Decision Tree analysis of the cars dataset predicting the Make of the car

The HPSPLIT Procedure

Performance Information	
Execution Mode	Single-Machine
Number of Threads	4

Data Access Information			
Data	**Engine**	**Role**	**Path**
WORK.CARS	V9	Input	On Client

Model Information	
Split Criterion Used	Entropy
Pruning Method	Cost-Complexity
Subtree Evaluation Criterion	Cost-Complexity
Number of Branches	2
Maximum Tree Depth Requested	10
Maximum Tree Depth Achieved	10
Tree Depth	8
Number of Leaves Before Pruning	160
Number of Leaves After Pruning	41

Number of Observations Read	428
Number of Observations Used	428

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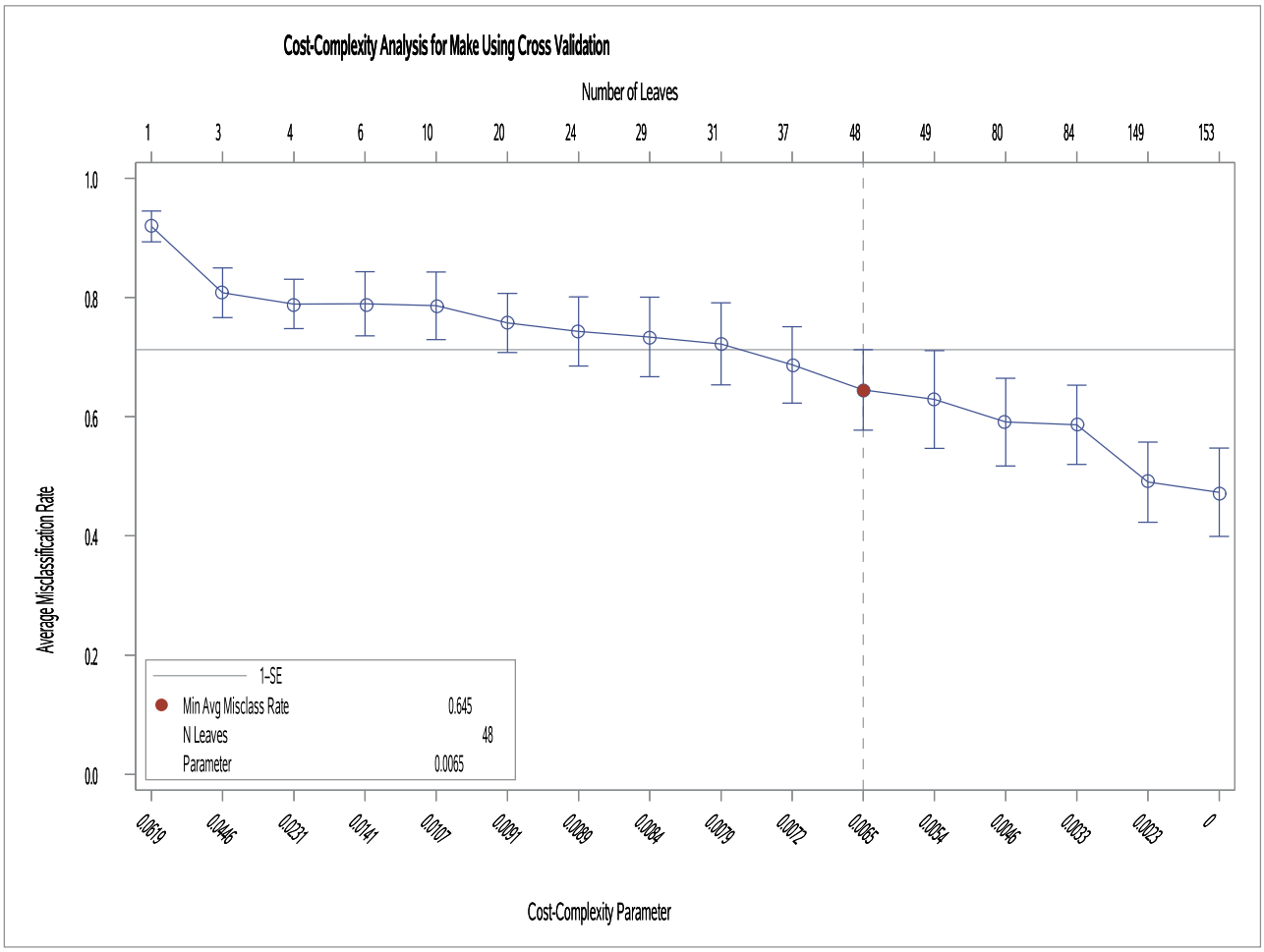
The HPSPLIT Procedure



