984   | 0.76538 |
|                        | -0.02740    | -2.0194  | 0.04345 |
|                        | 0.01026     | 3.4586   | 0.00054 |
| NO                     | 0.00666     | 0.1187   | 0.90554 |
|                        | 0.00407     | 1.0509   | 0.29332 |
|                        | 0.00260     | 0.8857   | 0.37579 |
| NO                     | 0.00141     | 0.0522   | 0.95835 |

## SAS Enterprise Miner Report

Node=Exhaustive Regression

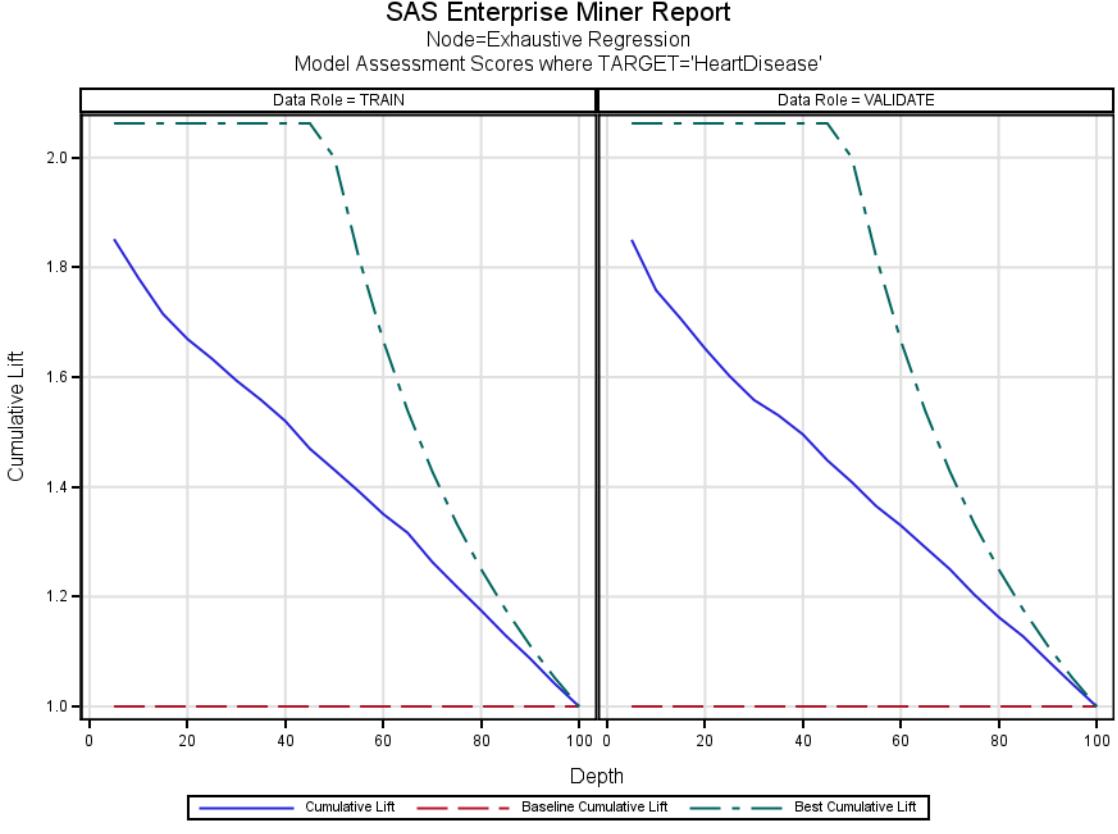
Model Assessment Scores where TARGET='HeartDisease'

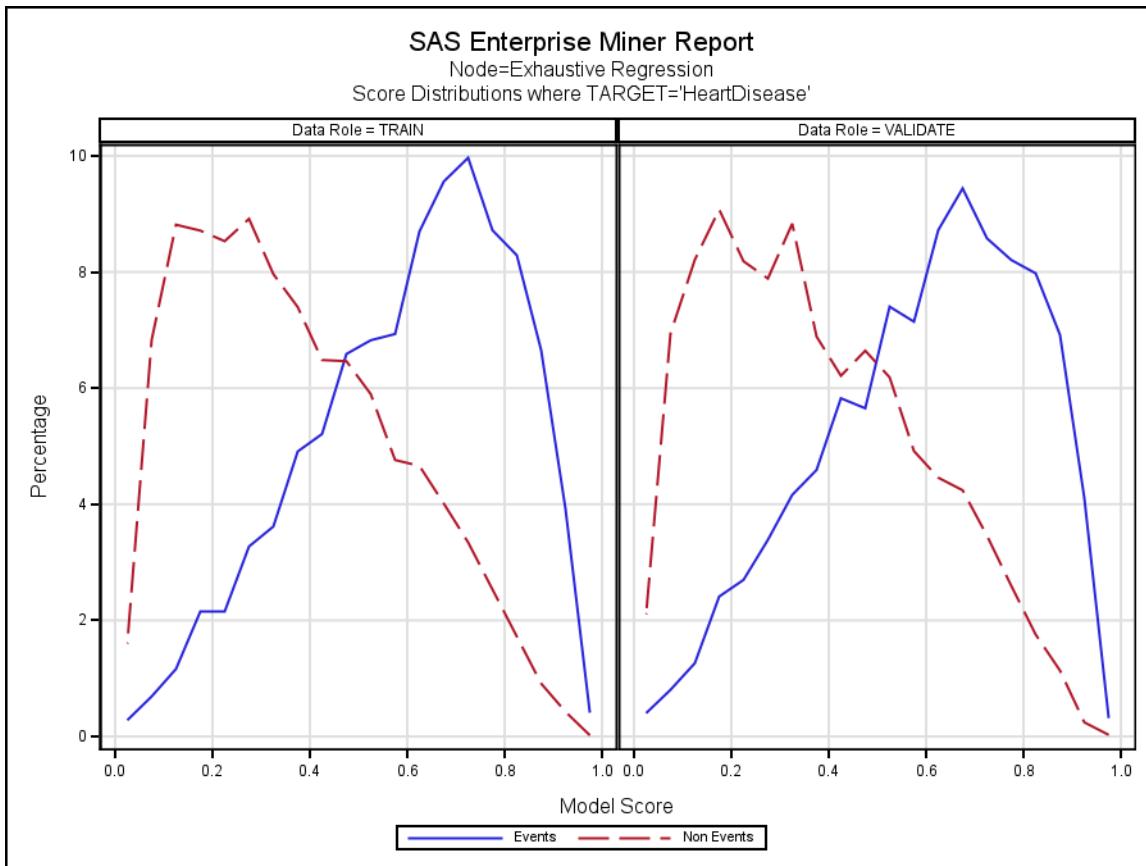
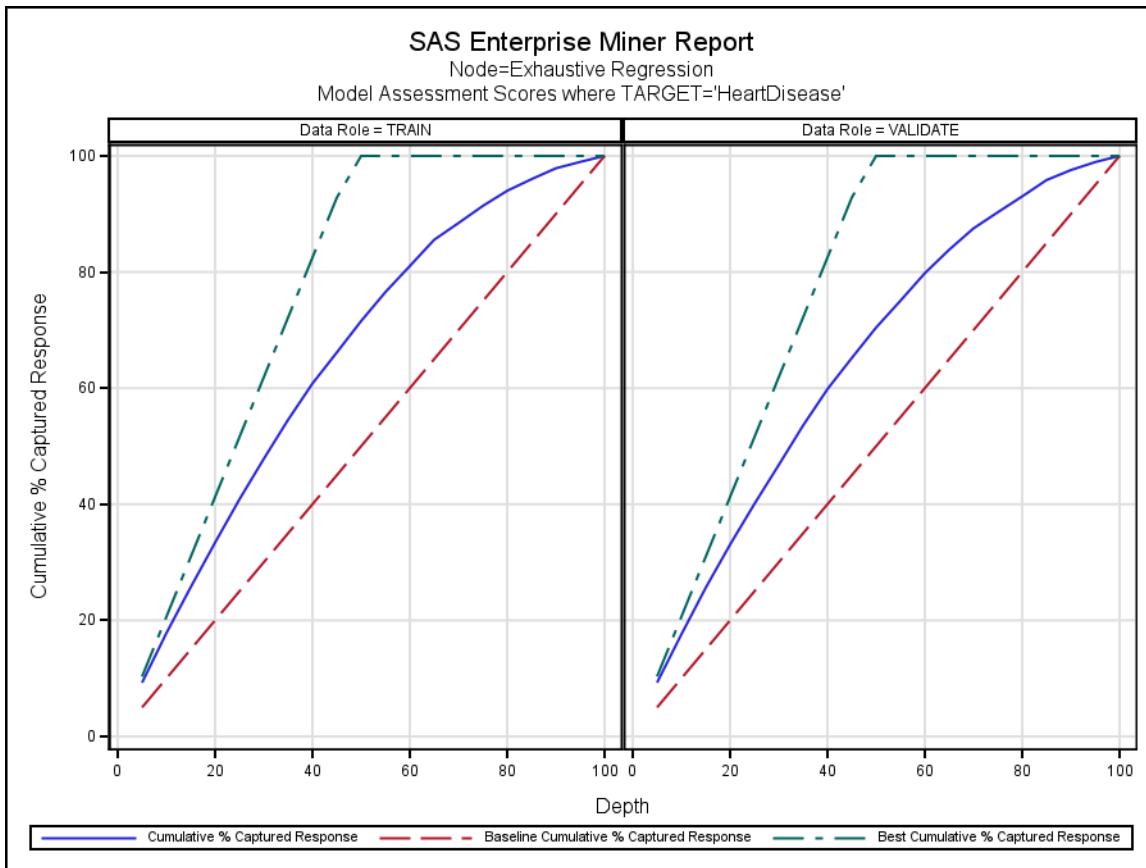


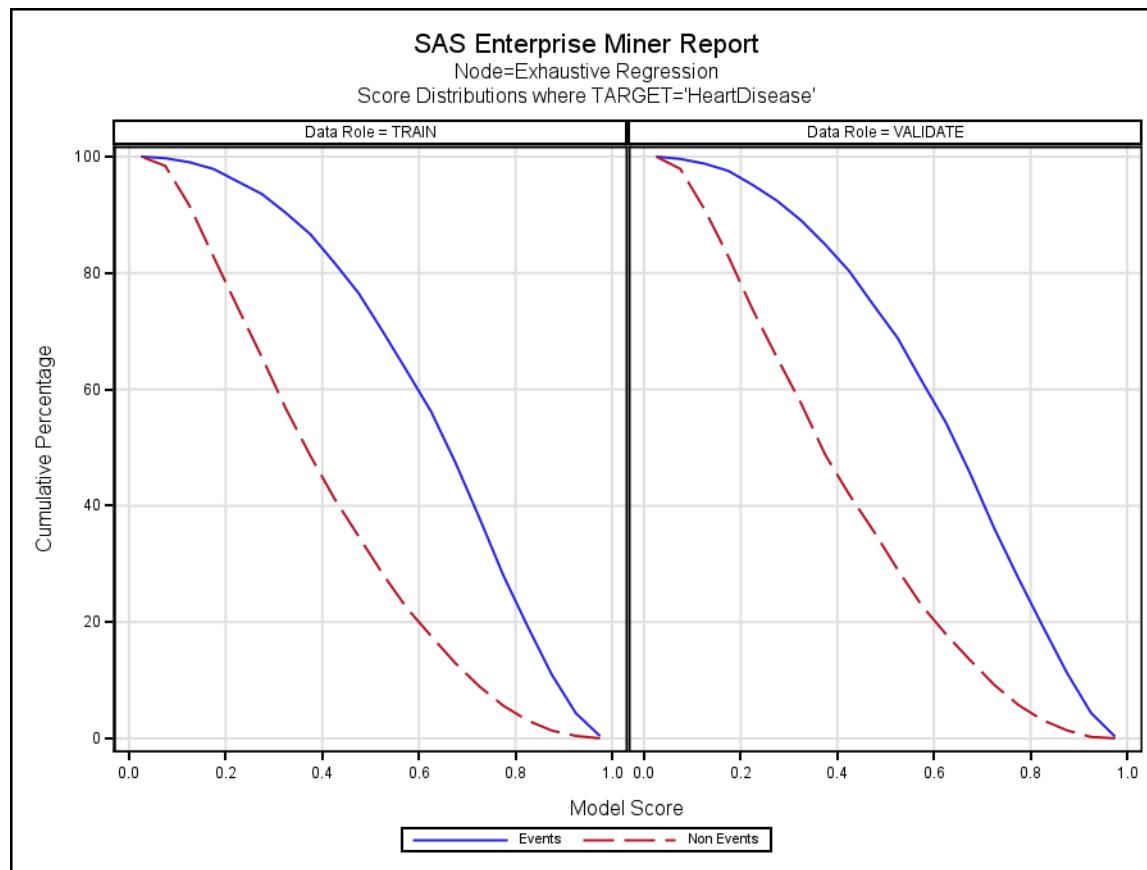
## SAS Enterprise Miner Report

Node=Exhaustive Regression

Model Assessment Scores where TARGET='HeartDisease'







