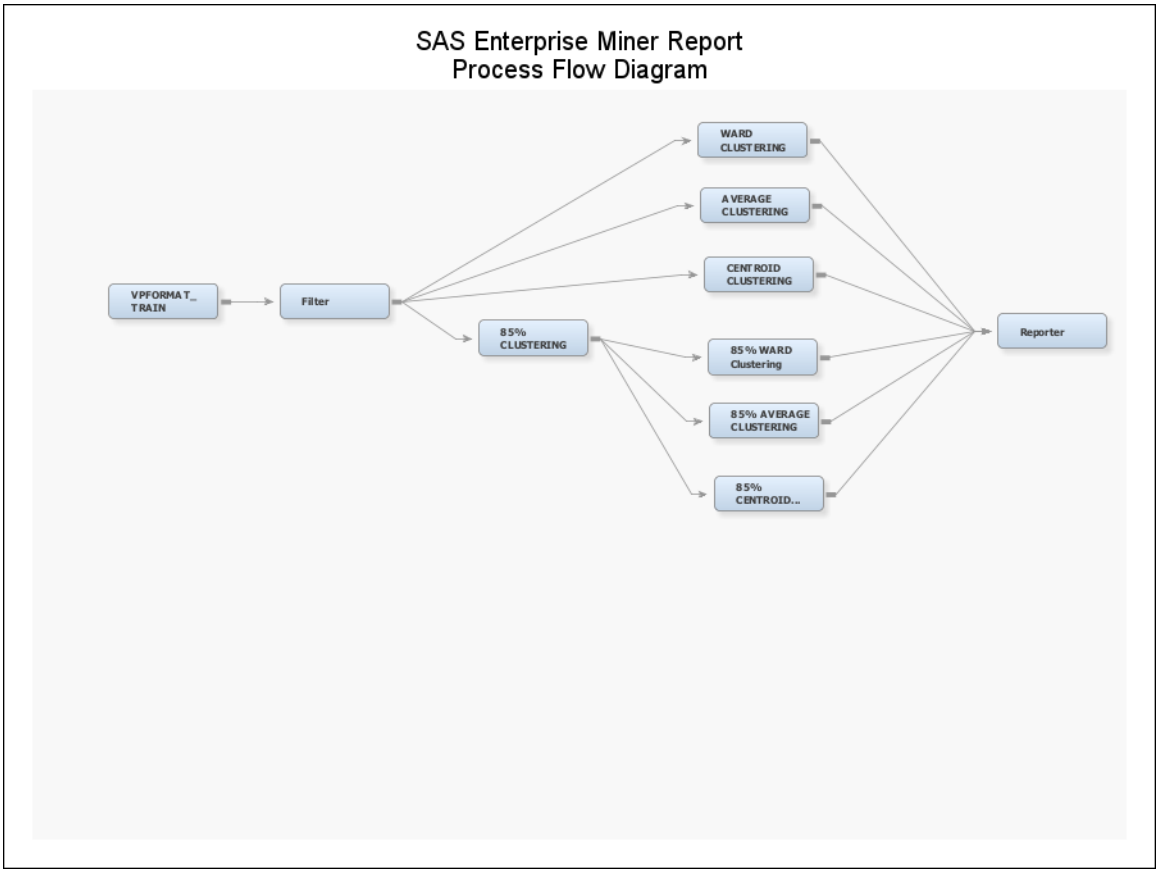
SAS Enterprise Miner Report

User = pchal5
Date = 20:27:03 March 09
Project = VP.ExploratoryAnalysis
Diagram = VPDATA.EXPLORATORY ANALYSIS

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

Format = PDF
Style = LISTING



SAS Enterprise Miner Report

Node=VPFORMAT_TRAIN
Summary

Node id = Ids
Node label = VPFORMAT_TRAIN
Meta path = Ids
Notes =

Node=VPFORMAT_TRAIN
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	DataSource		DsCreatedBy	pchal5		NBytes	57541632	.
ApplyIntervalLevelLowerLimit	Y		DsId	vpformattrain		NCols	11	.
ApplyMaxClassLevels	Y		DsModifiedBy	pchal5		NObs	166800	.
ApplyMaxPercentMissing	Y		DsModifyDate	2025178436.4		NewTable		
CMeta	WORK.M0D7_AKI		DsSampleName			NewVariableRole	REJECT	
ComputeStatistics	N		DsSampleSize			OutputType	VIEW	
DBPassThrough	Y		DsSampleSizeType			Role	RAW	TRAIN
Data	VPDATA.VPFORMAT_TRAIN		DsScope	LOCAL		Sample	D	
DataSelection	DATASOURCE		IdentifyEmptyColumns	Y		SampleSizeObs	10000	
DataSource	vpformattrain		IntervalLowerLimit	20		SampleSizePercent	20	
DataSourceRole	RAW		Library	VPDATA		SampleSizeType	PERCENT	
Description			MaxClassLevels	20		Scope	LOCAL	
DropMapVariables	Y		MaxPercentMissing	50		Segment		
DsCreateDate	2025178436.1		MetaAdvisor	BASIC		Table	VPFORMAT_TRAIN	

Node=VPFORMAT_TRAIN
Data Attributes

Attribute	Value	Attribute	Value	Attribute	Value
Data Name	VPFORMAT_TRAIN	Date Created	03Mar2024:22:45:52	Data Size	57541632
Data Type	DATA	Date Modified	03Mar2024:22:45:52	Role	RAW
Data Label		Number Rows	166800	Segment	
Engine	BASE	Number Columns	11	Data Library	VPDATA

Node=VPFORMAT_TRAIN
Variables List

Name	Label	Role	Level	Type	Length	Format	Creator
City	City	REJECTED	NOMINAL	C	24	$24.	
Clean_Alternative_Fuel_Vehicle__		INPUT	NOMINAL	C	60		
Electric_Range		TARGET	INTERVAL	N	8		
Electric_Utility		REJECTED	NOMINAL	C	112		
Electric_Vehicle_Type		INPUT	NOMINAL	C	38		
Legislative_District		INPUT	INTERVAL	N	8		
Make	Make	INPUT	NOMINAL	C	20	$20.	
Model	Model	REJECTED	NOMINAL	C	24	$24.	
Model_Year		TIMEID	INTERVAL	N	8		
State	State	REJECTED	NOMINAL	C	2	$2.	
Vehicle_Location		REJECTED	NOMINAL	C	33		

SAS Enterprise Miner Report

Node=Filter
Summary

Node id = Filter
Node label = Filter
Meta path = Ids => Filter
Notes =

Node=Filter
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Filter		KeepMissingInterval	Y		PercentsCutoff	0.5	
ClassFilterMethod	MINPCT		MADSCutoff	9		PublishScoreCode	Y	
CreateDistributionData	Y	N	MaxValues	25		SpacingsCutoff	9	
ExportTable	FILTERED		MinFreq	1		StddevCutoff	3	
IntervalFilterMethod	STDDEV		MinPercent	0.01		TabletoFilter	TRAIN	
KeepMissingClass	Y		NormalizeClassValue	Y		UpdateClassLevel	N	

Node=Filter
Variable Summary

Role	Level	Frequency Count	Name
TIMEID	INTERVAL	1	Model_Year
TARGET	INTERVAL	1	Electric_Range
REJECTED	NOMINAL	5	City Electric_Utility Model State Vehicle_Location
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make

Node=Filter
Excluded Class Values

Node=Filter
Limits for Interval Variables

Variable	Role	Minimum	Maximum	Filter Method	Keep Missing Values	Label
Legislative_District	INPUT	-15.3817	73.7395	STDDEV	Y	

SAS Enterprise Miner Report

Node=85% CLUSTERING
Summary

Node id = Smpl
Node label = 85% CLUSTERING
Meta path = Ids => Filter => Smpl
Notes =

Node=85% CLUSTERING
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	85	10
FreqCount	N		Method	DEFAULT		SizeType	PERCENT	
FreqMiss	N		MinStrataSize	5		StratifyCriterion	PROPORTIONAL	

Node=85% CLUSTERING
Variable Summary

Role	Level	Frequency Count	Name
TIMEID	INTERVAL	1	Model_Year
TARGET	INTERVAL	1	Electric_Range
REJECTED	NOMINAL	5	City Electric_Utility Model State Vehicle_Location
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make

SAS Enterprise Miner Report

Node=85% CENTROID CLUSTERING Summary

Node id = Clus6
Node label = 85% CENTROID CLUSTERING
Meta path = Ids => Filter => Smpl => Clus6
Notes =

Node=85% CENTROID CLUSTERING Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	CENTROID	WARD	ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=85% CENTROID CLUSTERING Variable Summary

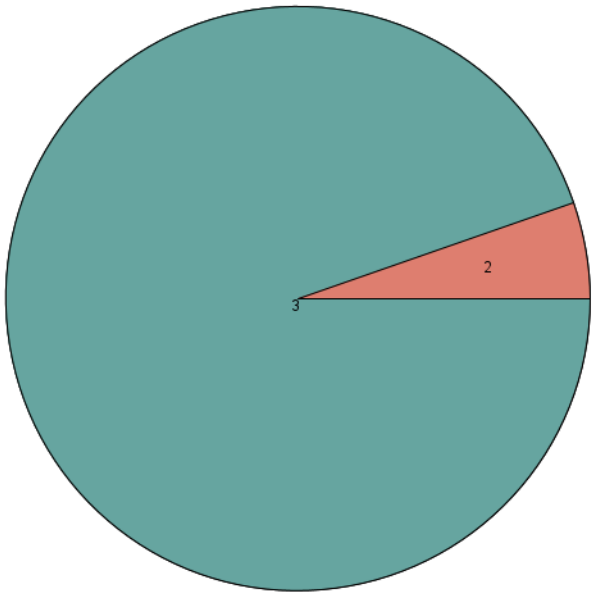
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make
ID	INTERVAL	1	_dataobs_

Node=85% CENTROID CLUSTERING Mean Statistics

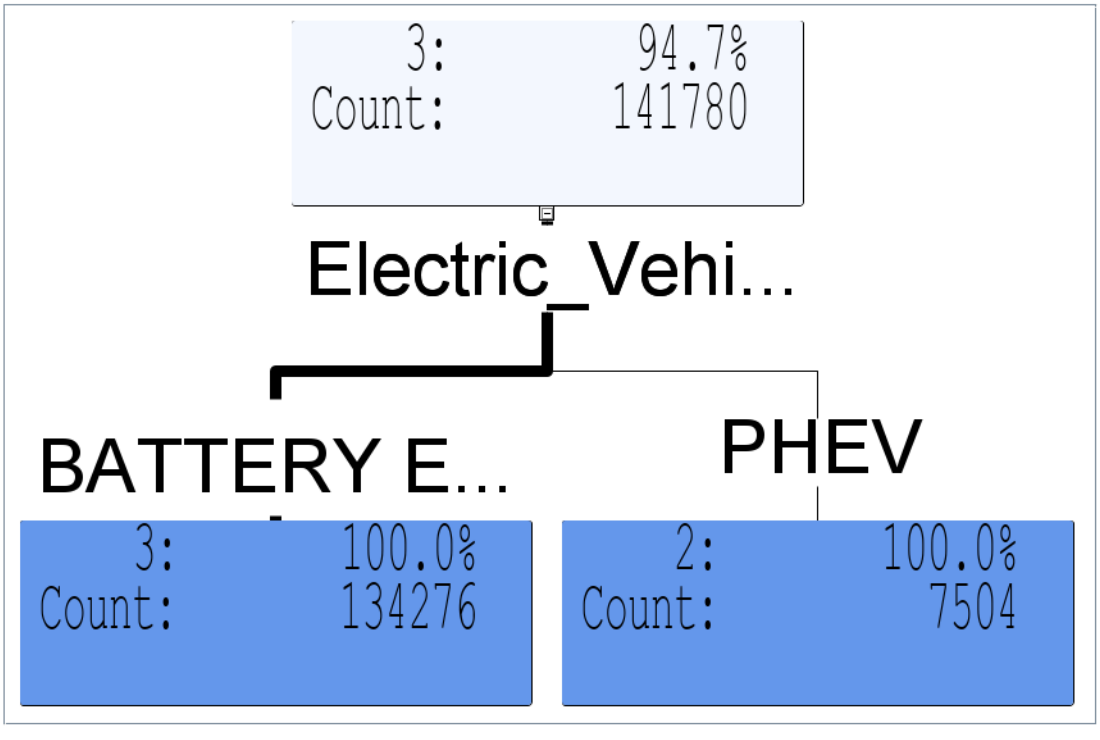
Variable	Segment 1	Segment 2	Segment 3
Clustering Criterion	0.2679	0.27	0.27
Maximum Relative Change in Cluster Seeds	0.0000	0.00	0.00
Improvement in Clustering Criterion	0.0000	0.00	0.00
Frequency of Cluster	2.0000	7504.00	134274.00
Root-Mean-Square Standard Deviation	0.0680	0.36	0.26
Maximum Distance from Cluster Seed	0.3365	34.88	34.88
Nearest Cluster	3.0000	3.00	2.00
Distance to Nearest Cluster	42.6490	3.01	3.01
Legislative_District	16.0000	32.44	28.99
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	0.0000	-0.00	0.34
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	1.0000	0.00	0.53
Clean_Alternative_Fuel_Vehicle__=Eligible	0.0000	0.56	0.03
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.0000	0.44	-0.00

