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A wide-angle, low-perspective shot of a vast warehouse interior. The space is filled with tall, industrial metal shelving units that stretch far into the background. These racks are densely packed with numerous cardboard boxes, some stacked high and others more organized. The floor is highly polished, creating a clear reflection of the overhead lights and the structure of the warehouse. The ceiling is high, with a complex network of steel beams and long, bright industrial light fixtures that illuminate the space. The overall atmosphere is one of a large-scale, organized storage facility.

[illegible][illegible]

Figure 1 consists of three panels. The top panel is a bar chart titled 'Lagged Dependent Variable' with '2015' and '2016' on the x-axis and 'Lagged Dependent Variable' on the y-axis. The middle panel is a bar chart titled 'Lagged Dependent Variable' with '2015' and '2016' on the x-axis and 'Lagged Dependent Variable' on the y-axis. The bottom panel is a bar chart titled 'Lagged Dependent Variable' with '2015' and '2016' on the x-axis and 'Lagged Dependent Variable' on the y-axis.

Execution Time (s)

Problem Size	Proposed	GA	PSO	ACO	Tabu Search	Simulated Annealing
100	~0.1	~0.2	~0.3	~0.4	~0.5	~0.6
200	~0.2	~0.4	~0.6	~0.8	~1.0	~1.2
300	~0.3	~0.6	~1.0	~1.5	~2.0	~2.5
400	~0.4	~0.8	~1.5	~2.5	~3.5	~4.5
500	~0.5	~1.0	~2.0	~3.5	~5.0	~6.5

Number of Iterations

Problem Size	Proposed	GA	PSO	ACO	Tabu Search	Simulated Annealing
100	~10	~20	~30	~40	~50	~60
200	~15	~30	~45	~60	~80	~100
300	~20	~40	~60	~80	~110	~140
400	~25	~50	~75	~100	~130	~160
500	~30	~60	~90	~120	~150	~180

Model Comparison: Validation Accuracy (F1) and Loss

Validation Accuracy (F1)

Model	Validation Accuracy (F1)
Baseline	~0.78
Proposed	~0.82

Validation Accuracy (F1)

Epoch	Baseline (F1)	Proposed (F1)
1	~0.78	~0.82
2	~0.75	~0.81
3	~0.74	~0.80
4	~0.75	~0.80
5	~0.76	~0.80
6	~0.76	~0.80
7	~0.76	~0.80
8	~0.76	~0.80
9	~0.76	~0.80
10	~0.75	~0.80

Legend: Baseline (Blue line), Proposed (Pink line)



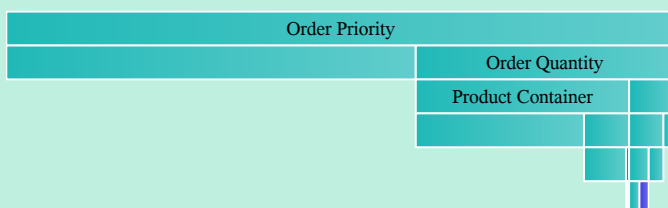
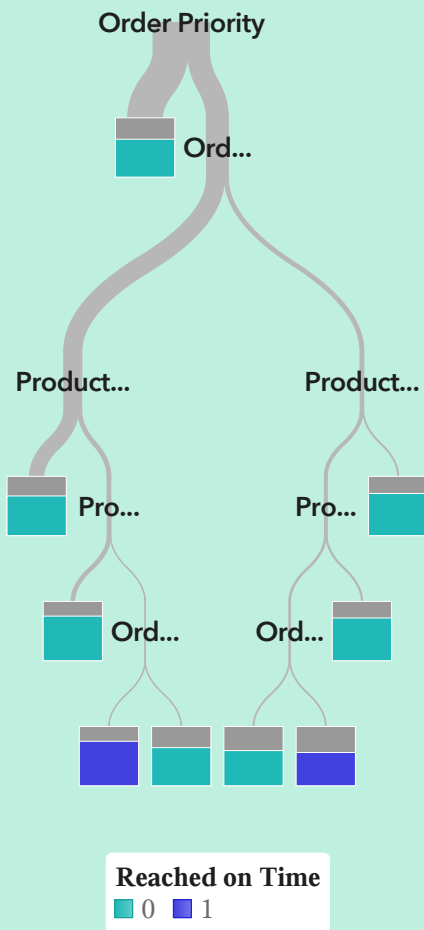
EverZone Warehouse