### Node=Exhaustive Regression Score Distributions

Target Variable=HeartDisease 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                   | 19               | 0.40904              | 0.02026                 | 0.409                           | 0.020                              |
| 0.90-0.95                   | 182              | 3.91819              | 0.42553                 | 4.327                           | 0.446                              |
| 0.85-0.90                   | 309              | 6.65231              | 0.91185                 | 10.980                          | 1.358                              |
| 0.80-0.85                   | 385              | 8.28848              | 1.72239                 | 19.268                          | 3.080                              |
| 0.75-0.80                   | 405              | 8.71905              | 2.53293                 | 27.987                          | 5.613                              |
| 0.70-0.75                   | 463              | 9.96771              | 3.34347                 | 37.955                          | 8.956                              |
| 0.65-0.70                   | 444              | 9.55867              | 4.01216                 | 47.513                          | 12.969                             |
| 0.60-0.65                   | 404              | 8.69752              | 4.66059                 | 56.211                          | 17.629                             |
| 0.55-0.60                   | 322              | 6.93219              | 4.76190                 | 63.143                          | 22.391                             |
| 0.50-0.55                   | 317              | 6.82454              | 5.89666                 | 69.968                          | 28.288                             |
| 0.45-0.50                   | 306              | 6.58773              | 6.46403                 | 76.555                          | 34.752                             |
| 0.40-0.45                   | 242              | 5.20990              | 6.48430                 | 81.765                          | 41.236                             |
| 0.35-0.40                   | 228              | 4.90850              | 7.39615                 | 86.674                          | 48.632                             |
| 0.30-0.35                   | 168              | 3.61679              | 7.96353                 | 90.291                          | 56.596                             |
| 0.25-0.30                   | 152              | 3.27234              | 8.91591                 | 93.563                          | 65.512                             |
| 0.20-0.25                   | 100              | 2.15285              | 8.53090                 | 95.716                          | 74.043                             |
| 0.15-0.20                   | 100              | 2.15285              | 8.71327                 | 97.869                          | 82.756                             |
| 0.10-0.15                   | 54               | 1.16254              | 8.81459                 | 99.031                          | 91.570                             |
| 0.05-0.10                   | 32               | 0.68891              | 6.82877                 | 99.720                          | 98.399                             |
| 0.00-0.05                   | 13               | 0.27987              | 1.60081                 | 100.000                         | 100.000                            |

Target Variable=HeartDisease Data Role=VALIDATE

| 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               | 0.31564              | 0.02701                 | 0.316                           | 0.027                              |
| 0.90-0.95                   | 143              | 4.10330              | 0.24311                 | 4.419                           | 0.270                              |
| 0.85-0.90                   | 241              | 6.91535              | 1.13452                 | 11.334                          | 1.405                              |
| 0.80-0.85                   | 278              | 7.97704              | 1.75581                 | 19.311                          | 3.160                              |
| 0.75-0.80                   | 286              | 8.20660              | 2.59319                 | 27.518                          | 5.754                              |
| 0.70-0.75                   | 299              | 8.57963              | 3.45759                 | 36.098                          | 9.211                              |
| 0.65-0.70                   | 329              | 9.44046              | 4.24095                 | 45.538                          | 13.452                             |
| 0.60-0.65                   | 304              | 8.72310              | 4.45705                 | 54.261                          | 17.909                             |
| 0.55-0.60                   | 249              | 7.14491              | 4.91626                 | 61.406                          | 22.825                             |
| 0.50-0.55                   | 258              | 7.40316              | 6.18585                 | 68.809                          | 29.011                             |
| 0.45-0.50                   | 197              | 5.65280              | 6.64506                 | 74.462                          | 35.656                             |
| 0.40-0.45                   | 203              | 5.82496              | 6.21286                 | 80.287                          | 41.869                             |
| 0.35-0.40                   | 160              | 4.59110              | 6.88817                 | 84.878                          | 48.757                             |
| 0.30-0.35                   | 145              | 4.16069              | 8.83306                 | 89.039                          | 57.590                             |
| 0.25-0.30                   | 118              | 3.38594              | 7.88763                 | 92.425                          | 65.478                             |
| 0.20-0.25                   | 94               | 2.69727              | 8.18476                 | 95.122                          | 73.663                             |
| 0.15-0.20                   | 84               | 2.41033              | 9.07618                 | 97.532                          | 82.739                             |
| 0.10-0.15                   | 44               | 1.26255              | 8.21178                 | 98.795                          | 90.951                             |
| 0.05-0.10                   | 28               | 0.80344              | 6.94219                 | 99.598                          | 97.893                             |
| 0.00-0.05                   | 14               | 0.40172              | 2.10697                 | 100.000                         | 100.000                            |

## SAS Enterprise Miner Report

### Node=Neural Network Model Comparision Summary

Node id = MdlComp4  
 Node label = Neural Network Model Comparision  
 Meta path = Ids => Smpl => EMSave => Part => Neural3 => MdlComp4  
 Notes =

### Node=Neural Network Model Comparision Properties

| Property                    | Value                         | Default | Property               | Value   | Default | Property             | Value        | Default |
|-----------------------------|-------------------------------|---------|------------------------|---------|---------|----------------------|--------------|---------|
| Component                   | ModelCompare                  |         | NumberOfReportedLevels | 1E-6    |         | SelectionData        | DEFAULT      |         |
| AssessAllTargetLevels       | N                             |         | NumberofBins           | 20      |         | SelectionDepth       | 10           |         |
| DecileBin                   | 20                            |         | ProfitEpsilon          | 1E-6    |         | SelectionTable       | TRAIN        | TABLE   |
| HPCriteria                  | DEFAULT                       |         | RecomputeAssess        | N       |         | StatisticUsed        | _VMISC_      |         |
| LiftEpsilon                 | 1E-6                          |         | RocChart               | Y       |         | TargetLabel          | HeartDisease |         |
| ModelCriteria               | Valid: Misclassification Rate |         | RocEpsilon             | 0.01    |         | TargetName           | HeartDisease |         |
| ModelDescription            | NNET 3HUDB                    |         | RoiEpsilon             | 1E-6    |         | classViyaCriteria    | DEFAULT      |         |
| ModelId                     | Neural3                       |         | ScoreDistBin           | 20      |         | intervalViyaCriteria | DEFAULT      |         |
| NormalizeReportingVariables | Y                             |         | SelectionCriteria      | DEFAULT |         |                      |              |         |

### Node=Neural Network Model Comparision Variable Summary

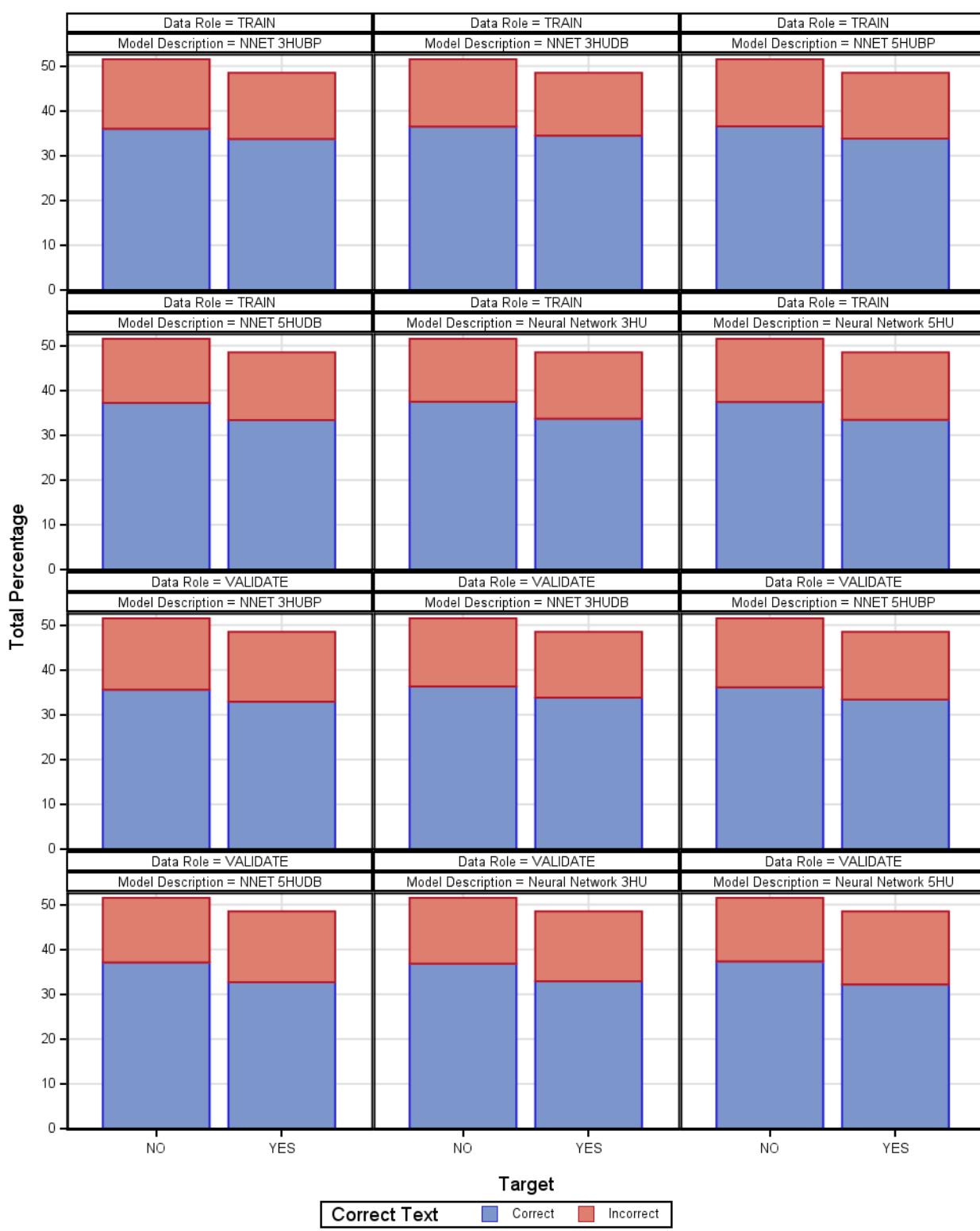
| Role   | Level  | Frequency Count | Name         |
|--------|--------|-----------------|--------------|
| TARGET | BINARY | 1               | HeartDisease |

### Node=Neural Network Model Comparision Fit Statistics Table

| Selected Model | Predecessor Node | Model Node | Model Description  | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Train: Average Squared Error | Train: Misclassification Rate | Train: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|--------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Neural3          | Neural3    | NNET 3HUBD         | HeartDisease    | HeartDisease | 0.29887  | 0.18990                      | 0.29050                       | 0.421                               |
|                | Neural4          | Neural4    | NNET 5HUBD         | HeartDisease    | HeartDisease | 0.30221  | 0.19012                      | 0.29436                       | 0.421                               |
|                | Neural           | Neural     | Neural Network 3HU | HeartDisease    | HeartDisease | 0.30277  | 0.18987                      | 0.28852                       | 0.425                               |
|                | Neural2          | Neural2    | Neural Network 5HU | HeartDisease    | HeartDisease | 0.30486  | 0.18874                      | 0.29165                       | 0.422                               |
|                | Neural6          | Neural6    | NNET 5HUBP         | HeartDisease    | HeartDisease | 0.30513  | 0.19464                      | 0.29666                       | 0.408                               |
|                | Neural5          | Neural5    | NNET 3HUBP         | HeartDisease    | HeartDisease | 0.31529  | 0.19714                      | 0.30271                       | 0.398                               |

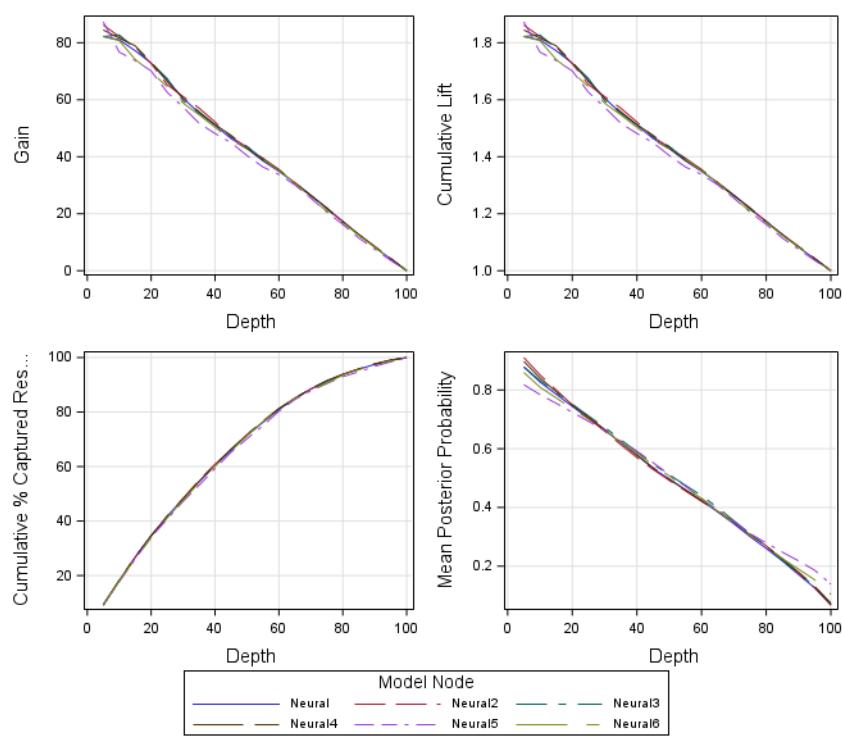
| Selected Model | Predecessor Node | Model Node | Model Description  | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Valid: Average Squared Error | Valid: Misclassification Rate | Valid: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|--------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Neural3          | Neural3    | NNET 3HUBD         | HeartDisease    | HeartDisease | 0.29887  | 0.19627                      | 0.29887                       | 0.407                               |
|                | Neural4          | Neural4    | NNET 5HUBD         | HeartDisease    | HeartDisease | 0.30221  | 0.19617                      | 0.30221                       | 0.400                               |
|                | Neural           | Neural     | Neural Network 3HU | HeartDisease    | HeartDisease | 0.30277  | 0.19640                      | 0.30277                       | 0.400                               |
|                | Neural2          | Neural2    | Neural Network 5HU | HeartDisease    | HeartDisease | 0.30486  | 0.19608                      | 0.30486                       | 0.404                               |
|                | Neural6          | Neural6    | NNET 5HUBP         | HeartDisease    | HeartDisease | 0.30513  | 0.20062                      | 0.30513                       | 0.395                               |
|                | Neural5          | Neural5    | NNET 3HUBP         | HeartDisease    | HeartDisease | 0.31529  | 0.20375                      | 0.31529                       | 0.377                               |