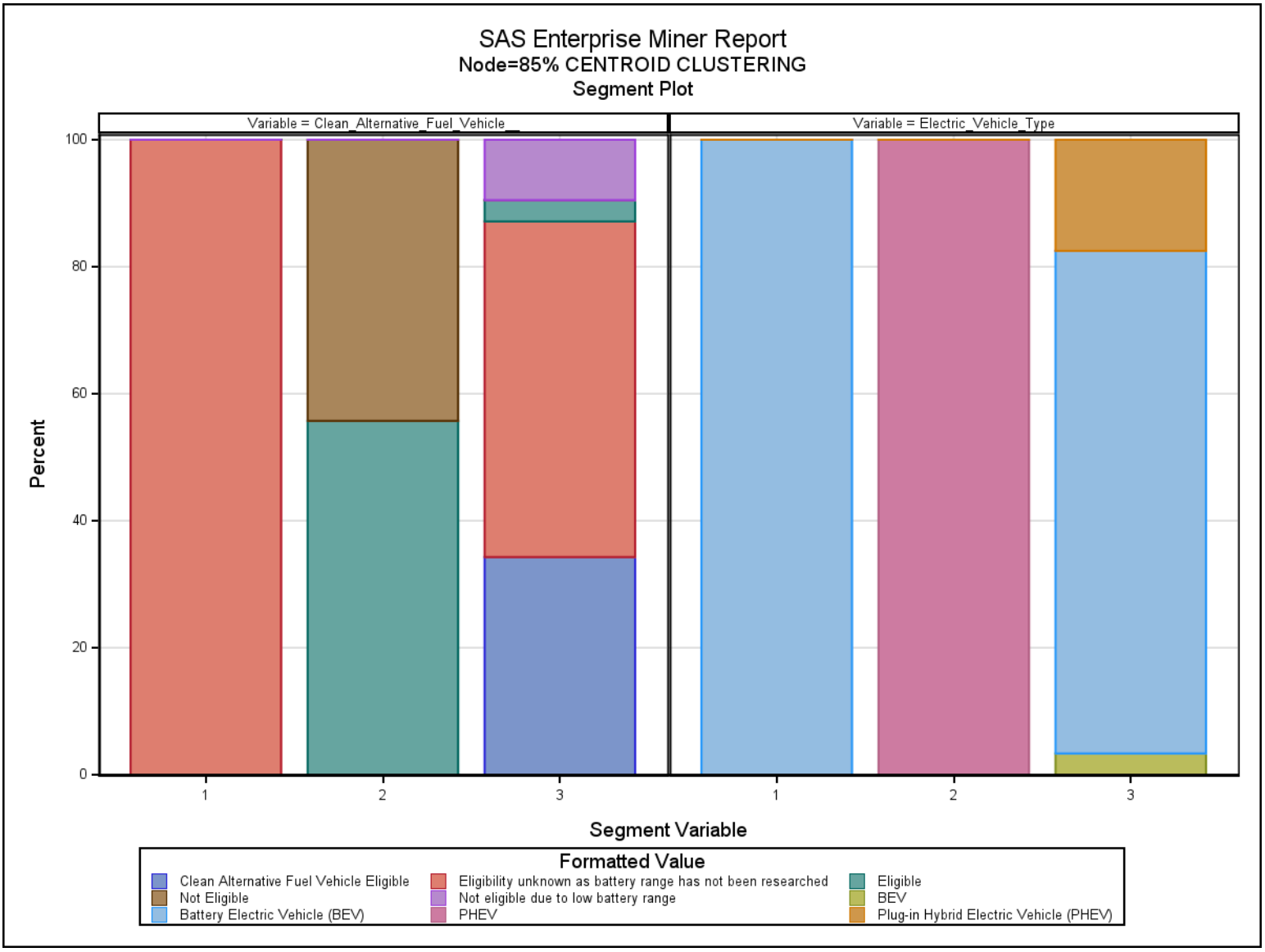
Variable	Segment 1	Segment 2	Segment 3
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	-0.0000	0.00	0.10
Electric_Vehicle_Type=BEV	0.0000	-0.00	0.03
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	1.0000	0.00	0.79
Electric_Vehicle_Type=PHEV	0.0000	1.00	0.00
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	0.0000	0.00	0.17
Make=ALFA ROMEO	-0.0000	0.00	0.00
Make=AUDI	0.0000	0.05	0.02
Make=AZURE DYNAMICS	0.0000	-0.00	0.00
Make=BENTLEY	-0.0000	0.00	0.00
Make=BMW	0.0000	0.16	0.04
Make=CADILLAC	-0.0000	0.00	0.00
Make=CHEVROLET	-0.0000	0.00	0.08
Make=CHRYSLER	0.0000	0.12	0.01
Make=DODGE	0.0000	0.00	0.00
Make=FIAT	0.0000	0.00	0.00
Make=FISKER	0.0000	-0.00	0.00
Make=FORD	0.0000	0.02	0.05
Make=GENESIS	0.0000	-0.00	0.00
Make=GMC	1.0000	-0.00	-0.00
Make=HONDA	0.0000	0.01	0.00
Make=HYUNDAI	0.0000	0.02	0.02
Make=JAGUAR	0.0000	-0.00	0.00
Make=JEEP	0.0000	0.17	0.02
Make=KIA	0.0000	0.10	0.04
Make=LAND ROVER	0.0000	0.00	0.00
Make=LEXUS	0.0000	0.01	0.00
Make=LINCOLN	0.0000	0.01	0.00
Make=LUCID	0.0000	-0.00	0.00
Make=MAZDA	0.0000	0.02	0.00
Make=MERCEDES-BENZ	0.0000	0.00	0.01
Make=MINI	0.0000	0.00	0.01
Make=MITSUBISHI	-0.0000	0.03	0.00
Make=NISSAN	0.0000	-0.00	0.09
Make=POLESTAR	0.0000	0.00	0.01
Make=PORSCHE	0.0000	0.01	0.01
Make=RIVIAN	-0.0000	-0.00	0.02
Make=SMART	-0.0000	-0.00	0.00
Make=SUBARU	0.0000	-0.00	0.01
Make=TESLA	0.0000	-0.00	0.47
Make=TH!NK	0.0000	-0.00	0.00
Make=TOYOTA	0.0000	0.15	0.03
Make=VOLKSWAGEN	0.0000	0.00	0.03
Make=VOLVO	0.0000	0.12	0.02
Make=WHEEGO ELECTRIC CARS	0.0000	-0.00	0.00

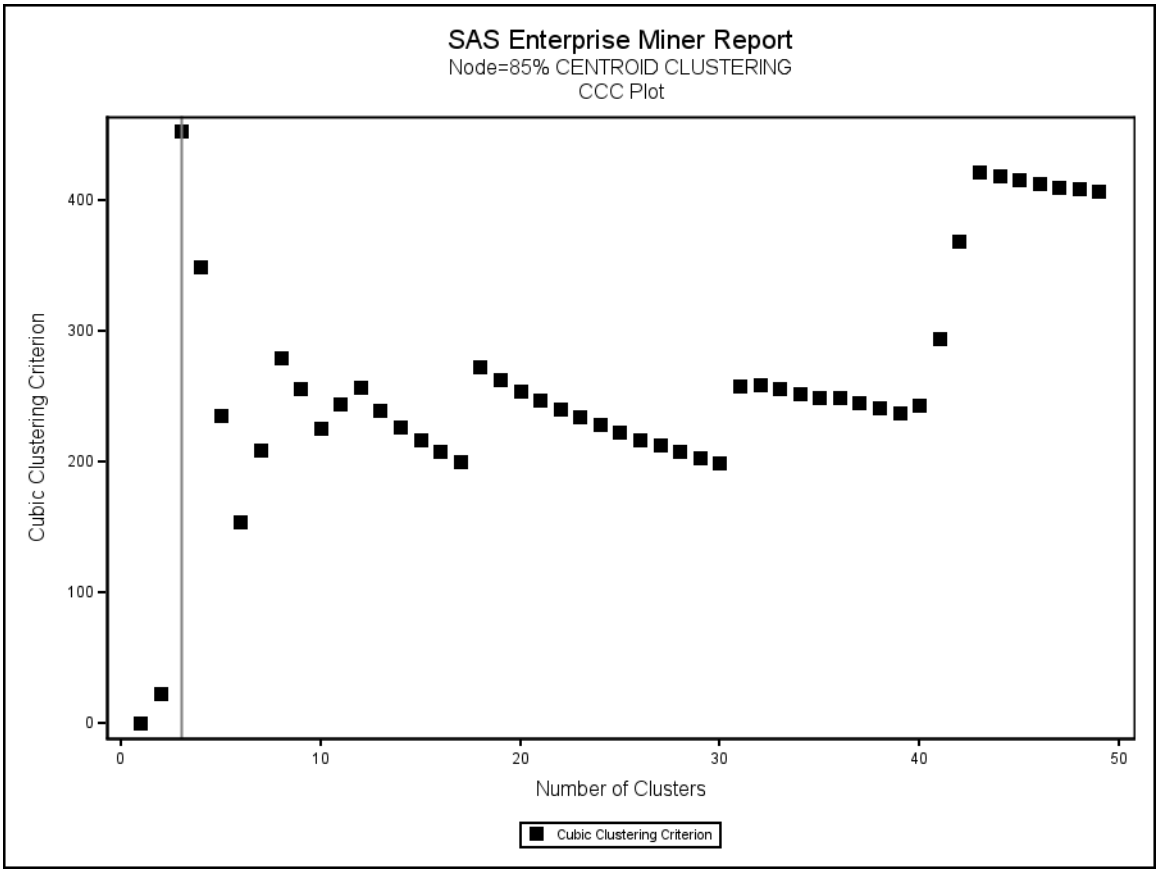
SAS Enterprise Miner Report
Node=85% CENTROID CLUSTERING
Segment Size



SAS Enterprise Miner Report
Node=85% CENTROID CLUSTERING
Tree Diagram




SAS Enterprise Miner Report
Node=85% CENTROID CLUSTERING
Segment Plot
Variable = Clean_Alternative_Fuel_Vehicle_
Variable = Electric_Vehicle_Type
Percent
100
80
60
40
20
0
1
2
3
1
2
3
Segment Variable
Formatted Value
Clean Alternative Fuel Vehicle Eligible
Not Eligible
Battery Electric Vehicle (BEV)
Eligibility unknown as battery range has not been researched
Not eligible due to low battery range
PHEV
Eligible
BEV
Plug-in Hybrid Electric Vehicle (PHEV)