Everything About Quality

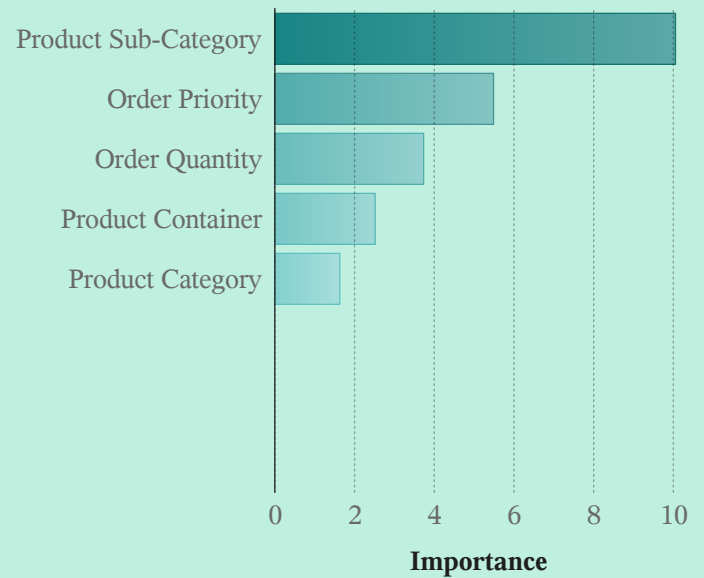
Decision Tree Model

Decision Tree Reached on Time (event=1) Validation Misclassification Rate (Event) **0.3563**
 Observations Used 8,399

Tree



Variable Importance



Confusion Matrix

		Observed			
Predicted	Partition	Training		Validation	
		0	1	0	1
0		3,797	39	1,596	24
1		1,988	55	874	26



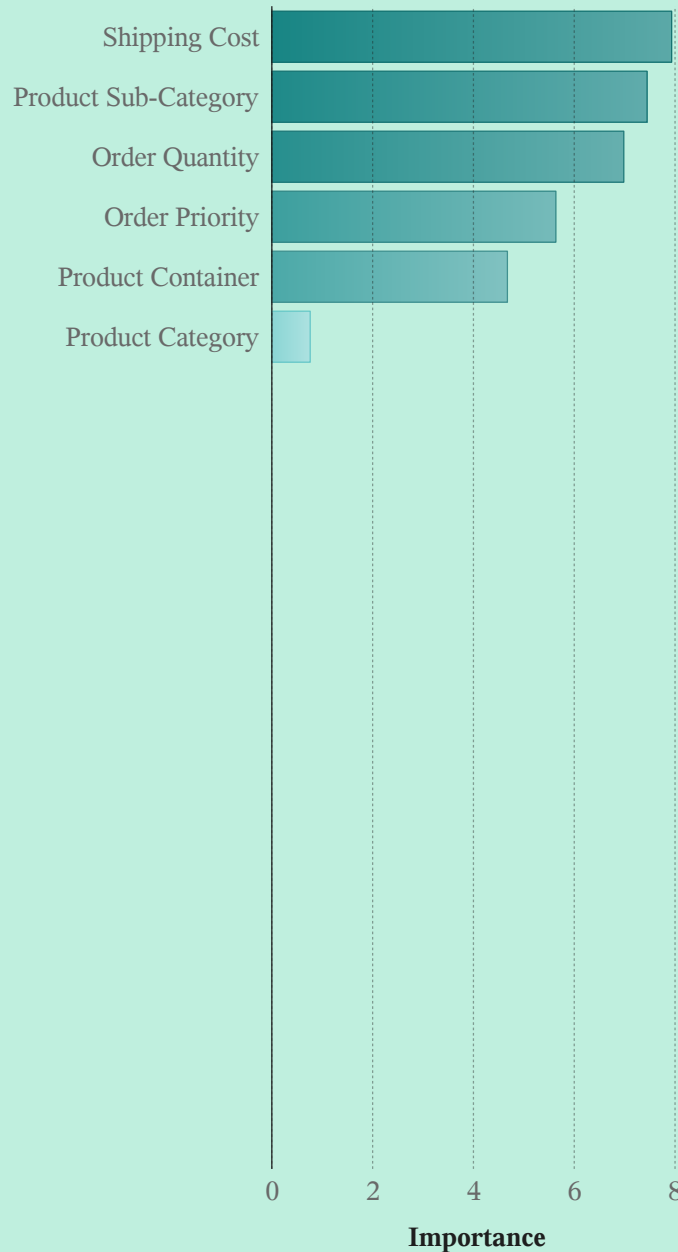
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Random Forest Model