**SAS Enterprise Miner Report**  
**Node=Neural Network Model Comparision**  
**Classification Chart**  
**TARGET='HeartDisease' and \_TYPE\_='PREDICTION'**



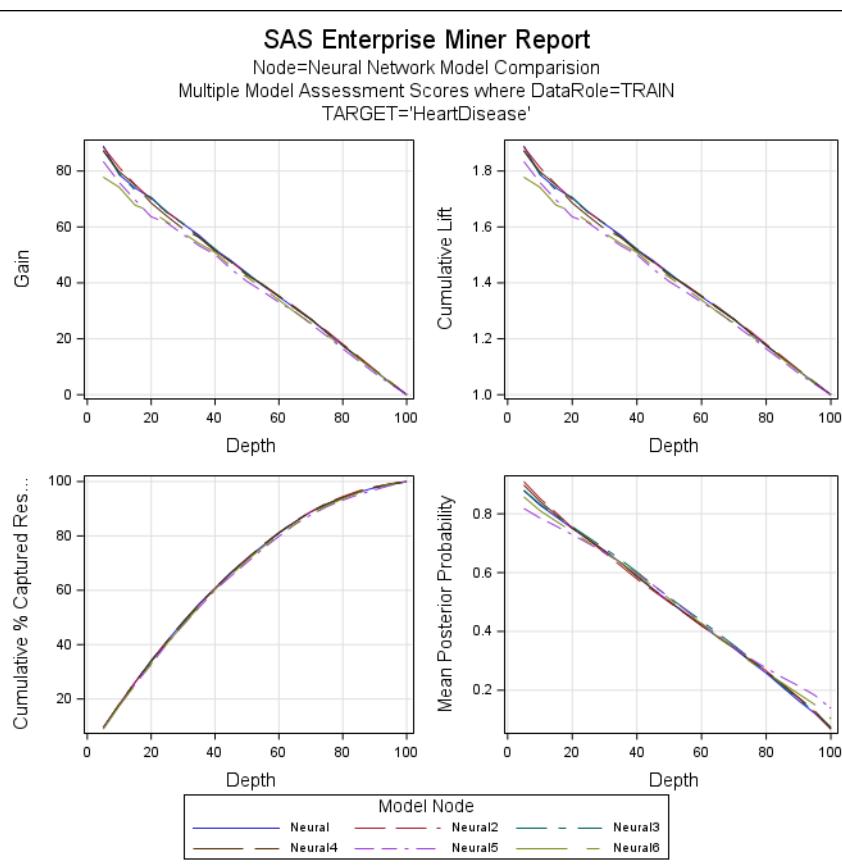
## SAS Enterprise Miner Report

Node=Neural Network Model Comparison  
 Multiple Model Assessment Scores where DataRole=TEST  
 TARGET='HeartDisease'



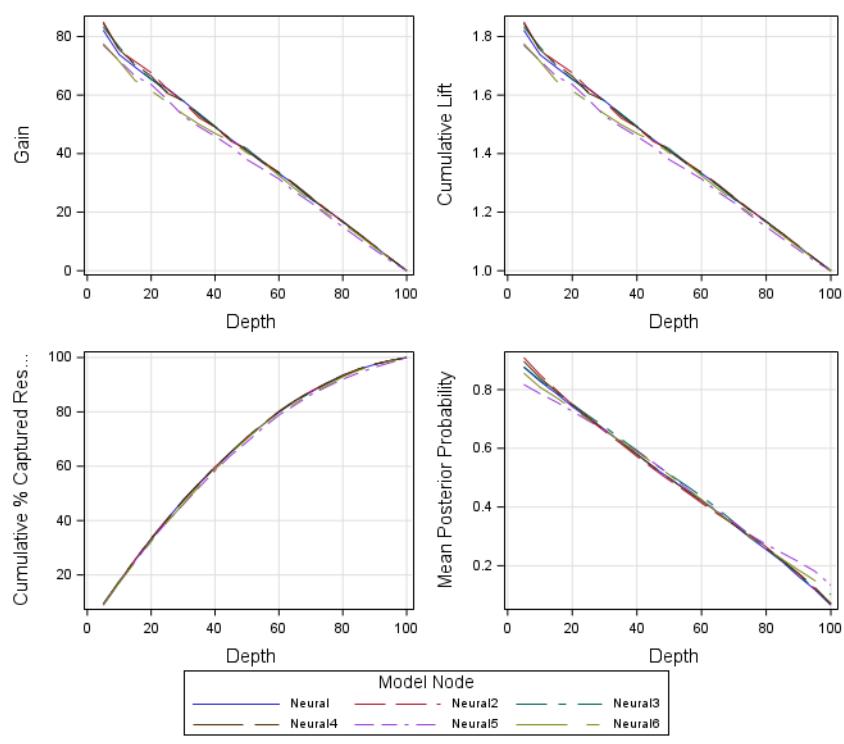
## SAS Enterprise Miner Report

Node=Neural Network Model Comparison  
 Multiple Model Assessment Scores where DataRole=TRAIN  
 TARGET='HeartDisease'

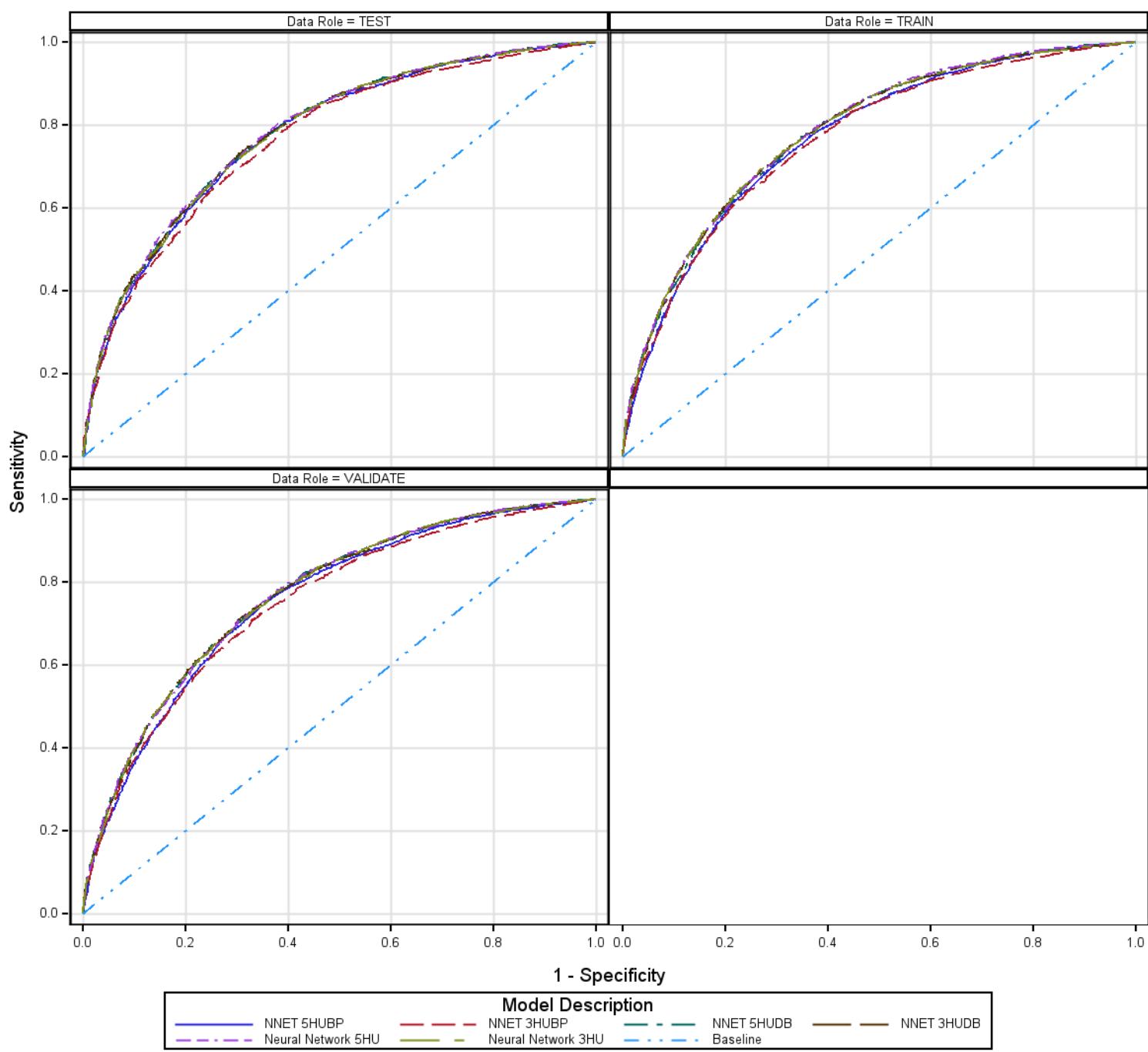


**SAS Enterprise Miner Report**

Node=Neural Network Model Comparison  
Multiple Model Assessment Scores where DataRole=VALIDATE  
TARGET='HeartDisease'



SAS Enterprise Miner Report  
Node=Neural Network Model Comparision  
ROC Chart  
TARGET='HeartDisease' and EVENT='YES'



## SAS Enterprise Miner Report

### Node=Class Dec Tree Model Comparison Summary

Node id = MdlComp  
 Node label = Class Dec Tree Model Comparison  
 Meta path = Ids => Smpl => EMSave => Part => Tree4 => MdlComp  
 Notes =

### Node=Class Dec Tree Model Comparison Properties

| Property                    | Value                         | Default | Property               | Value   | Default | Property             | Value        | Default |
|-----------------------------|-------------------------------|---------|------------------------|---------|---------|----------------------|--------------|---------|
| Component                   | ModelCompare                  |         | NumberOfReportedLevels | 1E-6    |         | SelectionData        | DEFAULT      |         |
| AssessAllTargetLevels       | N                             |         | NumberofBins           | 20      |         | SelectionDepth       | 10           |         |
| DecileBin                   | 20                            |         | ProfitEpsilon          | 1E-6    |         | SelectionTable       | TRAIN        | TABLE   |
| HPCriteria                  | DEFAULT                       |         | RecomputeAssess        | N       |         | StatisticUsed        | _VMISC_      |         |
| LiftEpsilon                 | 1E-6                          |         | RocChart               | Y       |         | TargetLabel          | HeartDisease |         |
| ModelCriteria               | Valid: Misclassification Rate |         | RocEpsilon             | 0.01    |         | TargetName           | HeartDisease |         |
| ModelDescription            | ClassDec Tree B3D6            |         | RoiEpsilon             | 1E-6    |         | classViyaCriteria    | DEFAULT      |         |
| ModelId                     | Tree4                         |         | ScoreDistBin           | 20      |         | intervalViyaCriteria | DEFAULT      |         |
| NormalizeReportingVariables | Y                             |         | SelectionCriteria      | DEFAULT |         |                      |              |         |

### Node=Class Dec Tree Model Comparison Variable Summary

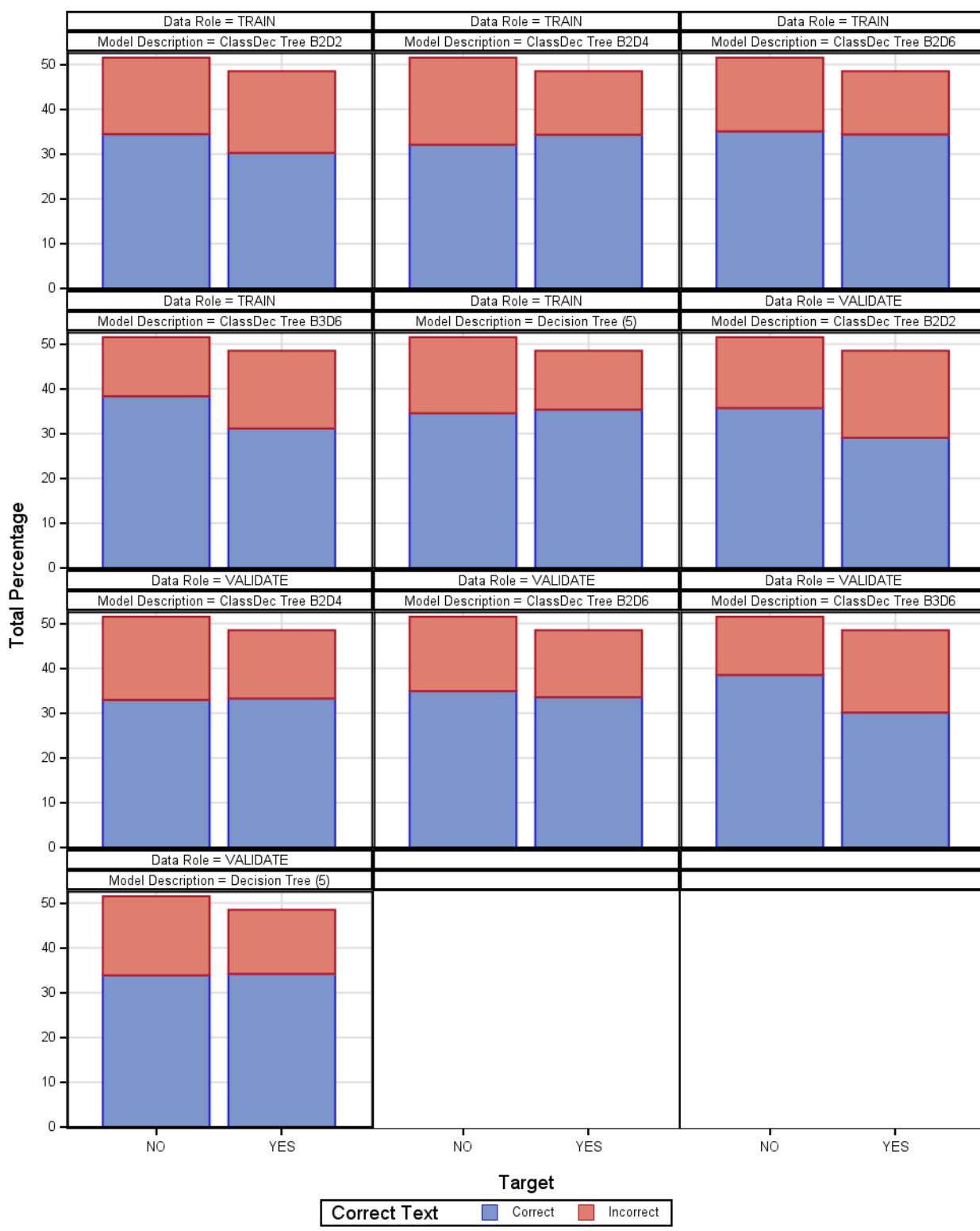
| Role   | Level  | Frequency Count | Name         |
|--------|--------|-----------------|--------------|
| TARGET | BINARY | 1               | HeartDisease |