SAS Enterprise Miner Report
Node=85% CENTROID CLUSTERING
CCC Plot
Cubic Clustering Criterion
400
300
200
100
0
0
10
20
30
40
50
Number of Clusters
Cubic Clustering Criterion

SAS Enterprise Miner Report

Node=85% AVERAGE CLUSTERING Summary

Node id = Clus5
Node label = 85% AVERAGE CLUSTERING
Meta path = Ids => Filter => Smpl => Clus5
Notes =

Node=85% AVERAGE CLUSTERING Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	AVERAGE	WARD	ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=85% AVERAGE CLUSTERING Variable Summary

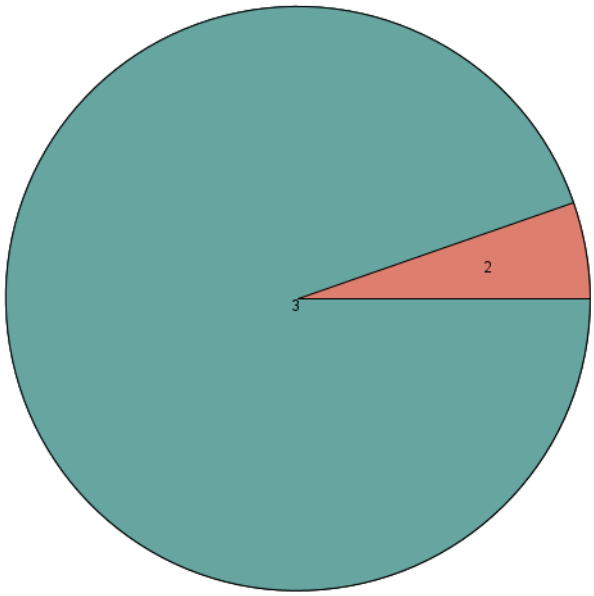
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make
ID	INTERVAL	1	_dataobs_

Node=85% AVERAGE CLUSTERING Mean Statistics

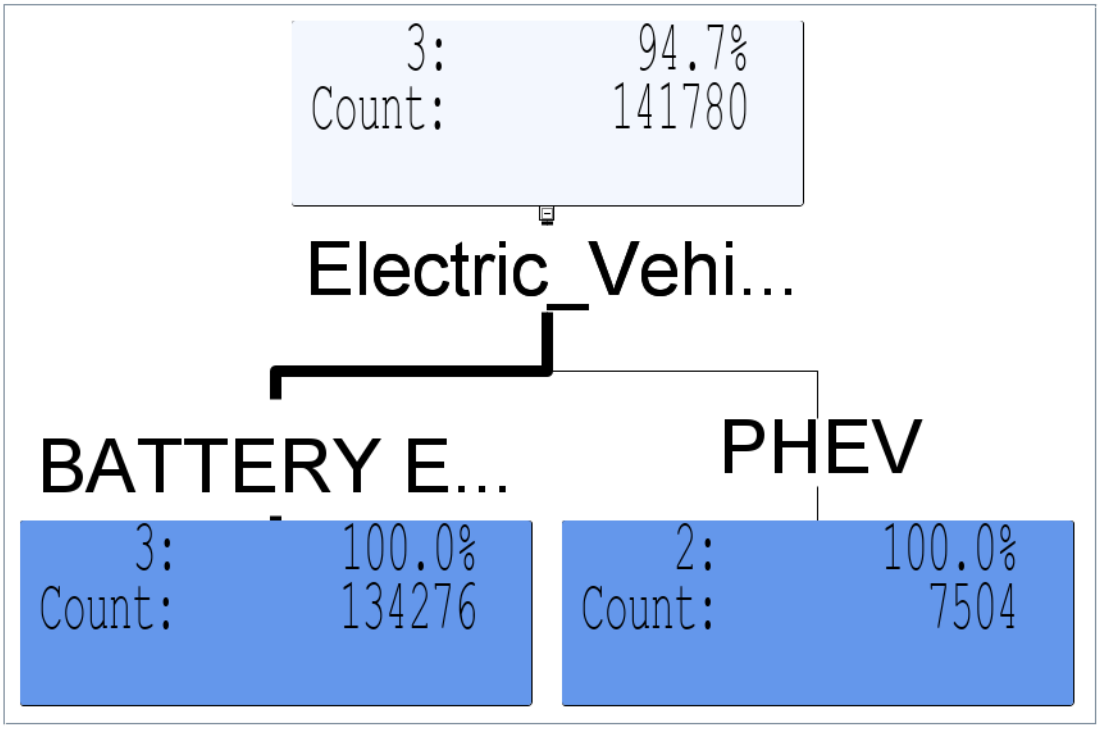
Variable	Segment 1	Segment 2	Segment 3
Clustering Criterion	0.2679	0.27	0.27
Maximum Relative Change in Cluster Seeds	0.0000	0.00	0.00
Improvement in Clustering Criterion	0.0000	0.00	0.00
Frequency of Cluster	2.0000	7504.00	134274.00
Root-Mean-Square Standard Deviation	0.0680	0.36	0.26
Maximum Distance from Cluster Seed	0.3365	34.88	34.88
Nearest Cluster	3.0000	3.00	2.00
Distance to Nearest Cluster	42.6490	3.01	3.01
Legislative_District	16.0000	32.44	28.99
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	0.0000	-0.00	0.34
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	1.0000	0.00	0.53
Clean_Alternative_Fuel_Vehicle__=Eligible	0.0000	0.56	0.03
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.0000	0.44	-0.00

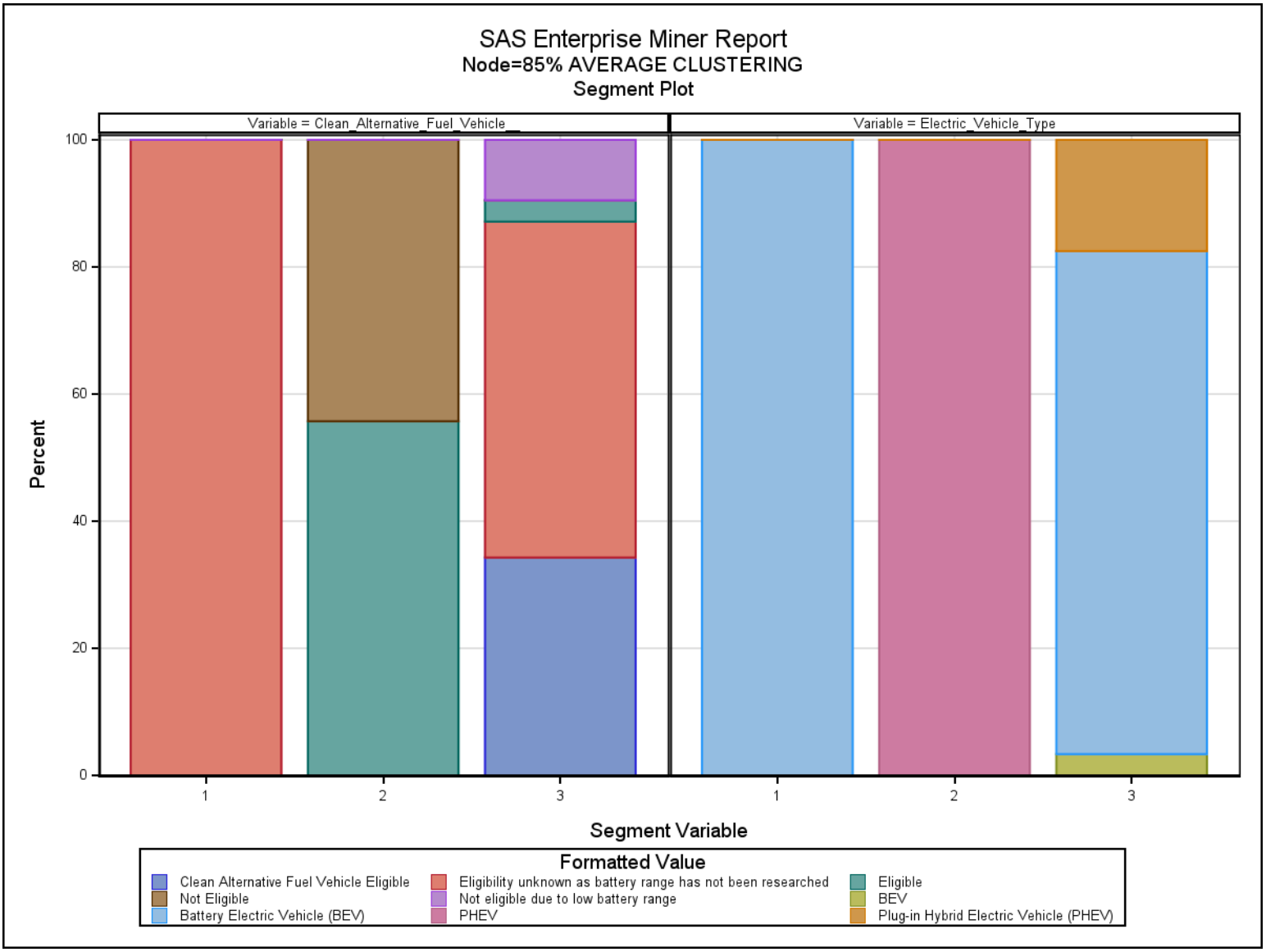
Variable	Segment 1	Segment 2	Segment 3
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	-0.0000	0.00	0.10
Electric_Vehicle_Type=BEV	0.0000	-0.00	0.03
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	1.0000	0.00	0.79
Electric_Vehicle_Type=PHEV	0.0000	1.00	0.00
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	0.0000	0.00	0.17
Make=ALFA ROMEO	-0.0000	0.00	0.00
Make=AUDI	0.0000	0.05	0.02
Make=AZURE DYNAMICS	0.0000	-0.00	0.00
Make=BENTLEY	-0.0000	0.00	0.00
Make=BMW	0.0000	0.16	0.04
Make=CADILLAC	-0.0000	0.00	0.00
Make=CHEVROLET	-0.0000	0.00	0.08
Make=CHRYSLER	0.0000	0.12	0.01
Make=DODGE	0.0000	0.00	0.00
Make=FIAT	0.0000	0.00	0.00
Make=FISKER	0.0000	-0.00	0.00
Make=FORD	0.0000	0.02	0.05
Make=GENESIS	0.0000	-0.00	0.00
Make=GMC	1.0000	-0.00	-0.00
Make=HONDA	0.0000	0.01	0.00
Make=HYUNDAI	0.0000	0.02	0.02
Make=JAGUAR	0.0000	-0.00	0.00
Make=JEEP	0.0000	0.17	0.02
Make=KIA	0.0000	0.10	0.04
Make=LAND ROVER	0.0000	0.00	0.00
Make=LEXUS	0.0000	0.01	0.00
Make=LINCOLN	0.0000	0.01	0.00
Make=LUCID	0.0000	-0.00	0.00
Make=MAZDA	0.0000	0.02	0.00
Make=MERCEDES-BENZ	0.0000	0.00	0.01
Make=MINI	0.0000	0.00	0.01
Make=MITSUBISHI	-0.0000	0.03	0.00
Make=NISSAN	0.0000	-0.00	0.09
Make=POLESTAR	0.0000	0.00	0.01
Make=PORSCHE	0.0000	0.01	0.01
Make=RIVIAN	-0.0000	-0.00	0.02
Make=SMART	-0.0000	-0.00	0.00
Make=SUBARU	0.0000	-0.00	0.01
Make=TESLA	0.0000	-0.00	0.47
Make=TH!NK	0.0000	-0.00	0.00
Make=TOYOTA	0.0000	0.15	0.03
Make=VOLKSWAGEN	0.0000	0.00	0.03
Make=VOLVO	0.0000	0.12	0.02
Make=WHEEGO ELECTRIC CARS	0.0000	-0.00	0.00