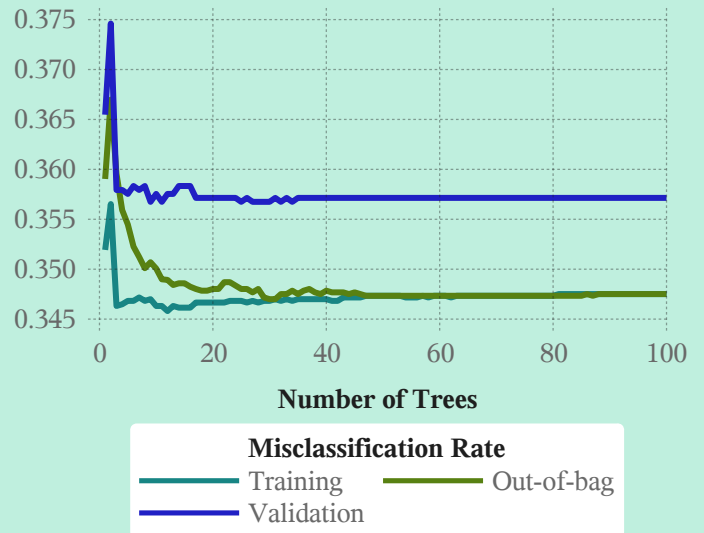
Forest Reached on Time (event=1) Validation Misclassification Rate **0.3571** Observations Used **8,399**