### Node=Class Dec Tree Model Comparison Fit Statistics Table

| Selected Model | Predecessor Node | Model Node | Model Description  | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Train: Average Squared Error | Train: Misclassification Rate | Train: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|--------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Tree4            | Tree4      | ClassDec Tree B3D6 | HeartDisease    | HeartDisease | 0.31362  | 0.20388                      | 0.30543                       | 0.386                               |
|                | Tree             | Tree       | ClassDec Tree B2D6 | HeartDisease    | HeartDisease | 0.31543  | 0.20142                      | 0.30553                       | 0.390                               |
|                | Tree5            | Tree5      | Decision Tree (5)  | HeartDisease    | HeartDisease | 0.31933  | 0.19594                      | 0.30094                       | 0.400                               |
|                | Tree2            | Tree2      | ClassDec Tree B2D4 | HeartDisease    | HeartDisease | 0.33797  | 0.21649                      | 0.33591                       | 0.331                               |
|                | Tree3            | Tree3      | ClassDec Tree B2D2 | HeartDisease    | HeartDisease | 0.35230  | 0.22475                      | 0.35303                       | 0.293                               |

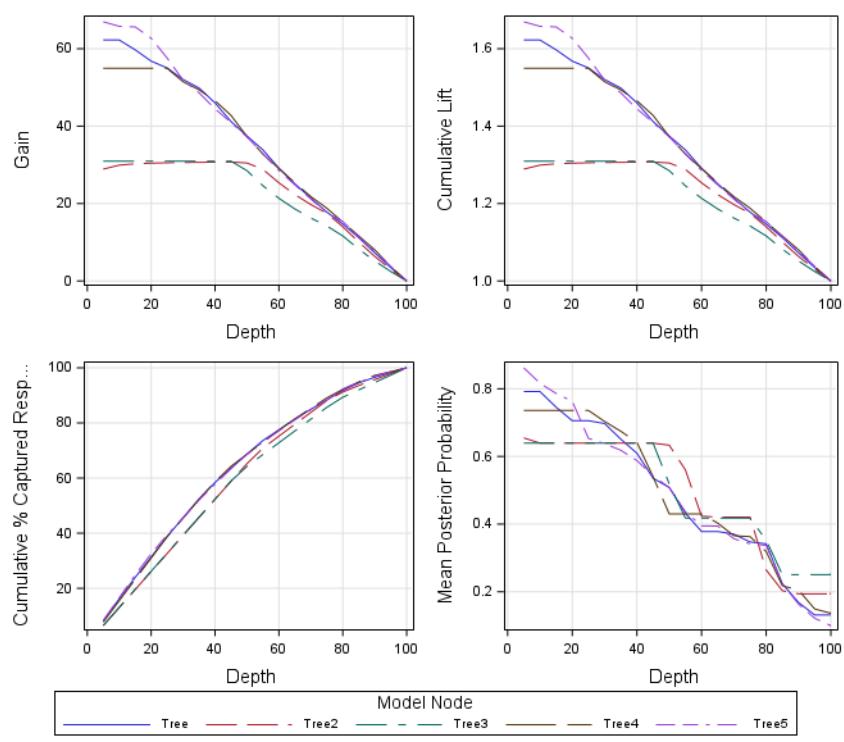
| Selected Model | Predecessor Node | Model Node | Model Description  | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Valid: Average Squared Error | Valid: Misclassification Rate | Valid: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|--------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Tree4            | Tree4      | ClassDec Tree B3D6 | HeartDisease    | HeartDisease | 0.31362  | 0.20709                      | 0.31362                       | 0.369                               |
|                | Tree             | Tree       | ClassDec Tree B2D6 | HeartDisease    | HeartDisease | 0.31543  | 0.20795                      | 0.31543                       | 0.370                               |
|                | Tree5            | Tree5      | Decision Tree (5)  | HeartDisease    | HeartDisease | 0.31933  | 0.20705                      | 0.31933                       | 0.363                               |
|                | Tree2            | Tree2      | ClassDec Tree B2D4 | HeartDisease    | HeartDisease | 0.33797  | 0.21865                      | 0.33797                       | 0.325                               |
|                | Tree3            | Tree3      | ClassDec Tree B2D2 | HeartDisease    | HeartDisease | 0.35230  | 0.22386                      | 0.35230                       | 0.293                               |

**SAS Enterprise Miner Report**  
**Node=Class Dec Tree Model Comparison**  
**Classification Chart**  
**TARGET='HeartDisease' and \_TYPE\_='PREDICTION'**



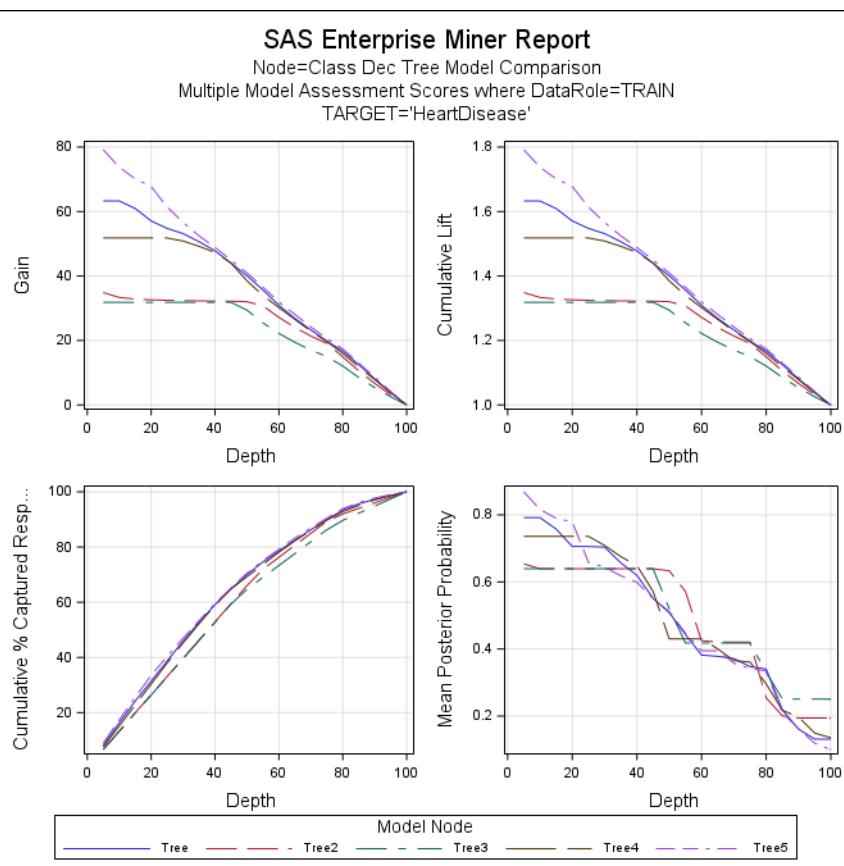
## SAS Enterprise Miner Report

Node=Class Dec Tree Model Comparison  
 Multiple Model Assessment Scores where DataRole=TEST  
 TARGET='HeartDisease'



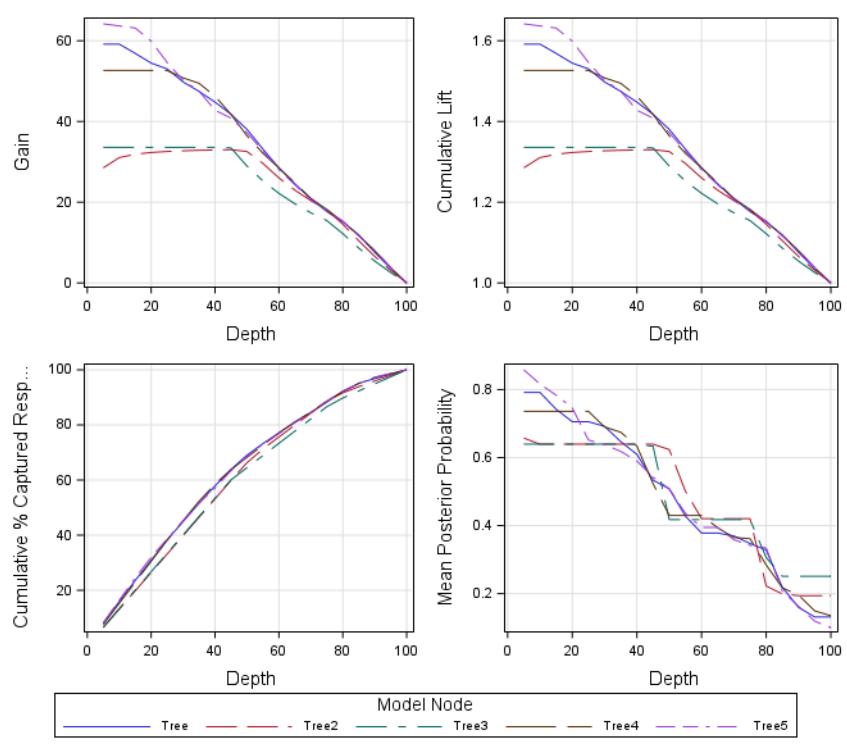
## SAS Enterprise Miner Report

Node=Class Dec Tree Model Comparison  
 Multiple Model Assessment Scores where DataRole=TRAIN  
 TARGET='HeartDisease'

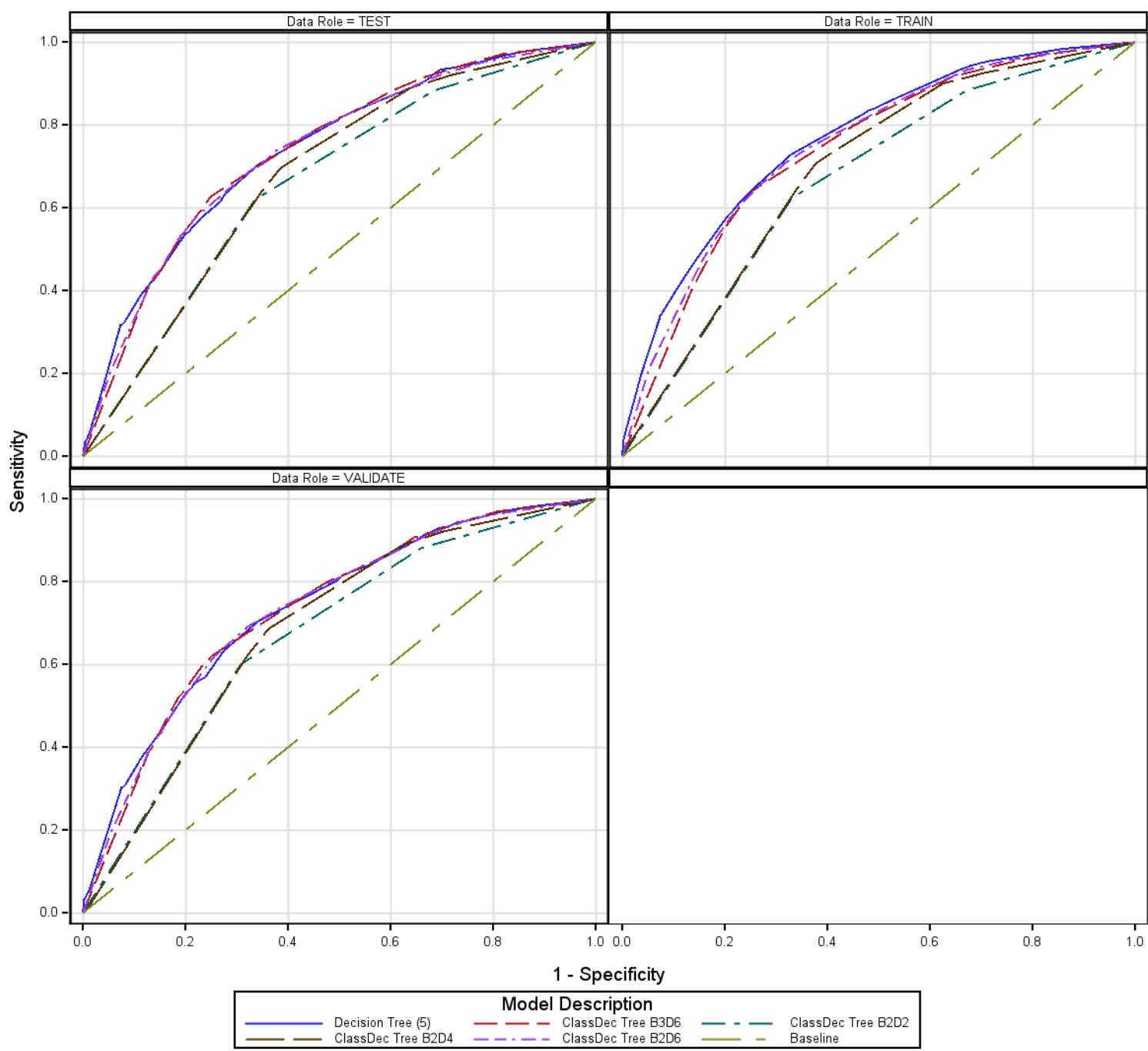


## SAS Enterprise Miner Report

Node=Class Dec Tree Model Comparison  
 Multiple Model Assessment Scores where DataRole=VALIDATE  
 TARGET='HeartDisease'