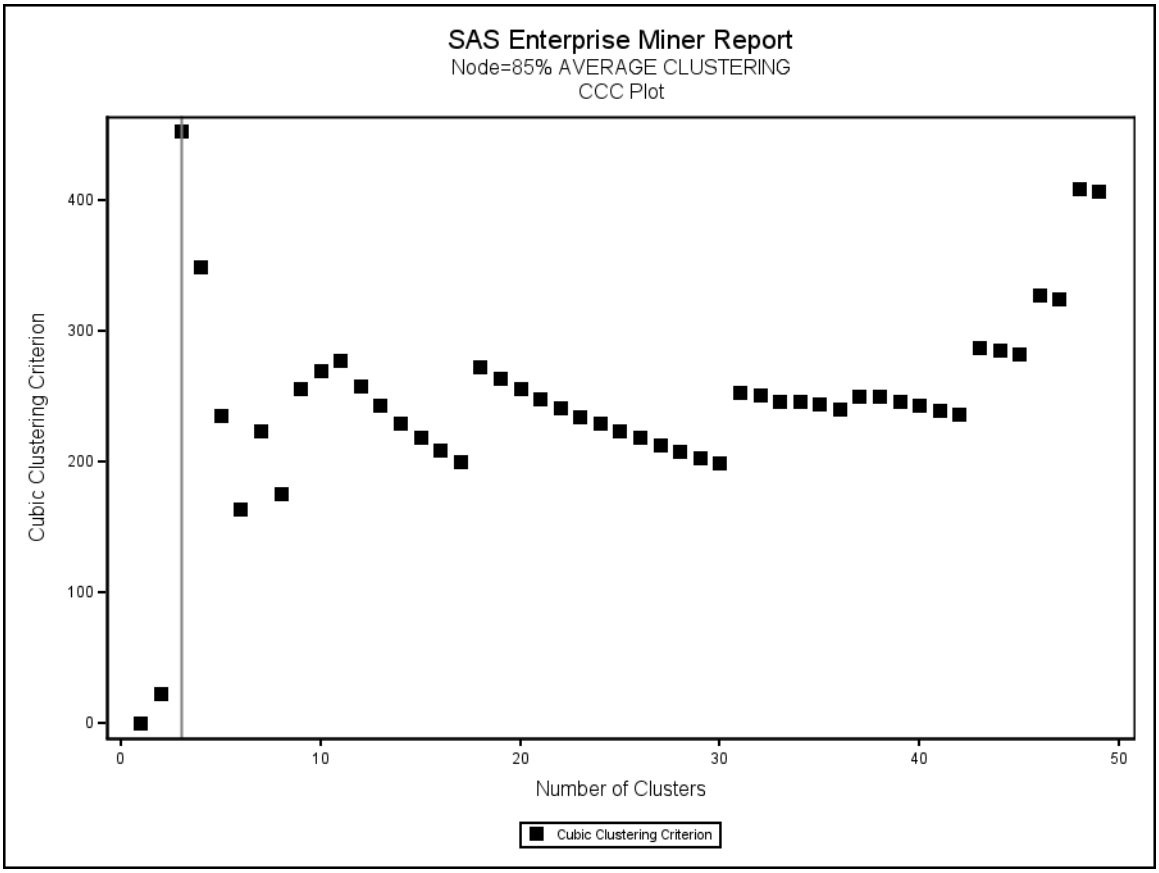
SAS Enterprise Miner Report
Node=85% AVERAGE CLUSTERING
Segment Size



SAS Enterprise Miner Report
Node=85% AVERAGE CLUSTERING
Tree Diagram




SAS Enterprise Miner Report
Node=85% AVERAGE CLUSTERING
Segment Plot
Variable = Clean_Alternative_Fuel_Vehicle_
Variable = Electric_Vehicle_Type
Percent
100
80
60
40
20
0
1
2
3
1
2
3
Segment Variable
Formatted Value
Clean Alternative Fuel Vehicle Eligible
Not Eligible
Battery Electric Vehicle (BEV)
Eligibility unknown as battery range has not been researched
Not eligible due to low battery range
PHEV
Eligible
BEV
Plug-in Hybrid Electric Vehicle (PHEV)


SAS Enterprise Miner Report
Node=85% AVERAGE CLUSTERING
CCC Plot
Cubic Clustering Criterion
400
300
200
100
0
0
10
20
30
40
50
Number of Clusters
Cubic Clustering Criterion

SAS Enterprise Miner Report

Node=85% WARD Clustering Summary

Node id = Clus4
Node label = 85% WARD Clustering
Meta path = Ids => Filter => Smpl => Clus4
Notes =

Node=85% WARD Clustering Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	WARD		ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=85% WARD Clustering Variable Summary

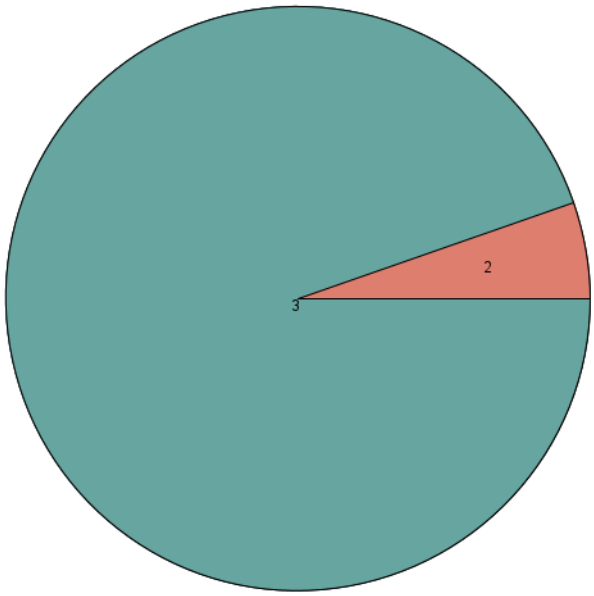
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make
ID	INTERVAL	1	_dataobs_

Node=85% WARD Clustering Mean Statistics

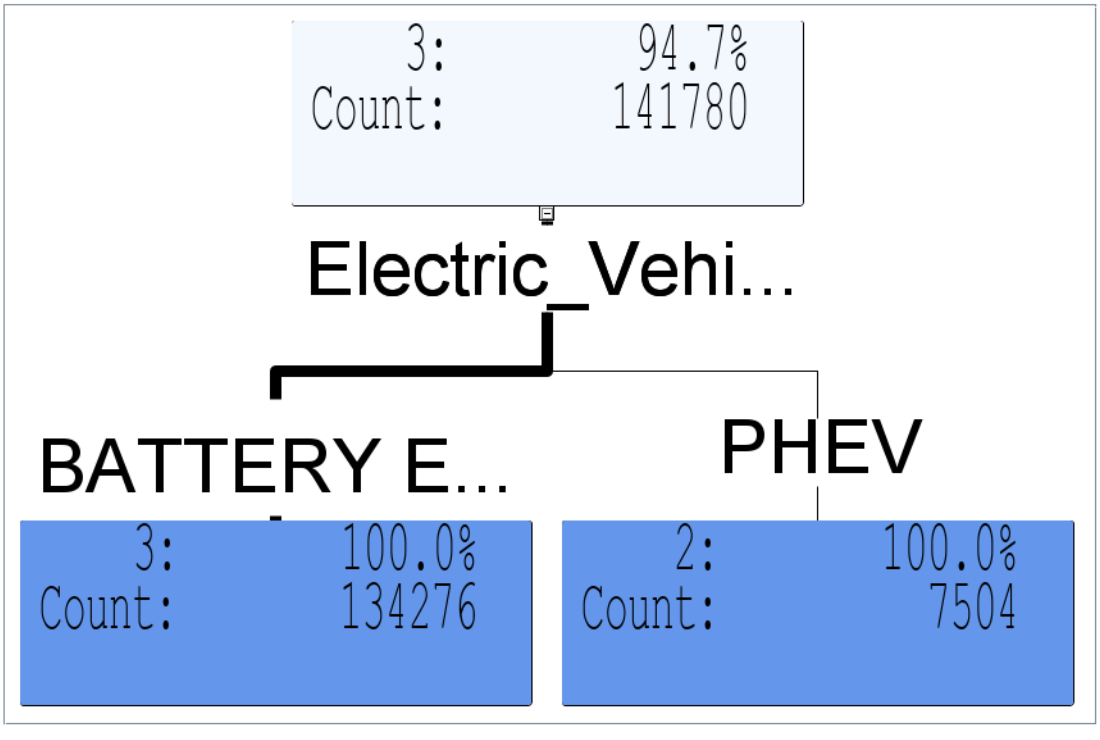
Variable	Segment 1	Segment 2	Segment 3
Clustering Criterion	0.2679	0.27	0.27
Maximum Relative Change in Cluster Seeds	0.0000	0.00	0.00
Improvement in Clustering Criterion	0.0000	0.00	0.00
Frequency of Cluster	2.0000	7504.00	134274.00
Root-Mean-Square Standard Deviation	0.0680	0.36	0.26
Maximum Distance from Cluster Seed	0.3365	34.88	34.88
Nearest Cluster	3.0000	3.00	2.00
Distance to Nearest Cluster	42.6490	3.01	3.01
Legislative_District	16.0000	32.44	28.99
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	0.0000	-0.00	0.34
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	1.0000	0.00	0.53
Clean_Alternative_Fuel_Vehicle__=Eligible	0.0000	0.56	0.03
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.0000	0.44	-0.00