Variable Importance

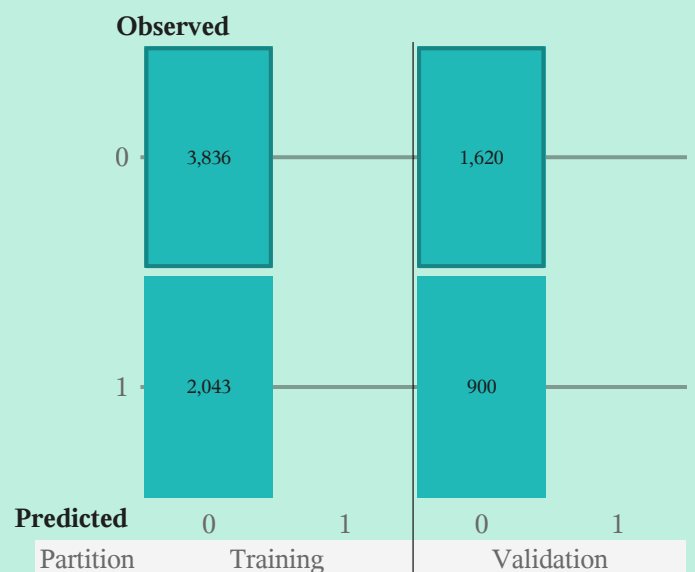


Error Plot

Misclassification Rate



Confusion Matrix





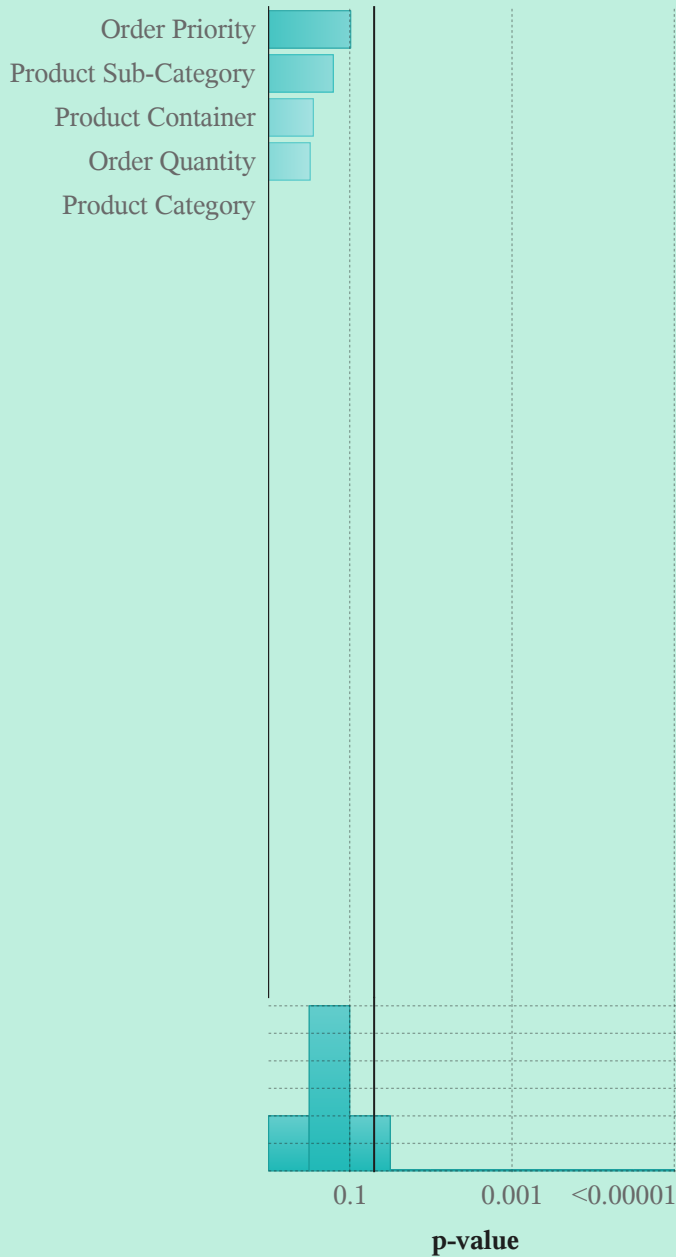
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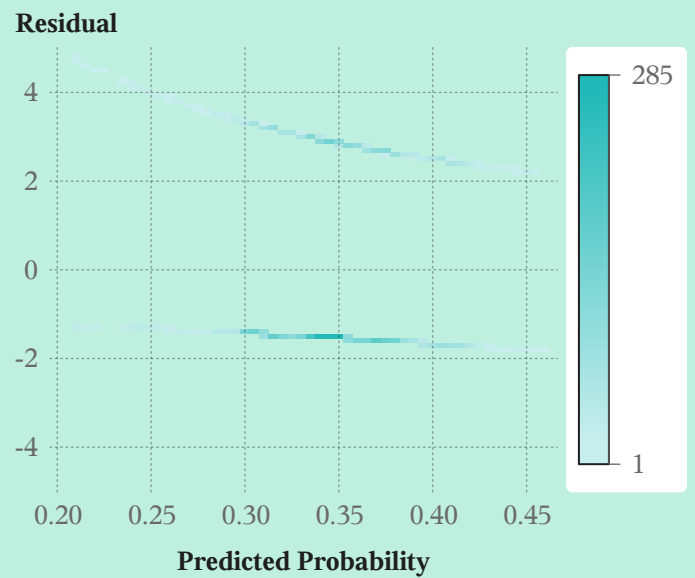
Logistic Regression Model