SAS Enterprise Miner Report  
Node=Class Dec Tree Model Comparison  
ROC Chart  
TARGET='HeartDisease' and EVENT='YES'



## SAS Enterprise Miner Report

### Node=Logistic Model Comparision Summary

Node id = MdlComp2  
 Node label = Logistic Model Comparision  
 Meta path = Ids => Smpl => EMSave => Part => Reg => MdlComp2  
 Notes =

### Node=Logistic Model Comparision Properties

| Property                    | Value                         | Default | Property               | Value   | Default | Property             | Value        | Default |
|-----------------------------|-------------------------------|---------|------------------------|---------|---------|----------------------|--------------|---------|
| Component                   | ModelCompare                  |         | NumberOfReportedLevels | 1E-6    |         | SelectionData        | DEFAULT      |         |
| AssessAllTargetLevels       | N                             |         | NumberofBins           | 20      |         | SelectionDepth       | 10           |         |
| DecileBin                   | 20                            |         | ProfitEpsilon          | 1E-6    |         | SelectionTable       | TRAIN        | TABLE   |
| HPCriteria                  | DEFAULT                       |         | RecomputeAssess        | N       |         | StatisticUsed        | _VMISC_      |         |
| LiftEpsilon                 | 1E-6                          |         | RocChart               | Y       |         | TargetLabel          | HeartDisease |         |
| ModelCriteria               | Valid: Misclassification Rate |         | RocEpsilon             | 0.01    |         | TargetName           | HeartDisease |         |
| ModelDescription            | Exhaustive Regression         |         | RoiEpsilon             | 1E-6    |         | classViyaCriteria    | DEFAULT      |         |
| ModelId                     | Reg                           |         | ScoreDistBin           | 20      |         | intervalViyaCriteria | DEFAULT      |         |
| NormalizeReportingVariables | Y                             |         | SelectionCriteria      | DEFAULT |         |                      |              |         |

### Node=Logistic Model Comparision Variable Summary

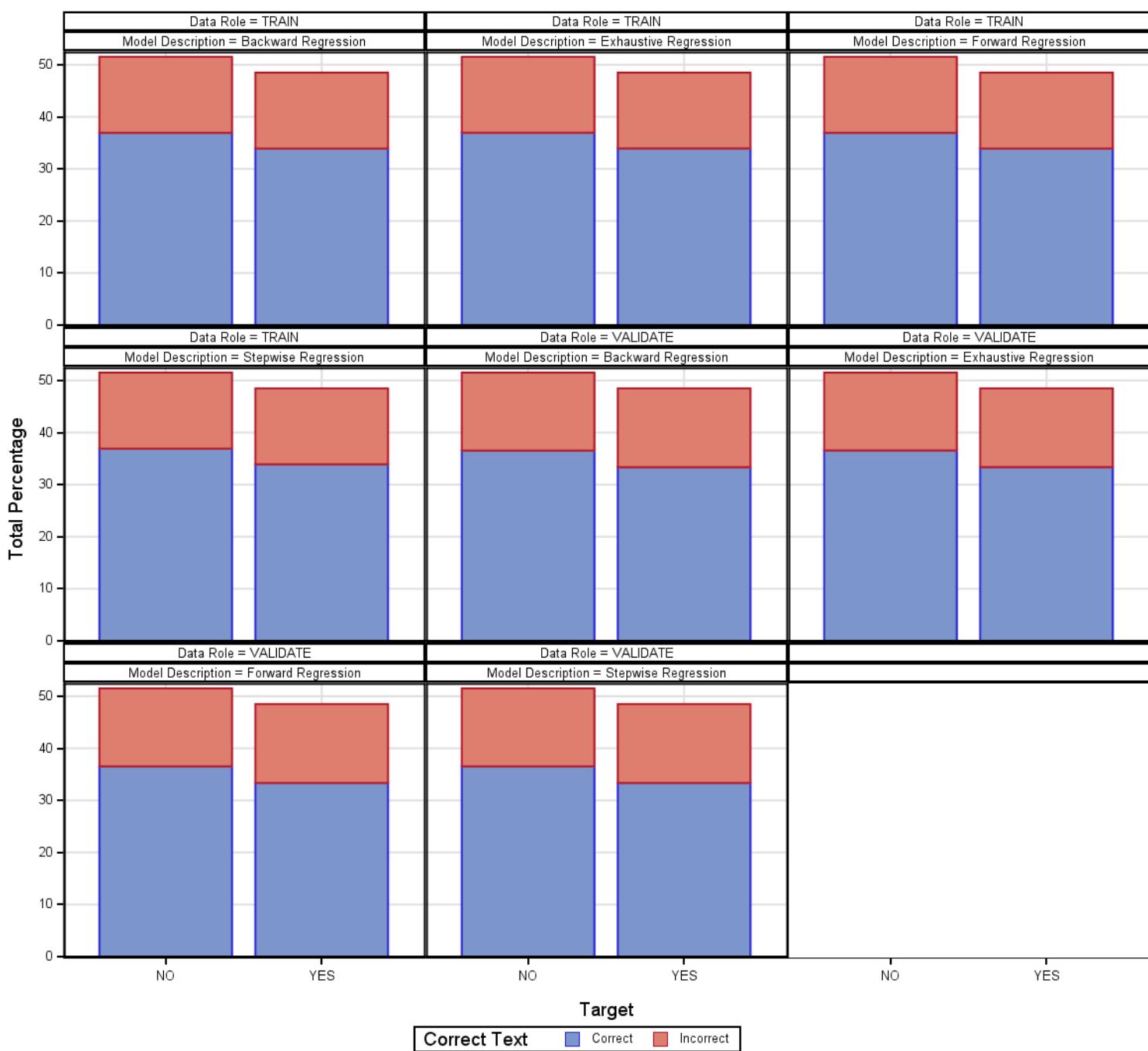
| Role   | Level  | Frequency Count | Name         |
|--------|--------|-----------------|--------------|
| TARGET | BINARY | 1               | HeartDisease |

### Node=Logistic Model Comparision Fit Statistics Table

| Selected Model | Predecessor Node | Model Node | Model Description     | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Train: Average Squared Error | Train: Misclassification Rate | Train: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|-----------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Reg              | Reg        | Exhaustive Regression | HeartDisease    | HeartDisease | 0.30068  | 0.19123                      | 0.29134                       | 0.421                               |
|                | Reg2             | Reg2       | Forward Regression    | HeartDisease    | HeartDisease | 0.30110  | 0.19126                      | 0.29175                       | 0.419                               |
|                | Reg3             | Reg3       | Backward Regression   | HeartDisease    | HeartDisease | 0.30110  | 0.19126                      | 0.29175                       | 0.419                               |
|                | Reg4             | Reg4       | Stepwise Regression   | HeartDisease    | HeartDisease | 0.30110  | 0.19126                      | 0.29175                       | 0.419                               |

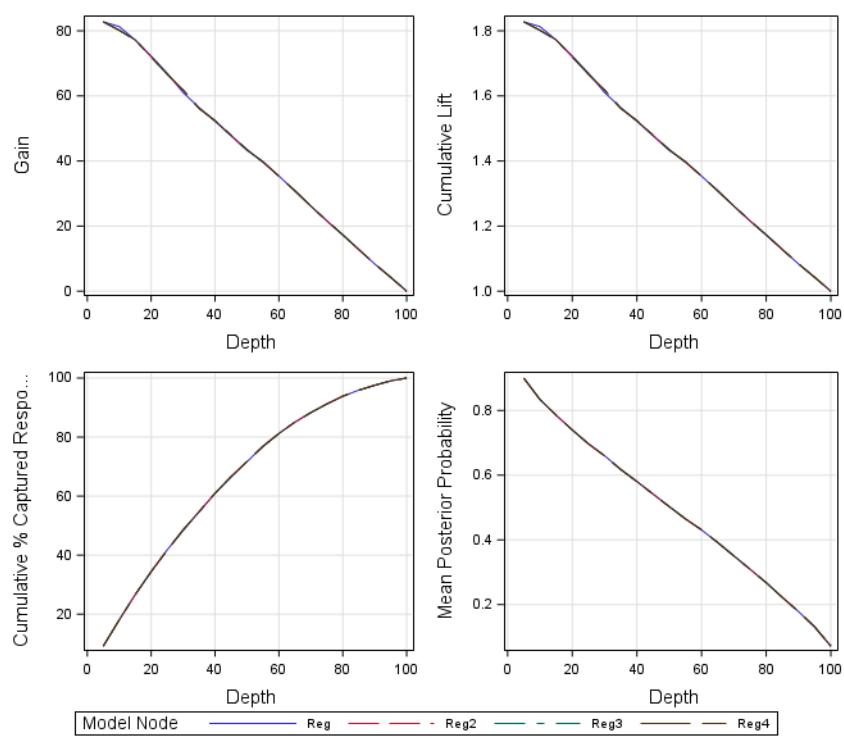
| Selected Model | Predecessor Node | Model Node | Model Description     | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Valid: Average Squared Error | Valid: Misclassification Rate | Valid: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|-----------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | Reg              | Reg        | Exhaustive Regression | HeartDisease    | HeartDisease | 0.30068  | 0.19703                      | 0.30068                       | 0.400                               |
|                | Reg2             | Reg2       | Forward Regression    | HeartDisease    | HeartDisease | 0.30110  | 0.19710                      | 0.30110                       | 0.401                               |
|                | Reg3             | Reg3       | Backward Regression   | HeartDisease    | HeartDisease | 0.30110  | 0.19710                      | 0.30110                       | 0.401                               |
|                | Reg4             | Reg4       | Stepwise Regression   | HeartDisease    | HeartDisease | 0.30110  | 0.19710                      | 0.30110                       | 0.401                               |

**SAS Enterprise Miner Report**  
**Node=Logistic Model Comparision**  
**Classification Chart**  
**TARGET='HeartDisease' and \_TYPE\_='PREDICTION'**



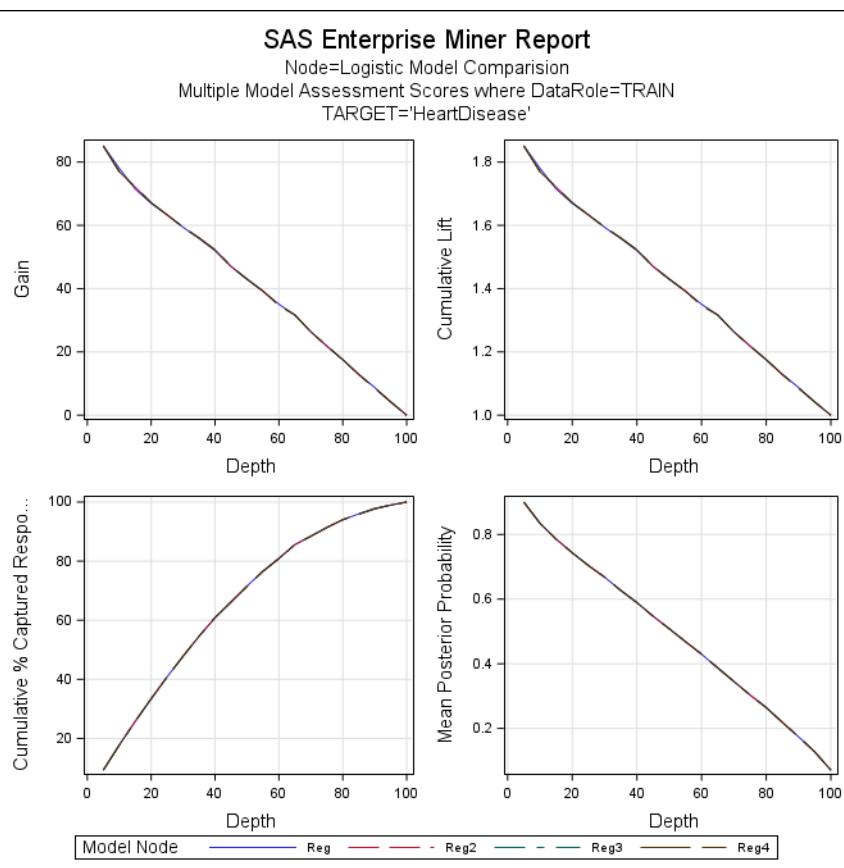
## SAS Enterprise Miner Report

Node=Logistic Model Comparison  
 Multiple Model Assessment Scores where DataRole=TEST  
 TARGET='HeartDisease'