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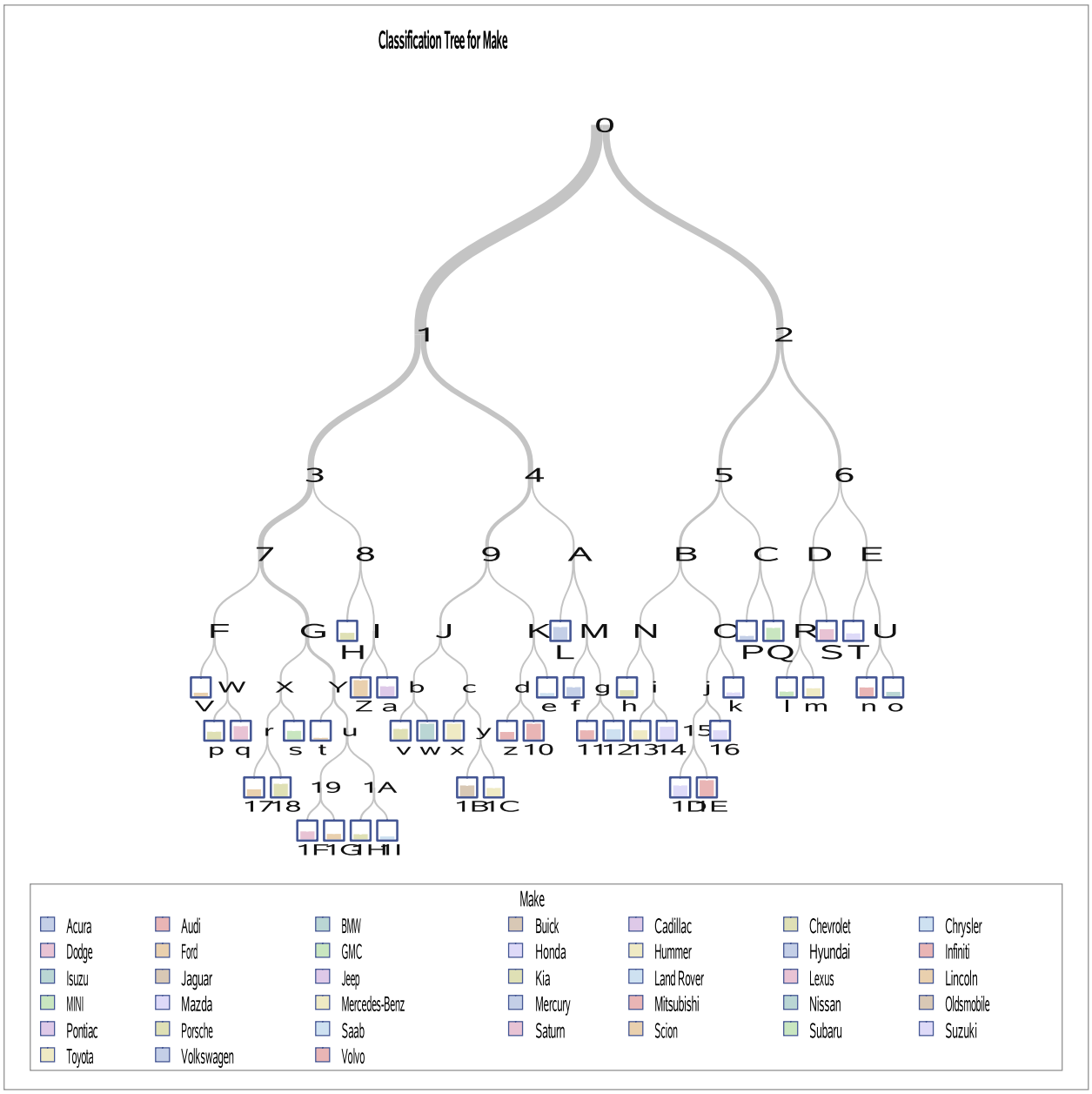
The HPSPLIT Procedure