Logistic Regression **Reached on Time** (event=1) Validation Misclassification Rate (Event) **0.3571**
 Observations Used **8,399**

Fit Summary



Residual Plot



Confusion Matrix





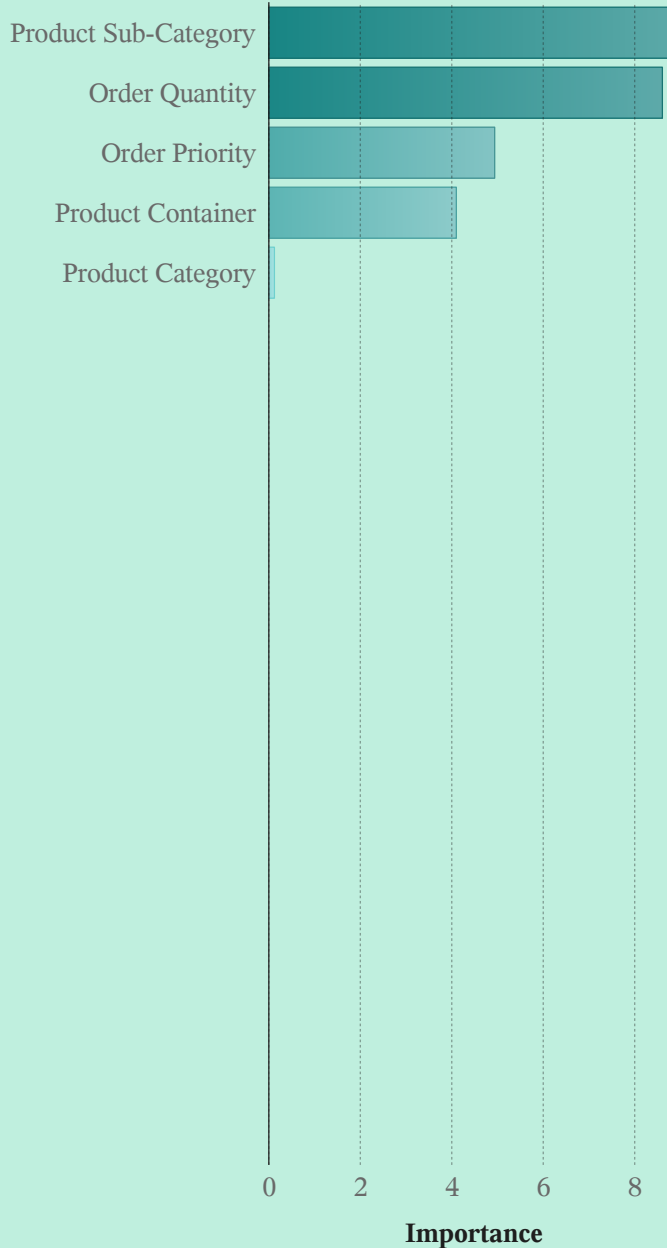
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Gradient Boosting Model

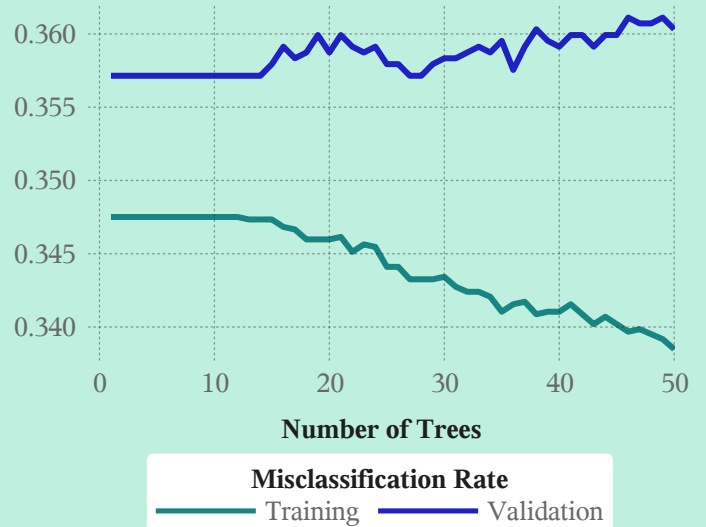
Gradient Boosting Reached on Time (event=1) Validation Misclassification Rate (Event) **0.3603**
 Observations Used **8,399**