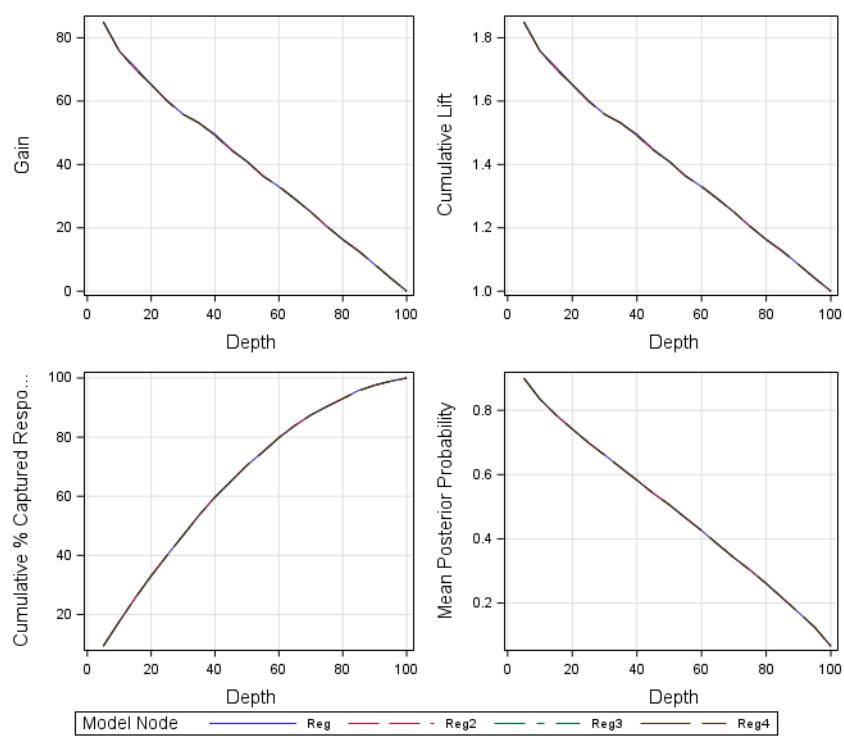
## SAS Enterprise Miner Report

Node=Logistic Model Comparison  
 Multiple Model Assessment Scores where DataRole=TRAIN  
 TARGET='HeartDisease'

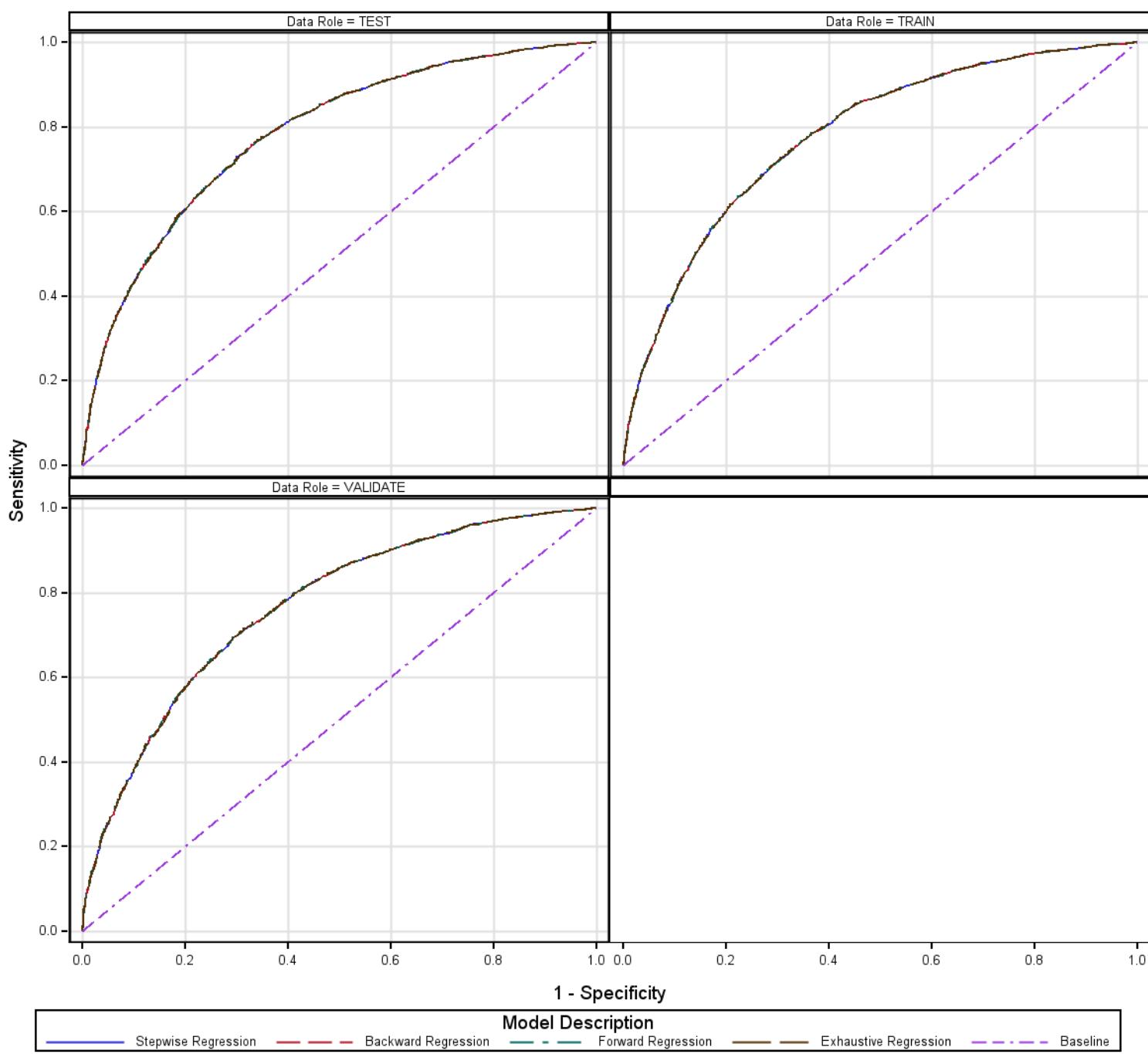


**SAS Enterprise Miner Report**

Node=Logistic Model Comparison  
Multiple Model Assessment Scores where DataRole=VALIDATE  
TARGET='HeartDisease'



SAS Enterprise Miner Report  
Node=Logistic Model Comparision  
ROC Chart  
TARGET='HeartDisease' and EVENT='YES'



## SAS Enterprise Miner Report

### Node=HAP\_SCORE\_DATA Summary

Node id = lds2  
 Node label = HAP\_SCORE\_DATA  
 Meta path = lds2  
 Notes =

### Node=HAP\_SCORE\_DATA Properties

| Property                     | Value                | Default | Property             | Value        | Default | Property          | Value         | Default |
|------------------------------|----------------------|---------|----------------------|--------------|---------|-------------------|---------------|---------|
| Component                    | DataSource           |         | DsCreatedBy          | ibees2       |         | NBytes            | 918528        | .       |
| ApplyIntervalLevelLowerLimit | Y                    |         | DsId                 | emsavetrain  |         | NCols             | 17            | .       |
| ApplyMaxClassLevels          | Y                    |         | DsModifiedBy         | ibees2       |         | NObs              | 5989          | .       |
| ApplyMaxPercentMissing       | Y                    |         | DsModifyDate         | 2030607894.9 |         | NewTable          |               |         |
| CMeta                        | WORK.M3OY1494        |         | DsSampleName         |              |         | NewVariableRole   | REJECT        |         |
| ComputeStatistics            | N                    |         | DsSampleSize         |              |         | OutputType        | VIEW          |         |
| DBPassThrough                | Y                    |         | DsSampleSizeType     |              |         | Role              | RAW           | TRAIN   |
| Data                         | TEDATA.EM_SAVE_TRAIN |         | DsScope              | LOCAL        |         | Sample            | D             |         |
| DataSelection                | DATASOURCE           |         | IdentifyEmptyColumns | Y            |         | SampleSizeObs     | 10000         |         |
| DataSource                   | emsavetrain          |         | IntervalLowerLimit   | 20           |         | SampleSizePercent | 20            |         |
| DataSourceRole               | RAW                  |         | Library              | TEDATA       |         | SampleSizeType    | PERCENT       |         |
| Description                  |                      |         | MaxClassLevels       | 20           |         | Scope             | LOCAL         |         |
| DropMapVariables             | Y                    |         | MaxPercentMissing    | 50           |         | Segment           |               |         |
| DsCreateDate                 | 2030607283.9         |         | MetaAdvisor          | BASIC        |         | Table             | EM_SAVE_TRAIN |         |

### Node=HAP\_SCORE\_DATA Data Attributes

| Attribute  | Value         | Attribute      | Value              | Attribute    | Value  |
|------------|---------------|----------------|--------------------|--------------|--------|
| Data Name  | EM_SAVE_TRAIN | Date Created   | 06May2024:09:32:02 | Data Size    | 918528 |
| Data Type  | DATA          | Date Modified  | 06May2024:09:32:02 | Role         | RAW    |
| Data Label |               | Number Rows    | 5989               | Segment      |        |
| Engine     | BASE          | Number Columns | 17                 | Data Library | TEDATA |

### Node=HAP\_SCORE\_DATA Variables List

| Name             | Label            | Role  | Level    | Type | Length | Format | Creator |
|------------------|------------------|-------|----------|------|--------|--------|---------|
| AgeCategory      | AgeCategory      | INPUT | NOMINAL  | C    | 11     | \$11.  |         |
| AlcoholDrinking  | AlcoholDrinking  | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| Asthma           | Asthma           | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| BMI              | BMI              | INPUT | INTERVAL | N    | 8      | BEST.  |         |
| Diabetic         | Diabetic         | INPUT | NOMINAL  | C    | 23     | \$23.  |         |
| DiffWalking      | DiffWalking      | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| GenHealth        | GenHealth        | INPUT | NOMINAL  | C    | 9      | \$9.   |         |
| HeartDisease     | HeartDisease     | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| MentalHealth     | MentalHealth     | INPUT | INTERVAL | N    | 8      | BEST.  |         |
| PhysicalActivity | PhysicalActivity | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| PhysicalHealth   | PhysicalHealth   | INPUT | INTERVAL | N    | 8      | BEST.  |         |

| Name      | Label              | Role  | Level    | Type | Length | Format | Creator |
|-----------|--------------------|-------|----------|------|--------|--------|---------|
| Race      | Race               | INPUT | NOMINAL  | C    | 30     | \$30.  |         |
| Sex       | Sex                | INPUT | NOMINAL  | C    | 6      | \$6.   |         |
| SleepTime | SleepTime          | INPUT | INTERVAL | N    | 8      | BEST.  |         |
| Smoking   | Smoking            | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| Stroke    | Stroke             | INPUT | NOMINAL  | C    | 3      | \$3.   |         |
| _dataobs_ | Observation Number | INPUT | INTERVAL | N    | 8      |        |         |

## SAS Enterprise Miner Report

### Node=Class Model Comparison Summary

Node id = MdlComp3  
 Node label = Class Model Comparison  
 Meta path = Ids => Smpl => EMSave => Part => Neural3 => MdlComp4 => MdlComp3  
 Notes =

### Node=Class Model Comparison Properties

| Property                    | Value                         | Default | Property               | Value   | Default | Property             | Value        | Default |
|-----------------------------|-------------------------------|---------|------------------------|---------|---------|----------------------|--------------|---------|
| Component                   | ModelCompare                  |         | NumberOfReportedLevels | 1E-6    |         | SelectionData        | DEFAULT      |         |
| AssessAllTargetLevels       | N                             |         | NumberofBins           | 20      |         | SelectionDepth       | 10           |         |
| DecileBin                   | 20                            |         | ProfitEpsilon          | 1E-6    |         | SelectionTable       | TRAIN        | TABLE   |
| HPCriteria                  | DEFAULT                       |         | RecomputeAssess        | N       |         | StatisticUsed        | _VMISC_      |         |
| LiftEpsilon                 | 1E-6                          |         | RocChart               | Y       |         | TargetLabel          | HeartDisease |         |
| ModelCriteria               | Valid: Misclassification Rate |         | RocEpsilon             | 0.01    |         | TargetName           | HeartDisease |         |
| ModelDescription            | NNET 3HUDB                    |         | RoiEpsilon             | 1E-6    |         | classViyaCriteria    | DEFAULT      |         |
| ModelId                     | Neural3                       |         | ScoreDistBin           | 20      |         | intervalViyaCriteria | DEFAULT      |         |
| NormalizeReportingVariables | Y                             |         | SelectionCriteria      | DEFAULT |         |                      |              |         |