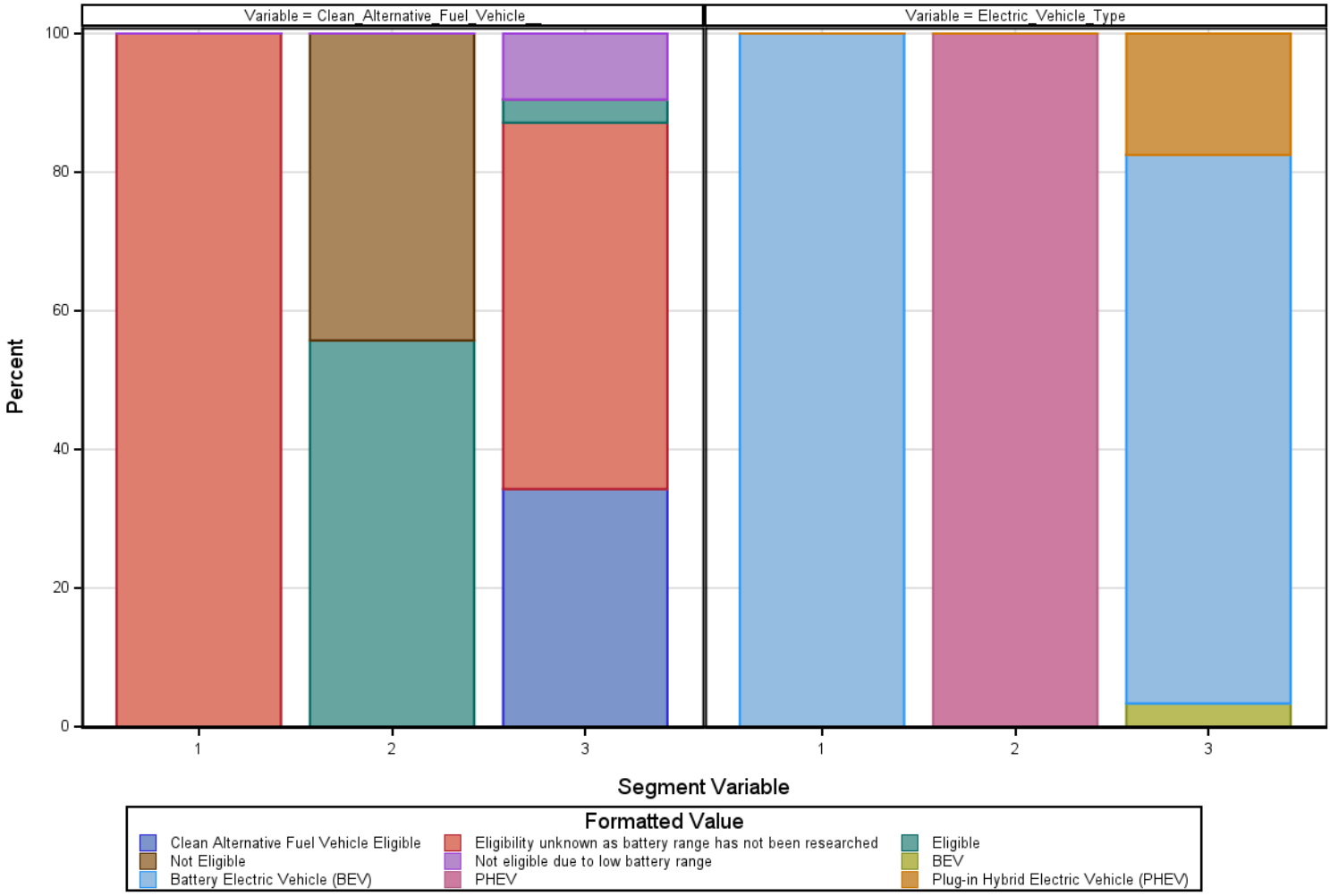
Variable	Segment 1	Segment 2	Segment 3
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	-0.0000	0.00	0.10
Electric_Vehicle_Type=BEV	0.0000	-0.00	0.03
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	1.0000	0.00	0.79
Electric_Vehicle_Type=PHEV	0.0000	1.00	0.00
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	0.0000	0.00	0.17
Make=ALFA ROMEO	-0.0000	0.00	0.00
Make=AUDI	0.0000	0.05	0.02
Make=AZURE DYNAMICS	0.0000	-0.00	0.00
Make=BENTLEY	-0.0000	0.00	0.00
Make=BMW	0.0000	0.16	0.04
Make=CADILLAC	-0.0000	0.00	0.00
Make=CHEVROLET	-0.0000	0.00	0.08
Make=CHRYSLER	0.0000	0.12	0.01
Make=DODGE	0.0000	0.00	0.00
Make=FIAT	0.0000	0.00	0.00
Make=FISKER	0.0000	-0.00	0.00
Make=FORD	0.0000	0.02	0.05
Make=GENESIS	0.0000	-0.00	0.00
Make=GMC	1.0000	-0.00	-0.00
Make=HONDA	0.0000	0.01	0.00
Make=HYUNDAI	0.0000	0.02	0.02
Make=JAGUAR	0.0000	-0.00	0.00
Make=JEEP	0.0000	0.17	0.02
Make=KIA	0.0000	0.10	0.04
Make=LAND ROVER	0.0000	0.00	0.00
Make=LEXUS	0.0000	0.01	0.00
Make=LINCOLN	0.0000	0.01	0.00
Make=LUCID	0.0000	-0.00	0.00
Make=MAZDA	0.0000	0.02	0.00
Make=MERCEDES-BENZ	0.0000	0.00	0.01
Make=MINI	0.0000	0.00	0.01
Make=MITSUBISHI	-0.0000	0.03	0.00
Make=NISSAN	0.0000	-0.00	0.09
Make=POLESTAR	0.0000	0.00	0.01
Make=PORSCHE	0.0000	0.01	0.01
Make=RIVIAN	-0.0000	-0.00	0.02
Make=SMART	-0.0000	-0.00	0.00
Make=SUBARU	0.0000	-0.00	0.01
Make=TESLA	0.0000	-0.00	0.47
Make=TH!NK	0.0000	-0.00	0.00
Make=TOYOTA	0.0000	0.15	0.03
Make=VOLKSWAGEN	0.0000	0.00	0.03
Make=VOLVO	0.0000	0.12	0.02
Make=WHEEGO ELECTRIC CARS	0.0000	-0.00	0.00

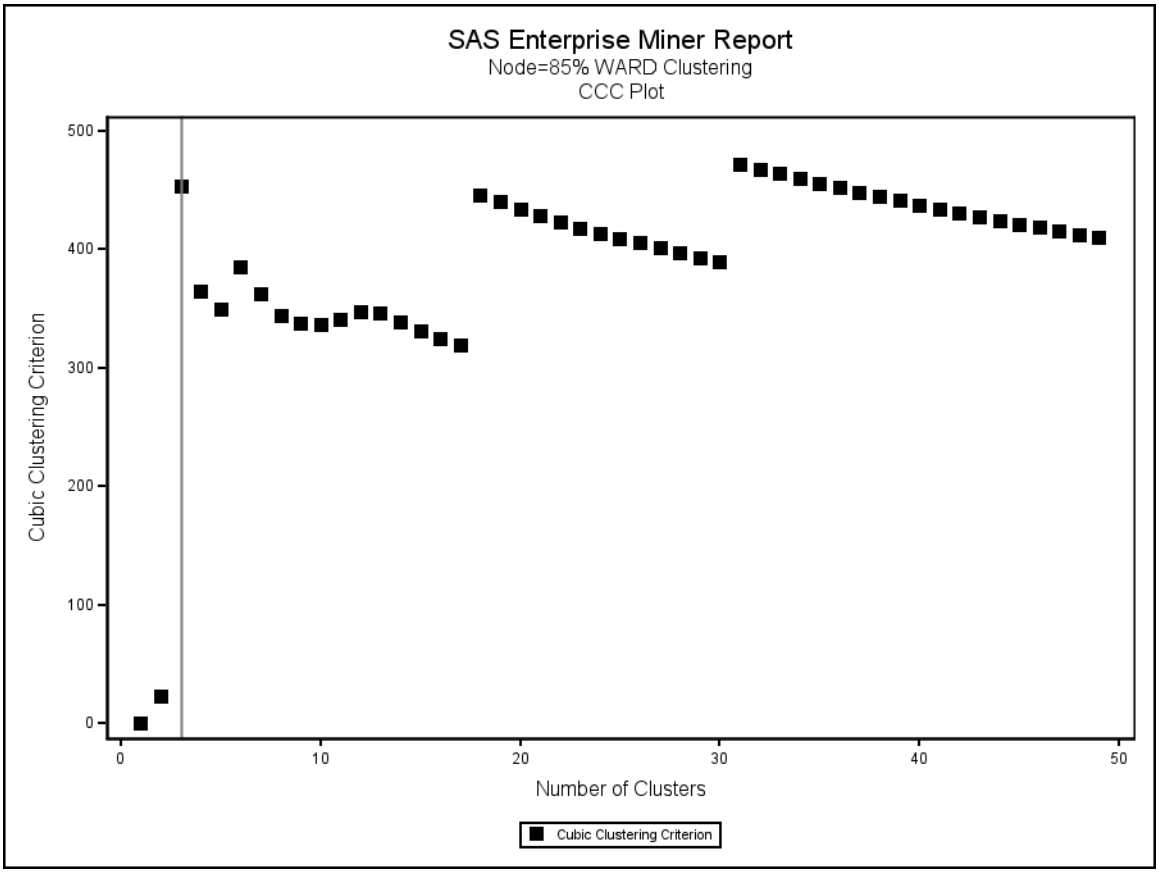
SAS Enterprise Miner Report
Node=85% WARD Clustering
Segment Size



SAS Enterprise Miner Report
Node=85% WARD Clustering
Tree Diagram




SAS Enterprise Miner Report
Node=85% WARD Clustering
Segment Plot
Variable = Clean_Alternative_Fuel_Vehicle_
Variable = Electric_Vehicle_Type
Percent
100
80
60
40
20
0
1
2
3
1
2
3
Segment Variable
Formatted Value
Clean Alternative Fuel Vehicle Eligible
Not Eligible
Battery Electric Vehicle (BEV)
Eligibility unknown as battery range has not been researched
Not eligible due to low battery range
PHEV
Eligible
BEV
Plug-in Hybrid Electric Vehicle (PHEV)


SAS Enterprise Miner Report
Node=85% WARD Clustering
CCC Plot
Cubic Clustering Criterion
500
400
300
200
100
0
0
10
20
30
40
50
Number of Clusters
Cubic Clustering Criterion

SAS Enterprise Miner Report

Node=CENTROID CLUSTERING
Summary

Node id = Clus3
Node label = CENTROID CLUSTERING
Meta path = Ids => Filter => Clus3
Notes =

Node=CENTROID CLUSTERING
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	CENTROID	WARD	ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=CENTROID CLUSTERING
Variable Summary

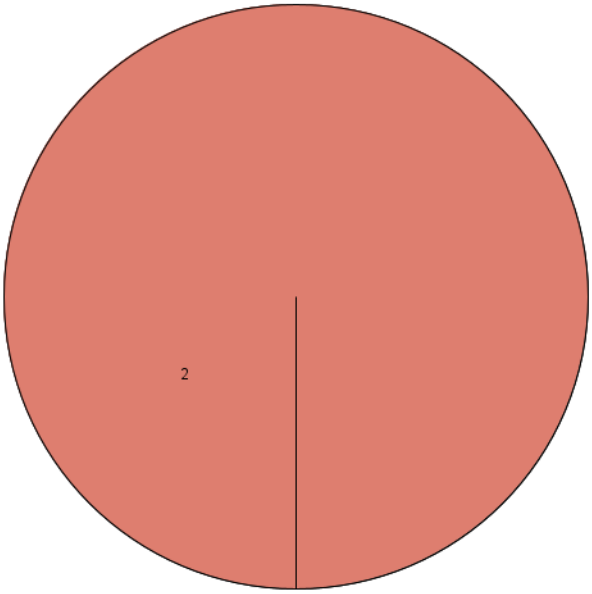
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make