Variable Importance



Iteration Plot

Misclassification Rate



Confusion Matrix

		Observed	
Predicted	Partition	0	1
		0	1
0	Training	3,802	34
	Validation	1,589	31
1	Training	1,956	87
	Validation	877	23



EverZone Warehouse

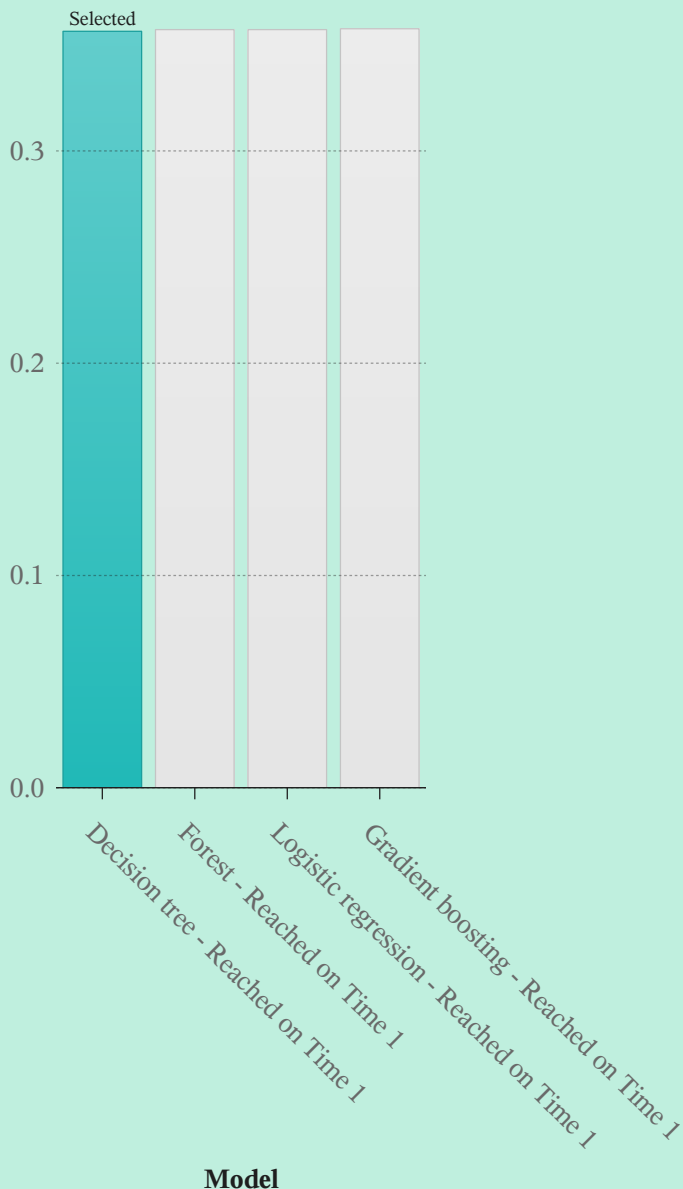
Everything About Quality

Model Comparison between Decision Tree, Random Forest, Logistic Regression, and Gradient Boosting

Model Comparison Reached on Time (event=1)

Fit Statistic

Validation: Misclassification Rate (Event)



Lift

Validation: Cumulative Lift