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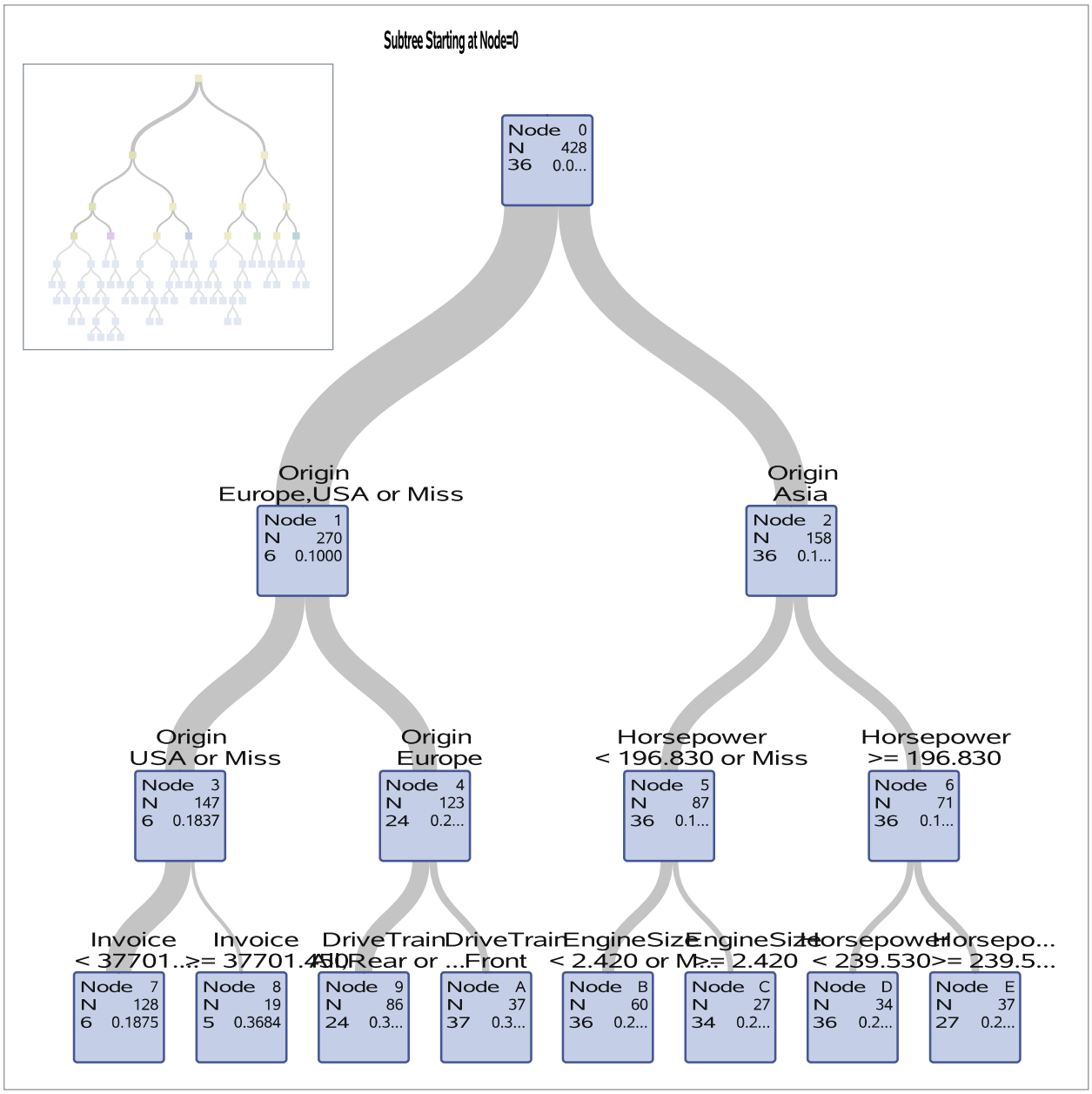

Decision Tree analysis of the cars dataset predicting the Make of the car

The HPSPLIT Procedure

Model-Based Confusion Matrix														
	Predicted													
Actual	Acura	Audi	BMW	Buick	Cadillac	Chevrolet	Chrysler	Dodge	Ford	GMC	Honda	Hummer	Hyundai	Infiniti
Acura	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Audi	0	17	0	0	0	0	0	0	0	0	0	0	0	0
BMW	0	3	10	0	0	0	0	0	0	0	0	0	0	0
Buick	0	0	0	0	0	6	3	0	0	0	0	0	0	0
Cadillac	0	0	0	0	6	1	0	0	1	0	0	0	0	0
Chevrolet	0	0	0	0	0	19	1	0	6	0	0	0	0	0
Chrysler	0	0	0	0	0	0	5	3	7	0	0	0	0	0
Dodge	0	0	0	0	0	3	3	4	3	0	0	0	0	0
Ford	0	0	0	0	0	2	1	0	20	0	0	0	0	0
GMC	0	0	0	0	1	0	0	0	4	3	0	0	0	0
Honda	0	0	0	0	0	0	0	0	0	0	15	0	0	0
Hummer	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hyundai	0	0	0	0	0	0	0	0	0	0	0	0	6	0
Infiniti	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Isuzu	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Jaguar	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Jeep	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Kia	0	0	0	0	0	0	0	0	0	0	1	0	4	0
Land Rover	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lexus	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lincoln	0	0	0	0	2	0	0	0	3	0	0	0	0	0
MINI	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mazda	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mercedes-Benz	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Mercury	0	0	0	0	0	0	2	0	7	0	0	0	0	0
Mitsubishi	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Nissan	0	0	0	0	0	0	0	0	0	0	5	0	2	2
Oldsmobile	0	0	0	0	0	0	1	0	2	0	0	0	0	0
Pontiac	0	0	0	0	0	5	1	0	3	2	0	0	0	0
Porsche	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Saab	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturn	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Scion	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Decision Tree analysis of the cars dataset predicting the Make of the car