Node=CENTROID CLUSTERING
Mean Statistics

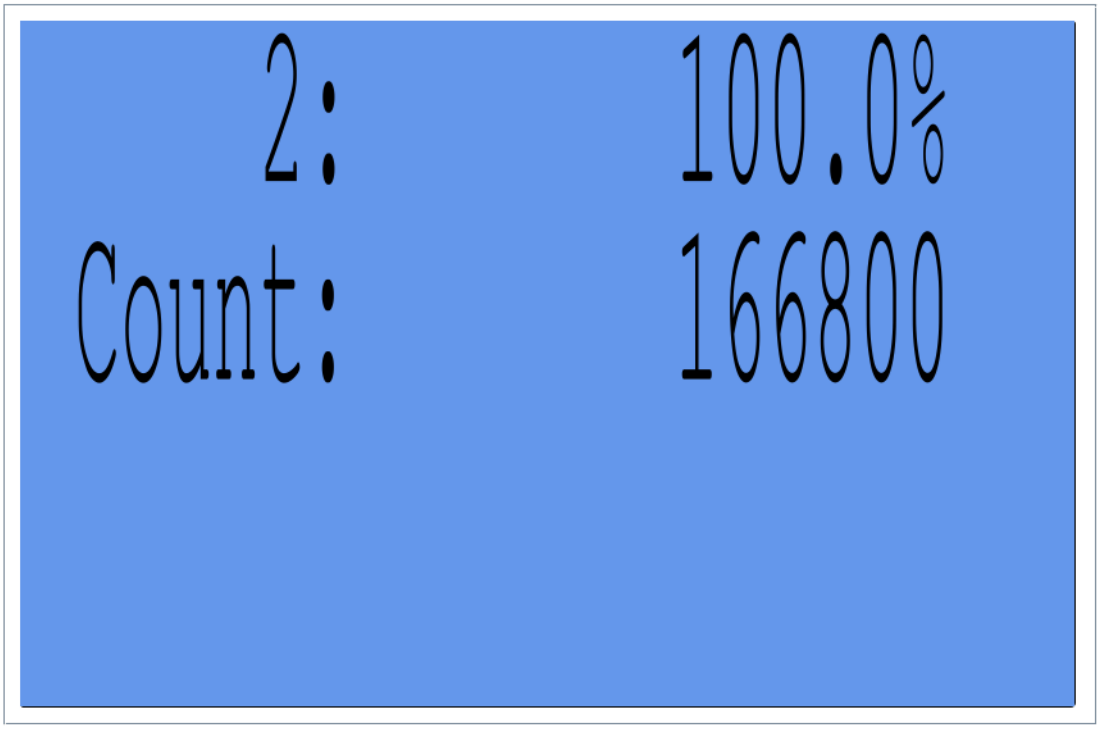
Variable	Segment 1	Segment 2	Segment 3	Segment 4
Clustering Criterion	0.2829	0.28	0.2829	0.2829
Maximum Relative Change in Cluster Seeds	0.0000	0.00	0.0000	0.0000
Improvement in Clustering Criterion	0.0000	0.00	0.0000	0.0000
Frequency of Cluster	3.0000	166792.00	3.0000	2.0000
Root-Mean-Square Standard Deviation	0.3660	0.28	0.1094	0.0680
Maximum Distance from Cluster Seed	2.8322	29.29	0.8528	0.3366
Nearest Cluster	2.0000	3.00	2.0000	2.0000
Distance to Nearest Cluster	37.8489	37.80	37.8005	46.2578
Legislative_District	24.3333	29.18	18.6667	16.0000
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	0.0000	0.32	1.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	0.0000	0.50	0.0000	1.0000
Clean_Alternative_Fuel_Vehicle__=Eligible	-0.0000	0.06	-0.0000	-0.0000
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.6667	0.02	0.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	0.3333	0.09	0.0000	0.0000

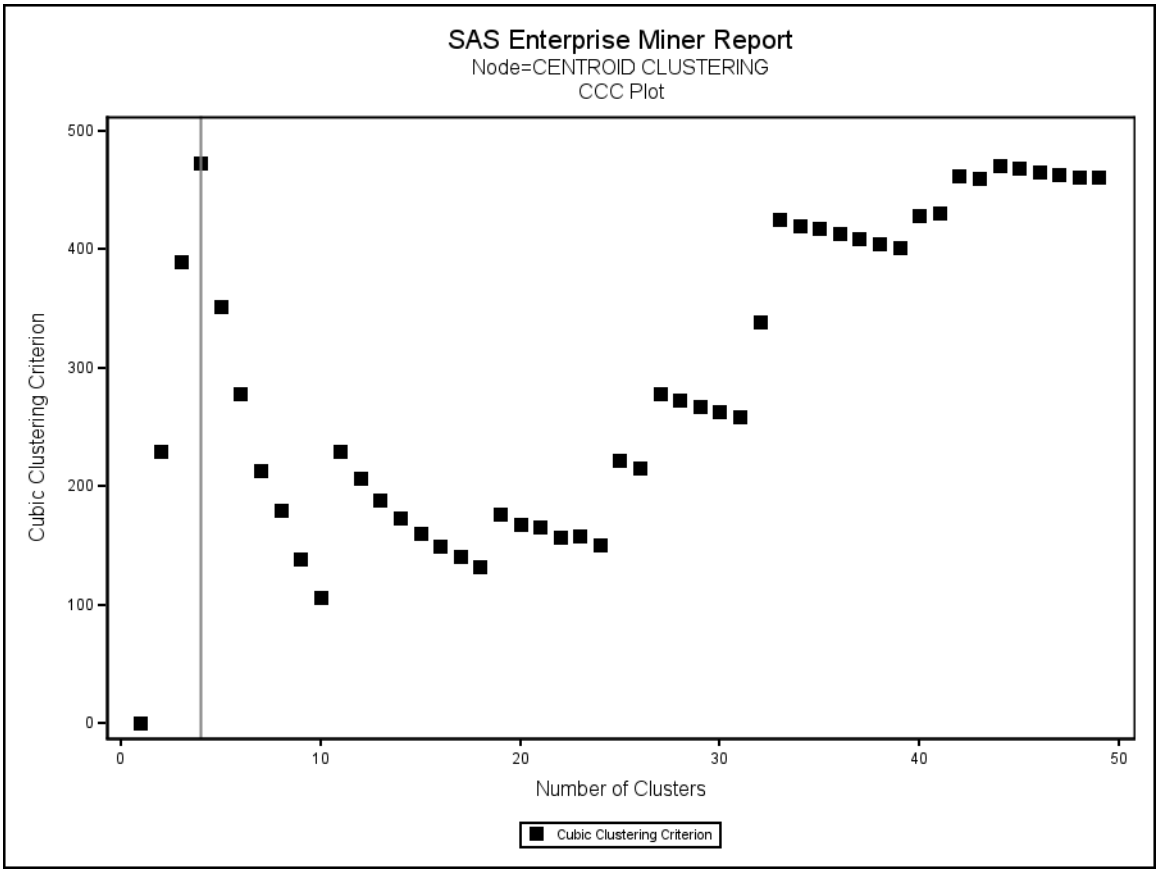
Variable	Segment 1	Segment 2	Segment 3	Segment 4
Electric_Vehicle_Type=BEV	0.0000	0.03	0.0000	0.0000
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	0.0000	0.75	0.0000	1.0000
Electric_Vehicle_Type=PHEV	0.6667	0.05	0.0000	0.0000
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	0.3333	0.17	1.0000	0.0000
Make=ALFA ROMEO	0.0000	0.00	0.0000	0.0000
Make=AUDI	-0.0000	0.02	-0.0000	-0.0000
Make=AZURE DYNAMICS	0.0000	0.00	0.0000	0.0000
Make=BENTLEY	1.0000	0.00	0.0000	0.0000
Make=BMW	-0.0000	0.04	-0.0000	-0.0000
Make=CADILLAC	-0.0000	0.00	-0.0000	-0.0000
Make=CHEVROLET	0.0000	0.08	0.0000	0.0000
Make=CHRYSLER	0.0000	0.02	0.0000	0.0000
Make=DODGE	0.0000	0.00	0.0000	0.0000
Make=FIAT	-0.0000	0.00	-0.0000	-0.0000
Make=FISKER	0.0000	0.00	0.0000	0.0000
Make=FORD	0.0000	0.05	0.0000	0.0000
Make=GENESIS	0.0000	0.00	0.0000	0.0000
Make=GMC	0.0000	0.00	0.0000	1.0000
Make=HONDA	-0.0000	0.00	-0.0000	0.0000
Make=HYUNDAI	0.0000	0.02	0.0000	0.0000
Make=JAGUAR	-0.0000	0.00	-0.0000	-0.0000
Make=JEEP	0.0000	0.02	0.0000	0.0000
Make=KIA	-0.0000	0.04	-0.0000	-0.0000
Make=LAND ROVER	0.0000	0.00	0.0000	0.0000
Make=LEXUS	0.0000	0.00	0.0000	0.0000
Make=LINCOLN	-0.0000	0.00	-0.0000	-0.0000
Make=LUCID	0.0000	0.00	0.0000	0.0000
Make=MAZDA	0.0000	0.00	0.0000	0.0000
Make=MERCEDES-BENZ	0.0000	0.01	0.0000	0.0000
Make=MINI	0.0000	0.01	0.0000	0.0000
Make=MITSUBISHI	0.0000	0.01	0.0000	0.0000
Make=NISSAN	0.0000	0.08	0.0000	0.0000
Make=POLESTAR	0.0000	0.01	0.0000	0.0000
Make=PORSCHE	0.0000	0.01	0.0000	0.0000
Make=RIVIAN	0.0000	0.02	0.0000	0.0000
Make=SMART	0.0000	0.00	0.0000	0.0000
Make=SUBARU	0.0000	0.00	0.0000	0.0000
Make=TESLA	-0.0000	0.45	-0.0000	-0.0000
Make=TH!NK	0.0000	0.00	0.0000	0.0000
Make=TOYOTA	0.0000	0.03	0.0000	0.0000
Make=VOLKSWAGEN	0.0000	0.03	0.0000	0.0000
Make=VOLVO	-0.0000	0.02	-0.0000	-0.0000
Make=WHEEGO ELECTRIC CARS	0.0000	0.00	1.0000	0.0000

SAS Enterprise Miner Report
Node=CENTROID CLUSTERING
Segment Size



SAS Enterprise Miner Report
Node=CENTROID CLUSTERING
Tree Diagram




SAS Enterprise Miner Report
Node=CENTROID CLUSTERING
CCC Plot
Cubic Clustering Criterion
500
400
300
200
100
0
0
10
20
30
40
50
Number of Clusters
Cubic Clustering Criterion

SAS Enterprise Miner Report

Node=AVERAGE CLUSTERING
Summary

Node id = Clus2
Node label = AVERAGE CLUSTERING
Meta path = Ids => Filter => Clus2
Notes =

Node=AVERAGE CLUSTERING
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	AVERAGE	WARD	ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=AVERAGE CLUSTERING
Variable Summary

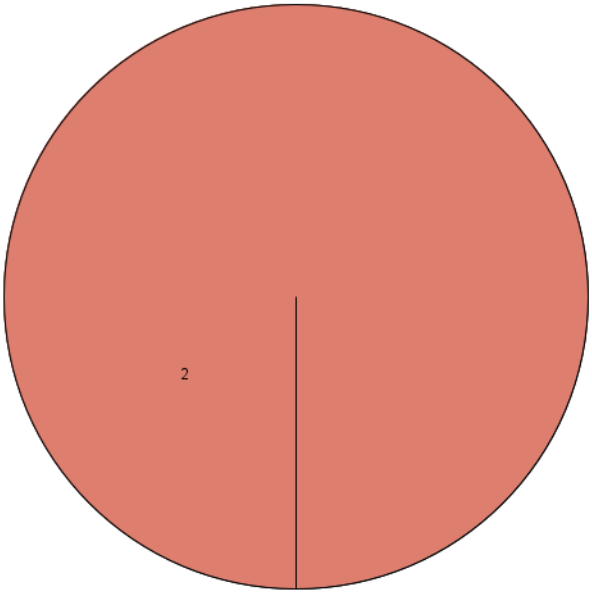
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make