### Node=Class Model Comparison Variable Summary

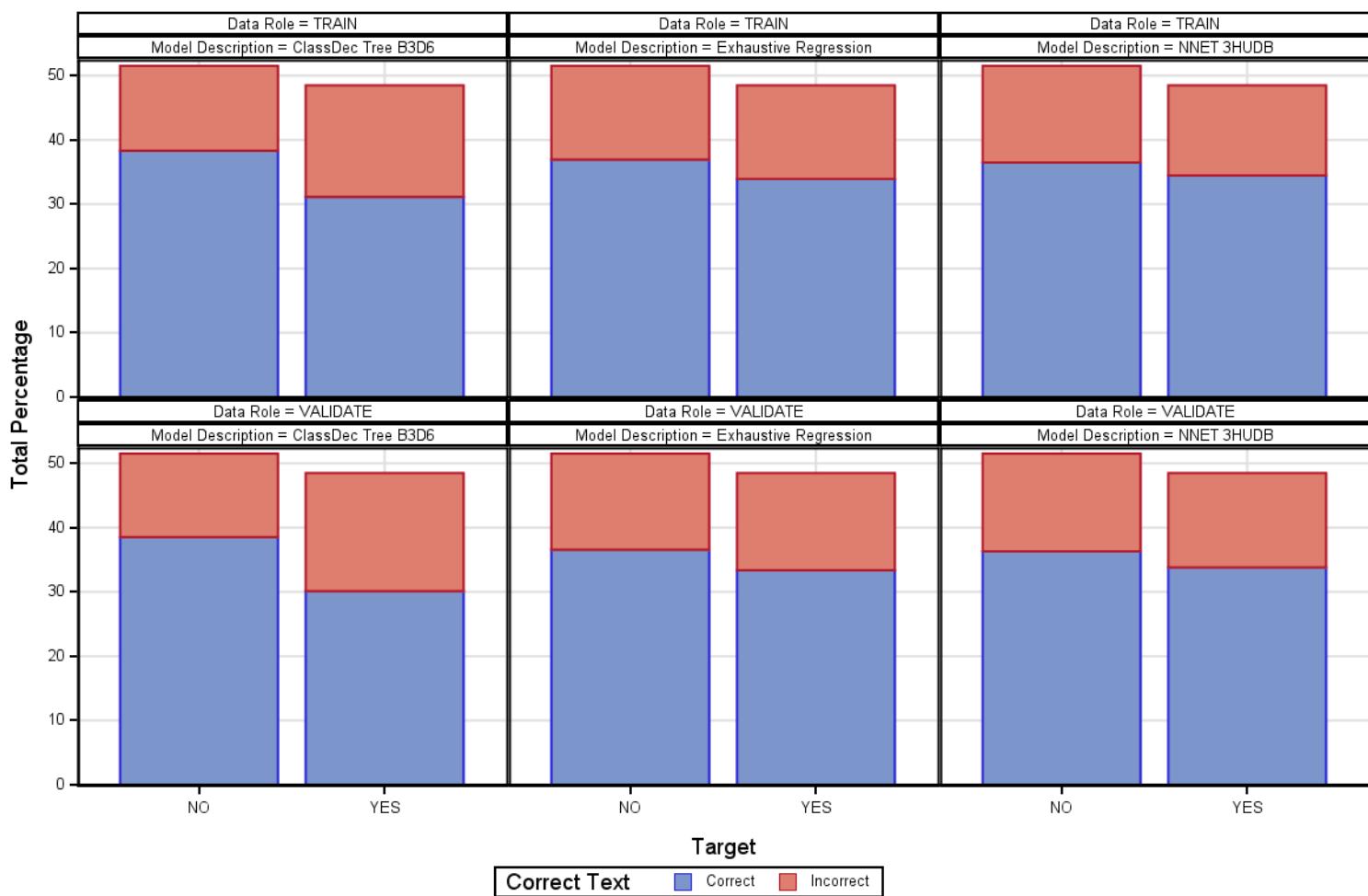
| Role   | Level  | Frequency Count | Name         |
|--------|--------|-----------------|--------------|
| TARGET | BINARY | 1               | HeartDisease |

### Node=Class Model Comparison Fit Statistics Table

| Selected Model | Predecessor Node | Model Node | Model Description     | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Train: Average Squared Error | Train: Misclassification Rate | Train: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|-----------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | MdlComp4         | Neural3    | NNET 3HUDB            | HeartDisease    | HeartDisease | 0.29887  | 0.18990                      | 0.29050                       | 0.421                               |
|                | MdlComp2         | Reg        | Exhaustive Regression | HeartDisease    | HeartDisease | 0.30068  | 0.19123                      | 0.29134                       | 0.421                               |
|                | MdlComp          | Tree4      | ClassDec Tree B3D6    | HeartDisease    | HeartDisease | 0.31362  | 0.20388                      | 0.30543                       | 0.386                               |

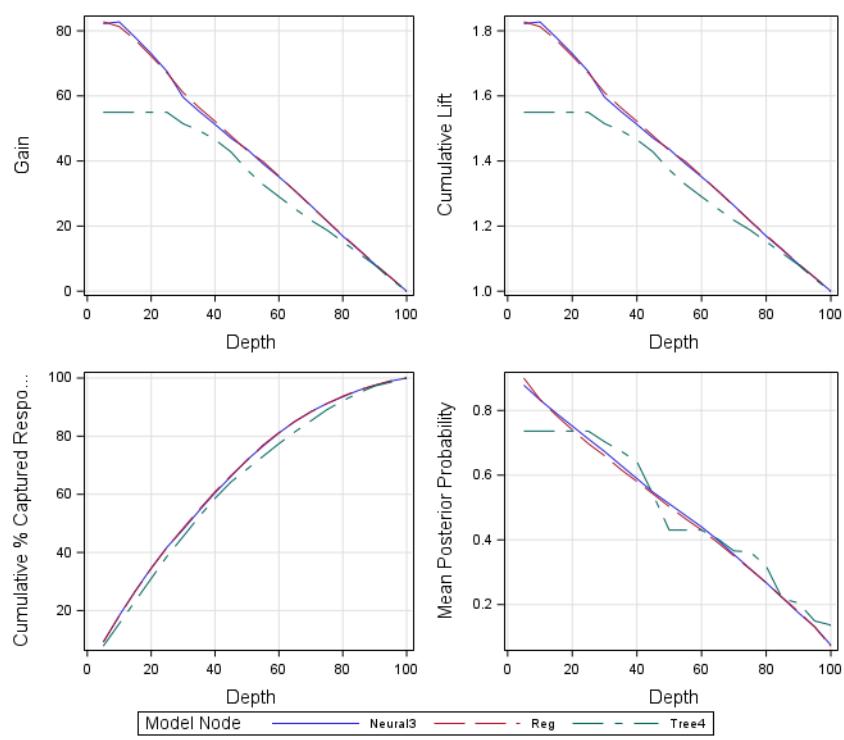
| Selected Model | Predecessor Node | Model Node | Model Description     | Target Variable | Target Label | Selection Criterion: Valid: Misclassification Rate | Valid: Average Squared Error | Valid: Misclassification Rate | Valid: Kolmogorov-Smirnov Statistic |
|----------------|------------------|------------|-----------------------|-----------------|--------------|--|------------------------------|-------------------------------|-------------------------------------|
| Y              | MdlComp4         | Neural3    | NNET 3HUDB            | HeartDisease    | HeartDisease | 0.29887  | 0.19627                      | 0.29887                       | 0.407                               |
|                | MdlComp2         | Reg        | Exhaustive Regression | HeartDisease    | HeartDisease | 0.30068  | 0.19703                      | 0.30068                       | 0.400                               |
|                | MdlComp          | Tree4      | ClassDec Tree B3D6    | HeartDisease    | HeartDisease | 0.31362  | 0.20709                      | 0.31362                       | 0.369                               |

**SAS Enterprise Miner Report**  
**Node=Class Model Comparison**  
**Classification Chart**  
**TARGET='HeartDisease' and \_TYPE\_='PREDICTION'**



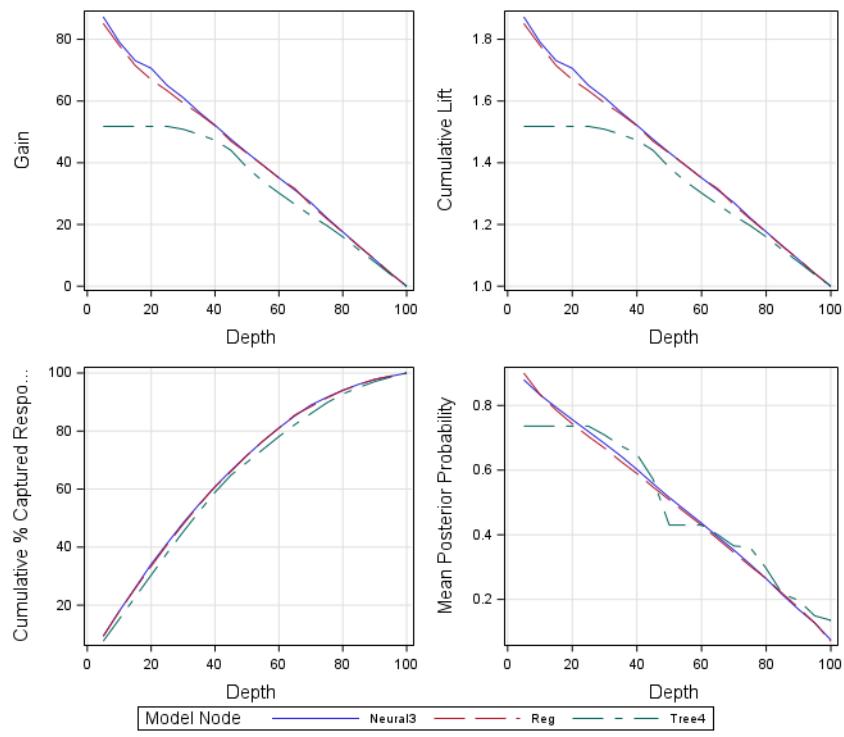
## SAS Enterprise Miner Report

Node=Class Model Comparison  
 Multiple Model Assessment Scores where DataRole=TEST  
 TARGET='HeartDisease'



## SAS Enterprise Miner Report

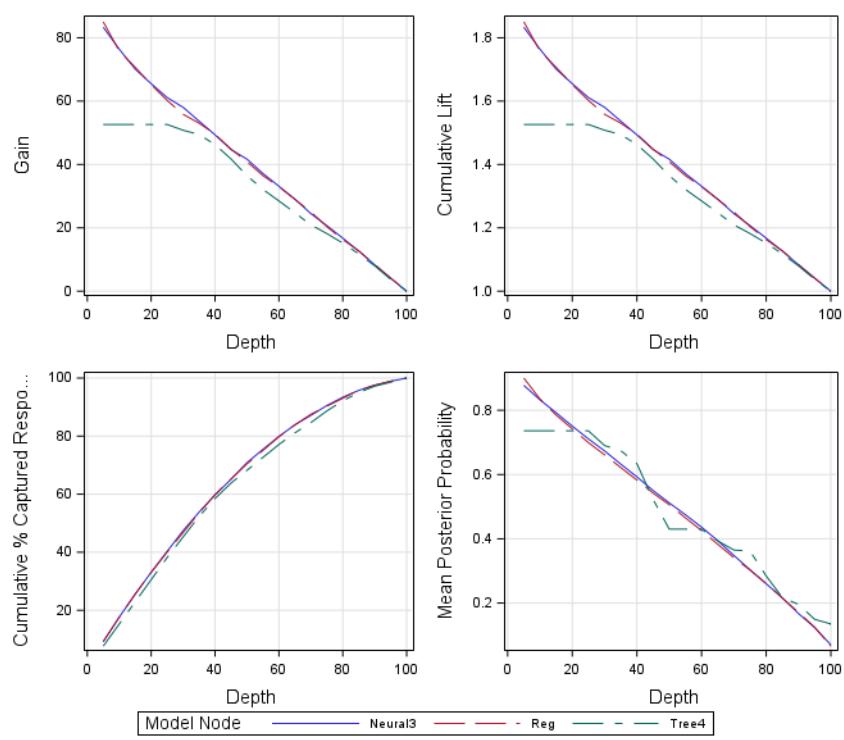
Node=Class Model Comparison  
 Multiple Model Assessment Scores where DataRole=TRAIN  
 TARGET='HeartDisease'



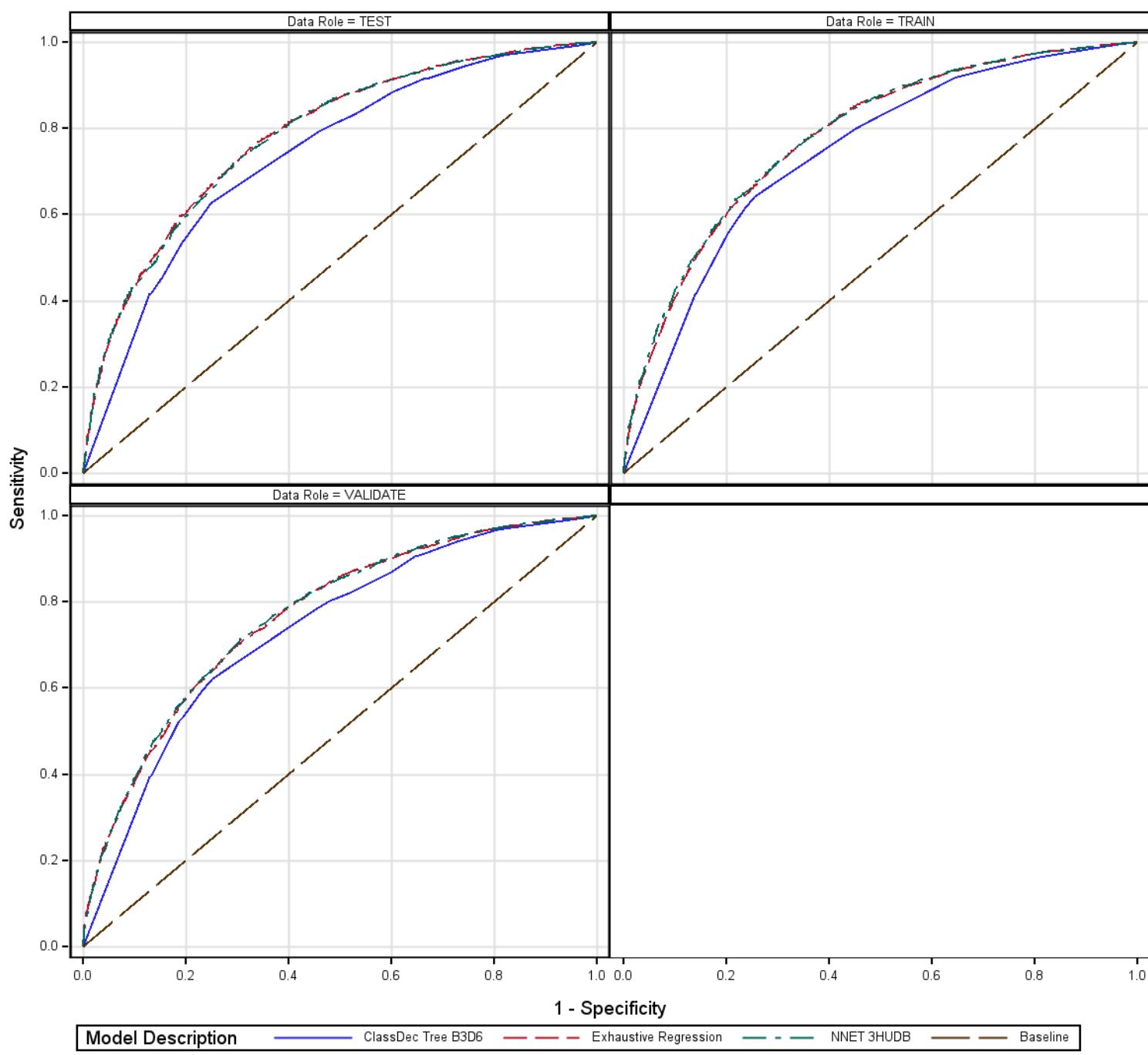
## SAS Enterprise Miner Report

Node=Class Model Comparison

Multiple Model Assessment Scores where DataRole=VALIDATE  
TARGET='HeartDisease'