The HPSPLIT Procedure

Model-Based Confusion Matrix													
	Predicted												
Actual	Isuzu	Jaguar	Jeep	Kia	Land Rover	Lexus	Lincoln	MINI	Mazda	Mercedes-Benz	Mercury	Mitsubishi	Nissan
Acura	0	0	0	0	0	2	0	0	0	0	0	0	2
Audi	0	0	0	0	0	0	0	0	0	0	0	0	0
BMW	0	2	0	0	2	0	0	0	0	3	0	0	0
Buick	0	0	0	0	0	0	0	0	0	0	0	0	0
Cadillac	0	0	0	0	0	0	0	0	0	0	0	0	0
Chevrolet	0	0	0	0	0	0	0	0	0	0	0	0	0
Chrysler	0	0	0	0	0	0	0	0	0	0	0	0	0
Dodge	0	0	0	0	0	0	0	0	0	0	0	0	0
Ford	0	0	0	0	0	0	0	0	0	0	0	0	0
GMC	0	0	0	0	0	0	0	0	0	0	0	0	0
Honda	0	0	0	0	0	0	0	0	0	0	0	0	0
Hummer	0	0	0	0	0	0	0	0	0	0	0	0	0
Hyundai	0	0	0	3	0	0	0	0	3	0	0	0	0
Infiniti	0	0	0	0	0	0	0	0	0	0	0	0	0
Isuzu	0	0	0	0	0	0	0	0	0	0	0	0	1
Jaguar	0	10	0	0	0	0	0	0	0	0	0	0	0
Jeep	0	0	0	0	0	0	0	0	0	0	0	0	0
Kia	0	0	0	6	0	0	0	0	0	0	0	0	0
Land Rover	0	0	0	0	3	0	0	0	0	0	0	0	0
Lexus	0	0	0	0	0	7	0	0	0	0	0	0	1
Lincoln	0	0	0	0	0	0	4	0	0	0	0	0	0
MINI	0	0	0	0	0	0	0	0	0	0	0	0	0
Mazda	0	0	0	2	0	0	0	0	5	0	0	0	0
Mercedes-Benz	0	2	0	0	2	0	0	0	0	16	0	0	0
Mercury	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitsubishi	0	0	0	0	0	1	0	0	0	0	0	3	1
Nissan	0	0	0	0	0	0	0	0	0	0	0	0	4
Oldsmobile	0	0	0	0	0	0	0	0	0	0	0	0	0
Pontiac	0	0	0	0	0	0	0	0	0	0	0	0	0
Porsche	0	0	0	0	1	0	0	0	0	0	0	0	0
Saab	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturn	0	0	0	0	0	0	0	0	0	0	0	0	0
Scion	0	0	0	0	0	0	0	0	0	0	0	0	0