Node=AVERAGE CLUSTERING
Mean Statistics

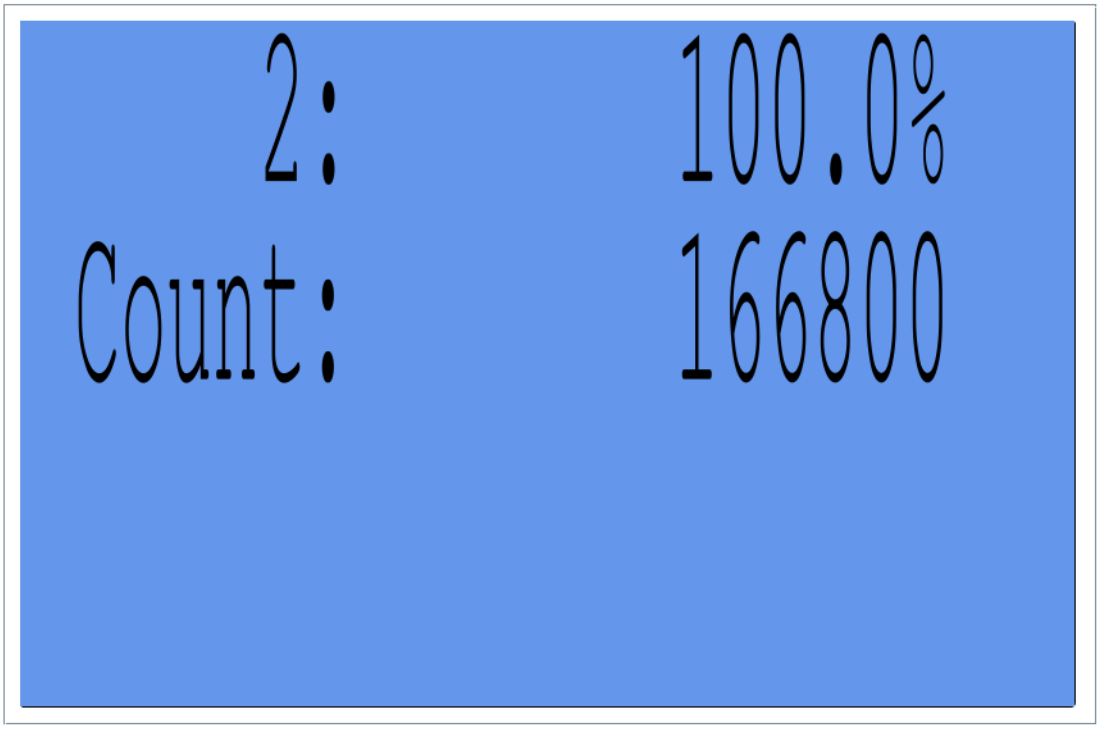
Variable	Segment 1	Segment 2	Segment 3	Segment 4
Clustering Criterion	0.2829	0.28	0.2829	0.2829
Maximum Relative Change in Cluster Seeds	0.0000	0.00	0.0000	0.0000
Improvement in Clustering Criterion	0.0000	0.00	0.0000	0.0000
Frequency of Cluster	3.0000	166792.00	3.0000	2.0000
Root-Mean-Square Standard Deviation	0.3660	0.28	0.1094	0.0680
Maximum Distance from Cluster Seed	2.8322	29.29	0.8528	0.3366
Nearest Cluster	2.0000	3.00	2.0000	2.0000
Distance to Nearest Cluster	37.8489	37.80	37.8005	46.2578
Legislative_District	24.3333	29.18	18.6667	16.0000
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	0.0000	0.32	1.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	0.0000	0.50	0.0000	1.0000
Clean_Alternative_Fuel_Vehicle__=Eligible	-0.0000	0.06	-0.0000	-0.0000
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.6667	0.02	0.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	0.3333	0.09	0.0000	0.0000

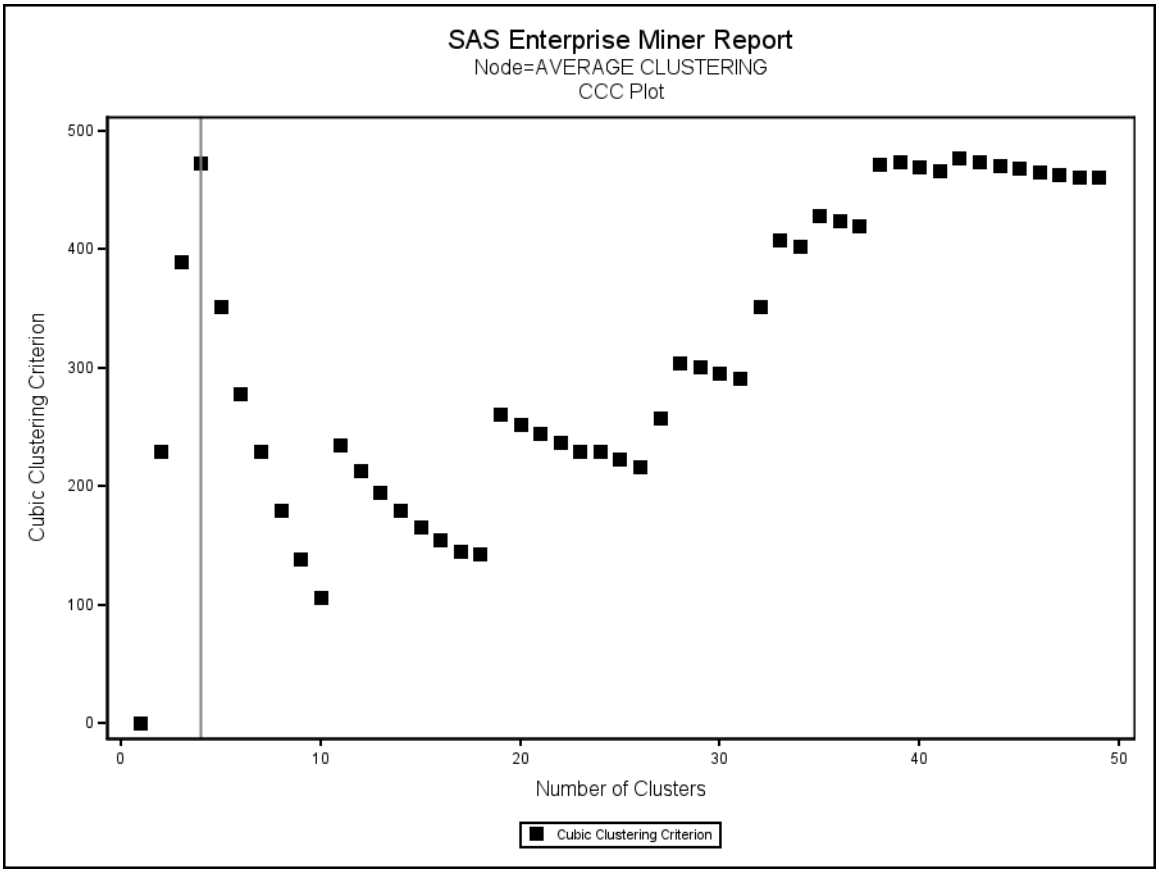
Variable	Segment 1	Segment 2	Segment 3	Segment 4
Electric_Vehicle_Type=BEV	0.0000	0.03	0.0000	0.0000
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	0.0000	0.75	0.0000	1.0000
Electric_Vehicle_Type=PHEV	0.6667	0.05	0.0000	0.0000
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	0.3333	0.17	1.0000	0.0000
Make=ALFA ROMEO	0.0000	0.00	0.0000	0.0000
Make=AUDI	-0.0000	0.02	-0.0000	-0.0000
Make=AZURE DYNAMICS	0.0000	0.00	0.0000	0.0000
Make=BENTLEY	1.0000	0.00	0.0000	0.0000
Make=BMW	-0.0000	0.04	-0.0000	-0.0000
Make=CADILLAC	-0.0000	0.00	-0.0000	-0.0000
Make=CHEVROLET	0.0000	0.08	0.0000	0.0000
Make=CHRYSLER	0.0000	0.02	0.0000	0.0000
Make=DODGE	0.0000	0.00	0.0000	0.0000
Make=FIAT	-0.0000	0.00	-0.0000	-0.0000
Make=FISKER	0.0000	0.00	0.0000	0.0000
Make=FORD	0.0000	0.05	0.0000	0.0000
Make=GENESIS	0.0000	0.00	0.0000	0.0000
Make=GMC	0.0000	0.00	0.0000	1.0000
Make=HONDA	-0.0000	0.00	-0.0000	0.0000
Make=HYUNDAI	0.0000	0.02	0.0000	0.0000
Make=JAGUAR	-0.0000	0.00	-0.0000	-0.0000
Make=JEEP	0.0000	0.02	0.0000	0.0000
Make=KIA	-0.0000	0.04	-0.0000	-0.0000
Make=LAND ROVER	0.0000	0.00	0.0000	0.0000
Make=LEXUS	0.0000	0.00	0.0000	0.0000
Make=LINCOLN	-0.0000	0.00	-0.0000	-0.0000
Make=LUCID	0.0000	0.00	0.0000	0.0000
Make=MAZDA	0.0000	0.00	0.0000	0.0000
Make=MERCEDES-BENZ	0.0000	0.01	0.0000	0.0000
Make=MINI	0.0000	0.01	0.0000	0.0000
Make=MITSUBISHI	0.0000	0.01	0.0000	0.0000
Make=NISSAN	0.0000	0.08	0.0000	0.0000
Make=POLESTAR	0.0000	0.01	0.0000	0.0000
Make=PORSCHE	0.0000	0.01	0.0000	0.0000
Make=RIVIAN	0.0000	0.02	0.0000	0.0000
Make=SMART	0.0000	0.00	0.0000	0.0000
Make=SUBARU	0.0000	0.00	0.0000	0.0000
Make=TESLA	-0.0000	0.45	-0.0000	-0.0000
Make=TH!NK	0.0000	0.00	0.0000	0.0000
Make=TOYOTA	0.0000	0.03	0.0000	0.0000
Make=VOLKSWAGEN	0.0000	0.03	0.0000	0.0000
Make=VOLVO	-0.0000	0.02	-0.0000	-0.0000
Make=WHEEGO ELECTRIC CARS	0.0000	0.00	1.0000	0.0000

SAS Enterprise Miner Report
Node=AVERAGE CLUSTERING
Segment Size



SAS Enterprise Miner Report
Node=AVERAGE CLUSTERING
Tree Diagram




SAS Enterprise Miner Report
Node=AVERAGE CLUSTERING
CCC Plot
Cubic Clustering Criterion
500
400
300
200
100
0
0
10
20
30
40
50
Number of Clusters
Cubic Clustering Criterion

SAS Enterprise Miner Report

Node=WARD CLUSTERING
Summary

Node id = Clus
Node label = WARD CLUSTERING
Meta path = Ids => Filter => Clus
Notes =

Node=WARD CLUSTERING
Properties

Property	Value	Default	Property	Value	Default	Property	Value	Default
Component	Cluster		FinalMaxNum	20		MissingNominal	DEFAULT	
AutomaticMaxNum	50		HideVariable	Y		MissingOrdinal	DEFAULT	
AutomaticMethod	WARD		ImputationMethod	NONE		NominalEncoding	GLM	
AutomaticMinNum	2		Initial	DEFAULT		NumberClusterMethod	AUTOMATIC	
Bins	100		Learn	.		OrdinalEncoding	RANK	
CCCCutOff	3		LearnFinal	0.02		Radius	0	
ClusterGraphs	Y		LearnInitial	0.5		Stdize	STD	
Clusvar	_SEGMENT_		LearnSteps	1000		Summary	N	
ClusvarLabel	Segment Variable		MaxC	10		TrainDefaults	Y	
ClusvarRole	SEGMENT		MaxIter	10		TreeProfile	Y	
DistancePlot	Y		MaxSteps	1200		XConv	0.0001	
Drift	N		MissingInterval	DEFAULT				

Node=WARD CLUSTERING
Variable Summary

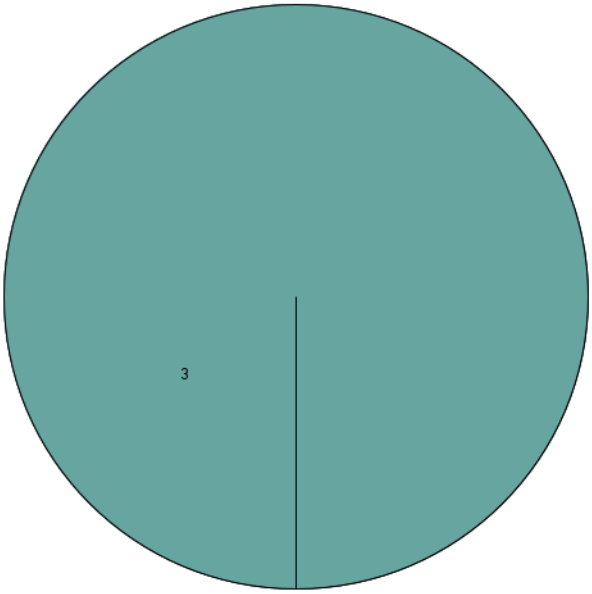
Role	Level	Frequency Count	Name
INPUT	INTERVAL	1	Legislative_District
INPUT	NOMINAL	3	Clean_Alternative_Fuel_Vehicle__ Electric_Vehicle_Type Make