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



## SAS Enterprise Miner Report

### Node=Score Summary

Node id = Score  
 Node label = Score  
 Meta path = Ids => Smpl => EMSave => Part => Neural3 => MdlComp4 => MdlComp3 => 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               | HeartDisease   |
| SEGMENT | NOMINAL | 1               | b_HeartDisease |

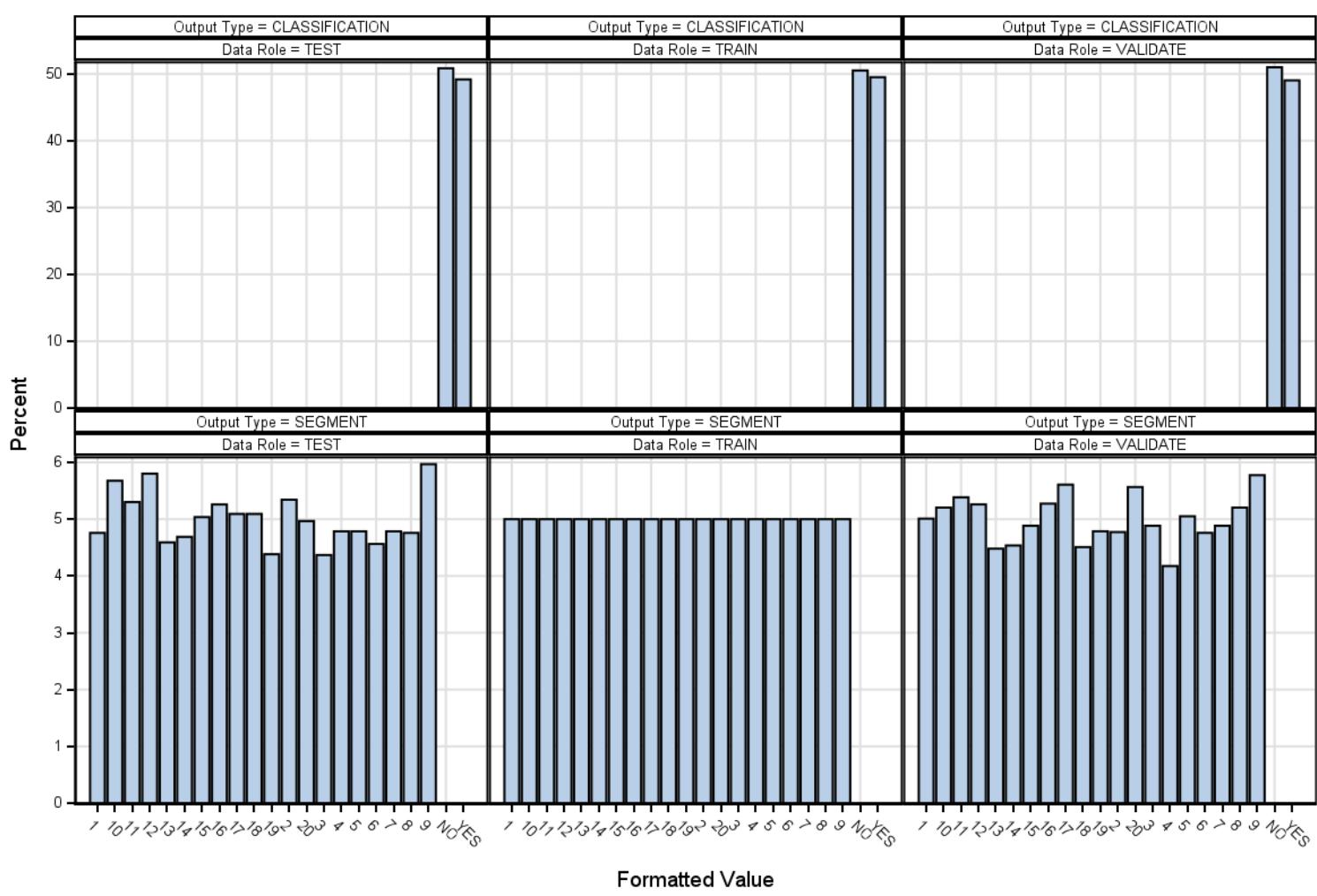
### Node=Score Output Variables

| Variable Name       | Creator  | Variable Label                            | Function       | Type |
|---------------------|----------|---|----------------|------|
| EM_CLASSIFICATION   | Score    | Prediction for HeartDisease               | CLASSIFICATION | C    |
| EM_EVENTPROBABILITY | Score    | Probability for level YES of HeartDisease | PREDICT        | N    |
| EM_PROBABILITY      | Score    | Probability of Classification             | PREDICT        | N    |
| EM_SEGMENT          | Score    | Segment                                   | TRANSFORM      | N    |
| I_HeartDisease      | Neural3  | Into: HeartDisease                        | CLASSIFICATION | C    |
| P_HeartDiseaseNo    | Neural3  | Predicted: HeartDisease=No                | PREDICT        | N    |
| P_HeartDiseaseYes   | Neural3  | Predicted: HeartDisease=Yes               | PREDICT        | N    |
| U_HeartDisease      | Neural3  | Unnormalized Into: HeartDisease           | CLASSIFICATION | C    |
| _WARN_              | Neural3  | Warnings                                  | ASSESS         | C    |
| b_HeartDisease      | MdlComp4 |   | TRANSFORM      | N    |

# SAS Enterprise Miner Report

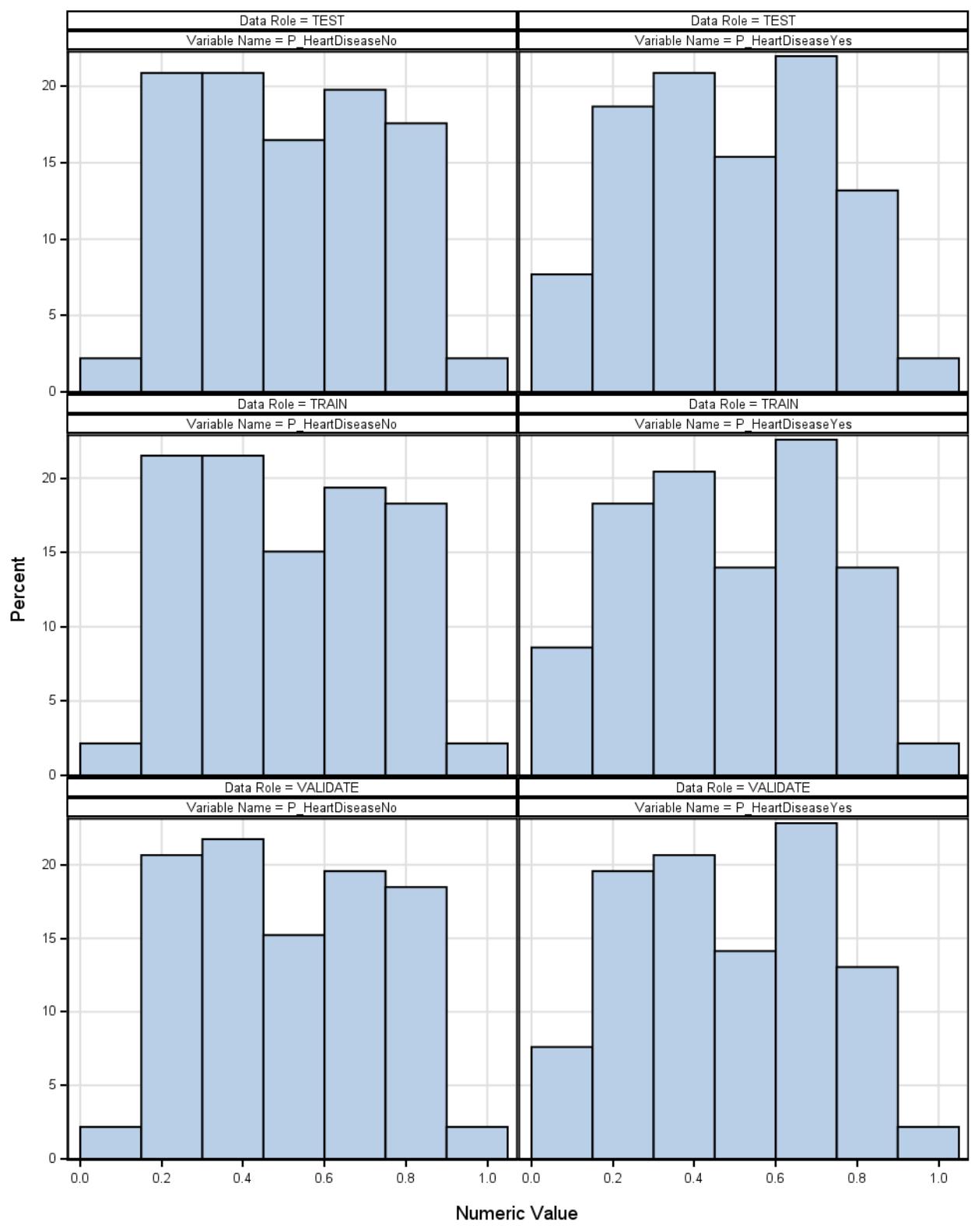
Node=Score

Bar Chart



# SAS Enterprise Miner Report

## Node=Score Histogram



## SAS Enterprise Miner Report

### Node=Save Score Data Summary

Node id = EMSave3  
 Node label = Save Score Data  
 Meta path = Ids => Smpl => EMSave => Part => Neural3 => MdlComp4 => MdlComp3 => Score => EMSave3  
 Notes =

### Node=Save Score Data Properties

| Property          | Value  | Default | Property | Value | Default | Property    | Value    | Default  |
|-------------------|--------|---------|----------|-------|---------|-------------|----------|----------|
| Component         | EMSave |         | Name     |       |         | Train       | Y        |          |
| AllObs            | Y      |         | OutObs   | 1000  |         | Transaction | Y        |          |
| AllRoles          | Y      |         | Replace  | Y     |         | Type        | SAS7BDAT | SAS7DBAT |
| DirectorySelector |        |         | Score    | Y     |         | Validate    | Y        |          |
| Lib               |        |         | Test     | Y     |         |             |          |          |

### Node=Save Score Data Variable Summary

| Role  | Level    | Frequency Count | Name   |
|-------|----------|-----------------|--|
| INPUT | BINARY   | 6               | AlcoholDrinking Asthma DiffWalking PhysicalActivity Smoking Stroke |
| INPUT | INTERVAL | 4               | BMI MentalHealth PhysicalHealth SleepTime                          |
| INPUT | NOMINAL  | 4               | AgeCategory Diabetic Race Sex                                      |
| INPUT | ORDINAL  | 1               | GenHealth  |

### Node=Save Score Data Data

| Data Library | Output Location   | Total Observations | Saved Observations | Number of Variables |
|--------------|---|--------------------|--------------------|---------------------|
| _em_save     | \uisnutvdipprof1a\redirected\$\ibees2\Documents\Team_Excel_SAS_EM_Heart_Attack_Prediction\Heart_Attack_Prediction_Team_Excel.Predictive_Analysis\Workspaces\EMWS1\EMSave3\em_save_TRAIN.sas7bdat    | 9580               | MAX                | 28                  |
| _em_save     | \uisnutvdipprof1a\redirected\$\ibees2\Documents\Team_Excel_SAS_EM_Heart_Attack_Prediction\Heart_Attack_Prediction_Team_Excel.Predictive_Analysis\Workspaces\EMWS1\EMSave3\em_save_VALIDATE.sas7bdat | 7187               | MAX                | 28                  |
| _em_save     | \uisnutvdipprof1a\redirected\$\ibees2\Documents\Team_Excel_SAS_EM_Heart_Attack_Prediction\Heart_Attack_Prediction_Team_Excel.Predictive_Analysis\Workspaces\EMWS1\EMSave3\em_save_TEST.sas7bdat     | 7188               | MAX                | 28                  |

End of Report