Decision Tree analysis of the cars dataset predicting the Make of the car

The HPSPLIT Procedure

Model-Based Confusion Matrix												
	Predicted											
Actual	Oldsmobile	Pontiac	Porsche	Saab	Saturn	Scion	Subaru	Suzuki	Toyota	Volkswagen	Volvo	Error Rate
Acura	0	0	0	0	0	0	2	0	0	0	0	1.0000
Audi	0	0	0	1	0	0	0	0	0	1	0	0.1053
BMW	0	0	0	0	0	0	0	0	0	0	0	0.5000
Buick	0	0	0	0	0	0	0	0	0	0	0	1.0000
Cadillac	0	0	0	0	0	0	0	0	0	0	0	0.2500
Chevrolet	0	0	0	0	1	0	0	0	0	0	0	0.2963
Chrysler	0	0	0	0	0	0	0	0	0	0	0	0.6667
Dodge	0	0	0	0	0	0	0	0	0	0	0	0.6923
Ford	0	0	0	0	0	0	0	0	0	0	0	0.1304
GMC	0	0	0	0	0	0	0	0	0	0	0	0.6250
Honda	0	0	0	0	0	0	0	2	0	0	0	0.1176
Hummer	0	0	0	0	0	0	0	0	0	0	0	1.0000
Hyundai	0	0	0	0	0	0	0	0	0	0	0	0.5000
Infiniti	0	0	0	0	0	0	0	0	0	0	0	0.0000
Isuzu	0	0	0	0	0	0	0	0	0	0	0	1.0000
Jaguar	0	0	0	0	0	0	0	0	0	0	0	0.1667
Jeep	0	0	0	0	0	0	0	0	0	0	0	1.0000
Kia	0	0	0	0	0	0	0	0	0	0	0	0.4545
Land Rover	0	0	0	0	0	0	0	0	0	0	0	0.0000
Lexus	0	0	0	0	0	0	1	0	0	0	0	0.3636
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0.5556
MINI	0	0	0	0	0	0	0	0	0	2	0	1.0000
Mazda	0	0	0	0	0	0	0	0	4	0	0	0.5455
Mercedes-Benz	0	0	2	0	0	0	0	0	0	0	0	0.3846
Mercury	0	0	0	0	0	0	0	0	0	0	0	1.0000
Mitsubishi	0	0	0	0	0	0	2	0	3	0	0	0.7692
Nissan	0	0	0	0	0	0	2	0	2	0	0	0.7647
Oldsmobile	0	0	0	0	0	0	0	0	0	0	0	1.0000
Pontiac	0	0	0	0	0	0	0	0	0	0	0	1.0000
Porsche	0	0	5	0	0	0	0	0	0	0	0	0.2857
Saab	0	0	0	7	0	0	0	0	0	0	0	0.0000
Saturn	0	0	0	0	6	0	0	0	0	0	0	0.2500
Scion	0	0	0	0	0	0	0	0	2	0	0	1.0000

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Model-Based Confusion Matrix														
	Predicted													
Actual	Acura	Audi	BMW	Buick	Cadillac	Chevrolet	Chrysler	Dodge	Ford	GMC	Honda	Hummer	Hyundai	Infiniti
Subaru	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Suzuki	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Toyota	0	0	0	0	0	0	0	0	0	0	7	0	2	0
Volkswagen	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Volvo	0	3	0	0	0	0	0	0	0	0	0	0	0	0

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Model-Based Confusion Matrix													
	Predicted												
Actual	Isuzu	Jaguar	Jeep	Kia	Land Rover	Lexus	Lincoln	MINI	Mazda	Mercedes-Benz	Mercury	Mitsubishi	Nissan
Subaru	0	0	0	0	0	0	0	0	0	0	0	0	1
Suzuki	0	0	0	0	0	0	0	0	0	0	0	0	0
Toyota	0	0	0	2	0	0	0	0	0	0	0	0	1
Volkswagen	0	0	0	0	1	0	0	0	0	0	0	0	0
Volvo	0	0	0	0	1	0	0	0	0	0	0	0	0

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Model-Based Confusion Matrix

Actual	Predicted											Error Rate
	Oldsmobile	Pontiac	Porsche	Saab	Saturn	Scion	Subaru	Suzuki	Toyota	Volkswagen	Volvo	
Subaru	0	0	0	0	0	0	10	0	0	0	0	0.0909
Suzuki	0	0	0	0	0	0	0	5	0	0	0	0.3750
Toyota	0	0	0	0	0	0	0	0	16	0	0	0.4286
Volkswagen	0	0	0	0	0	0	0	0	0	14	0	0.0667
Volvo	0	0	0	2	0	0	0	0	0	2	4	0.6667

Model-Based Fit Statistics for Selected Tree

N Leaves	ASE	Mis-class	Entropy	Gini	RSS
41	0.0146	0.4439	1.5128	0.5559	237.9

Variable Importance

Variable	Variable Label	Training		Count
		Relative	Importance	
Origin		1.0000	5.5898	2
Length	Length (IN)	0.9034	5.0499	6
Wheelbase	Wheelbase (IN)	0.8536	4.7714	6
DriveTrain		0.7866	4.3970	4
EngineSize	Engine Size (L)	0.7430	4.1531	6
MPG_Highway	MPG (Highway)	0.6524	3.6469	4
Horsepower		0.6172	3.4502	3
Invoice		0.6161	3.4438	3
Cylinders		0.5522	3.0866	2
Type		0.4089	2.2855	2
MSRP		0.3811	2.1301	1
MPG_City	MPG (City)	0.2616	1.4623	1