Node=WARD CLUSTERING
Mean Statistics

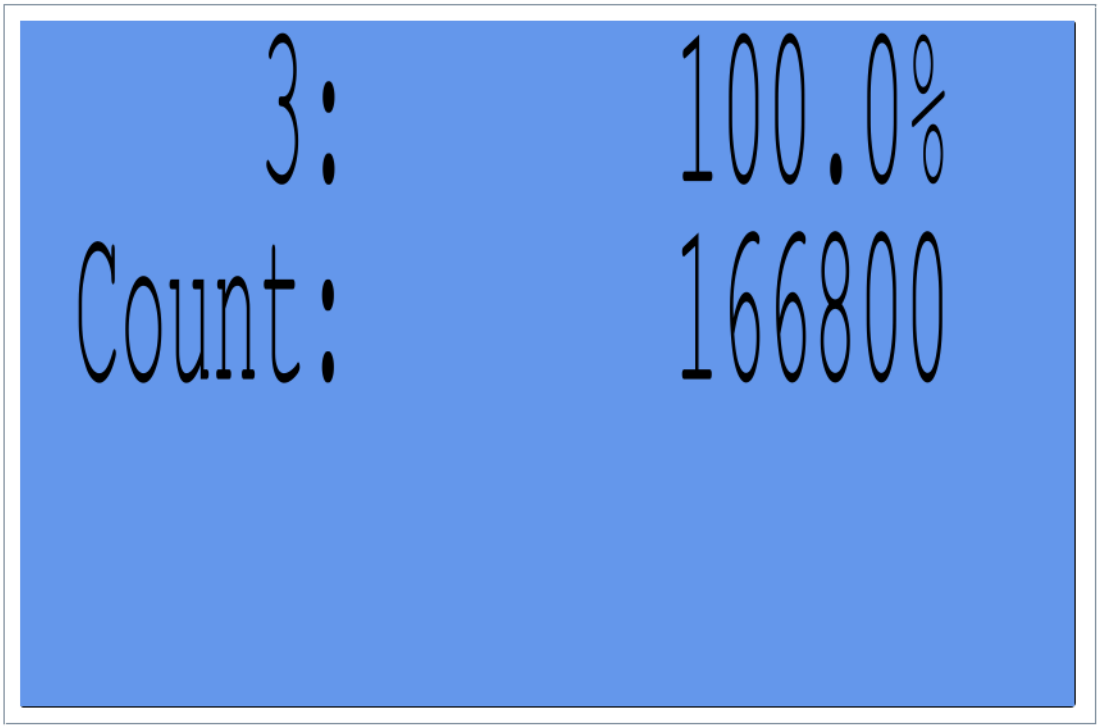
Variable	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5
Clustering Criterion	0.2819	0.2819	0.28	0.2819	0.2819
Maximum Relative Change in Cluster Seeds	0.0000	0.0000	0.00	0.0000	0.0000
Improvement in Clustering Criterion	0.0000	0.0000	0.00	0.0000	0.0000
Frequency of Cluster	3.0000	5.0000	166787.00	2.0000	3.0000
Root-Mean-Square Standard Deviation	0.1094	0.1390	0.28	0.0680	0.3660
Maximum Distance from Cluster Seed	0.8528	1.0503	23.18	0.3366	2.8322
Nearest Cluster	3.0000	3.0000	2.00	3.0000	3.0000
Distance to Nearest Cluster	37.8005	29.2633	29.26	46.2578	37.8489
Legislative_District	18.6667	33.6000	29.18	16.0000	24.3333
Clean_Alternative_Fuel_Vehicle__=Clean Alternative Fuel Vehicle Eligible	1.0000	1.0000	0.32	0.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Eligibility unknown as battery range has not been researched	0.0000	0.0000	0.50	1.0000	0.0000
Clean_Alternative_Fuel_Vehicle__=Eligible	-0.0000	-0.0000	0.06	-0.0000	-0.0000
Clean_Alternative_Fuel_Vehicle__=Not Eligible	0.0000	0.0000	0.02	0.0000	0.6667
Clean_Alternative_Fuel_Vehicle__=Not eligible due to low battery range	0.0000	0.0000	0.09	0.0000	0.3333

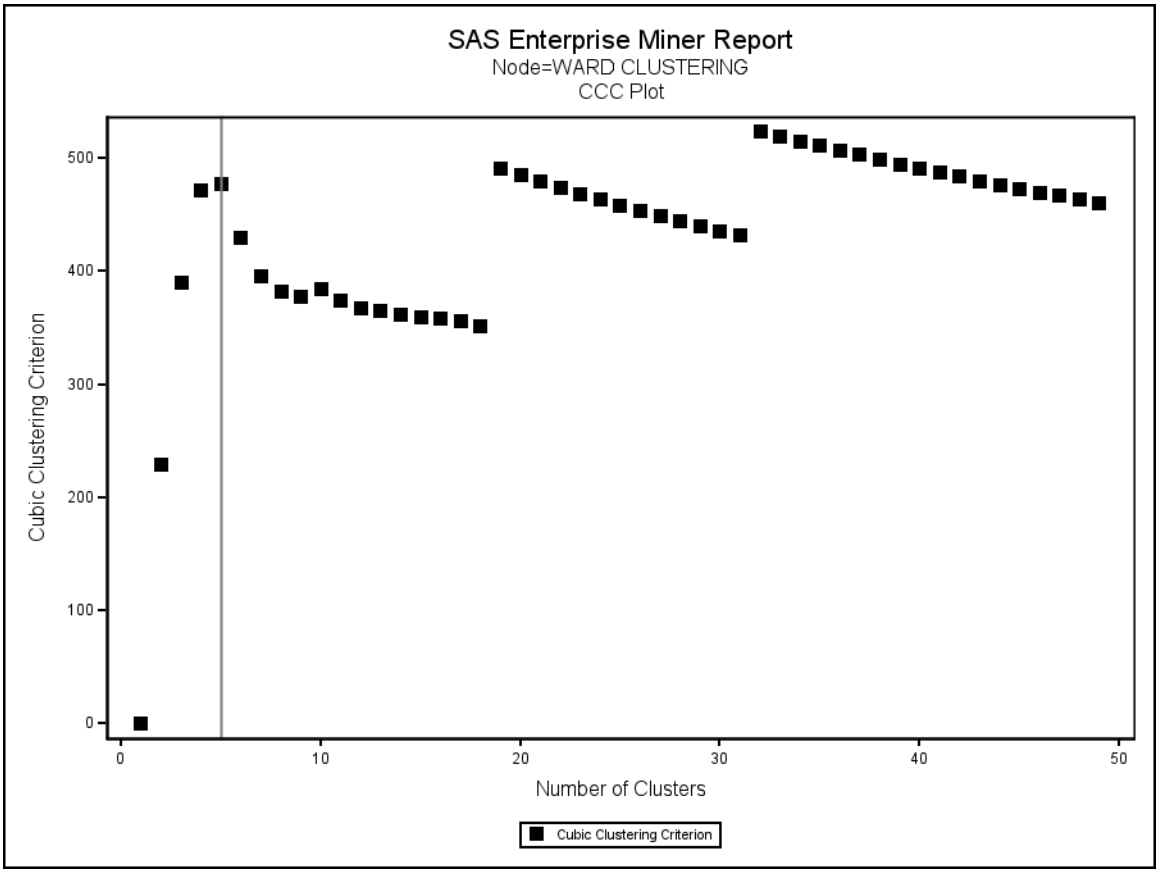
Variable	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5
Electric_Vehicle_Type=BEV	0.0000	0.0000	0.03	0.0000	0.0000
Electric_Vehicle_Type=Battery Electric Vehicle (BEV)	0.0000	1.0000	0.75	1.0000	0.0000
Electric_Vehicle_Type=PHEV	0.0000	0.0000	0.05	0.0000	0.6667
Electric_Vehicle_Type=Plug-in Hybrid Electric Vehicle (PHEV)	1.0000	0.0000	0.17	0.0000	0.3333
Make=ALFA ROMEO	0.0000	0.0000	0.00	0.0000	0.0000
Make=AUDI	-0.0000	-0.0000	0.02	-0.0000	-0.0000
Make=AZURE DYNAMICS	0.0000	0.0000	0.00	0.0000	0.0000
Make=BENTLEY	0.0000	0.0000	0.00	0.0000	1.0000
Make=BMW	-0.0000	-0.0000	0.04	-0.0000	-0.0000
Make=CADILLAC	-0.0000	-0.0000	0.00	-0.0000	-0.0000
Make=CHEVROLET	0.0000	0.0000	0.08	0.0000	0.0000
Make=CHRYSLER	0.0000	0.0000	0.02	0.0000	0.0000
Make=DODGE	0.0000	0.0000	0.00	0.0000	0.0000
Make=FIAT	-0.0000	-0.0000	0.00	-0.0000	-0.0000
Make=FISKER	0.0000	0.0000	0.00	0.0000	0.0000
Make=FORD	0.0000	0.0000	0.05	0.0000	0.0000
Make=GENESIS	0.0000	0.0000	0.00	0.0000	0.0000
Make=GMC	0.0000	0.0000	0.00	1.0000	0.0000
Make=HONDA	-0.0000	0.0000	0.00	0.0000	-0.0000
Make=HYUNDAI	0.0000	0.0000	0.02	0.0000	0.0000
Make=JAGUAR	-0.0000	-0.0000	0.00	-0.0000	-0.0000
Make=JEEP	0.0000	0.0000	0.02	0.0000	0.0000
Make=KIA	-0.0000	-0.0000	0.04	-0.0000	-0.0000
Make=LAND ROVER	0.0000	0.0000	0.00	0.0000	0.0000
Make=LEXUS	0.0000	0.0000	0.00	0.0000	0.0000
Make=LINCOLN	-0.0000	-0.0000	0.00	-0.0000	-0.0000
Make=LUCID	0.0000	0.0000	0.00	0.0000	0.0000
Make=MAZDA	0.0000	0.0000	0.00	0.0000	0.0000
Make=MERCEDES-BENZ	0.0000	0.0000	0.01	0.0000	0.0000
Make=MINI	0.0000	0.0000	0.01	0.0000	0.0000
Make=MITSUBISHI	0.0000	0.0000	0.01	0.0000	0.0000
Make=NISSAN	0.0000	0.0000	0.08	0.0000	0.0000
Make=POLESTAR	0.0000	0.0000	0.01	0.0000	0.0000
Make=PORSCHE	0.0000	0.0000	0.01	0.0000	0.0000
Make=RIVIAN	0.0000	0.0000	0.02	0.0000	0.0000
Make=SMART	0.0000	0.0000	0.00	0.0000	0.0000
Make=SUBARU	0.0000	0.0000	0.00	0.0000	0.0000
Make=TESLA	-0.0000	-0.0000	0.45	-0.0000	-0.0000
Make=TH!NK	0.0000	1.0000	0.00	0.0000	0.0000
Make=TOYOTA	0.0000	0.0000	0.03	0.0000	0.0000
Make=VOLKSWAGEN	0.0000	0.0000	0.03	0.0000	0.0000
Make=VOLVO	-0.0000	-0.0000	0.02	-0.0000	-0.0000
Make=WHEEGO ELECTRIC CARS	1.0000	0.0000	0.00	0.0000	0.0000

SAS Enterprise Miner Report
Node=WARD CLUSTERING
Segment Size



SAS Enterprise Miner Report
Node=WARD CLUSTERING
Tree Diagram





End of Report