MAVERIK

SALES FORECASTING

By
BonFire Analytics

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Business Problem

Daily Sales Forecast for New Store

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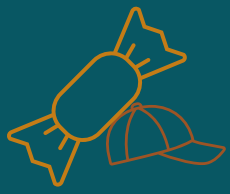
Objective

Unleaded

Inside Sales 

Diesel

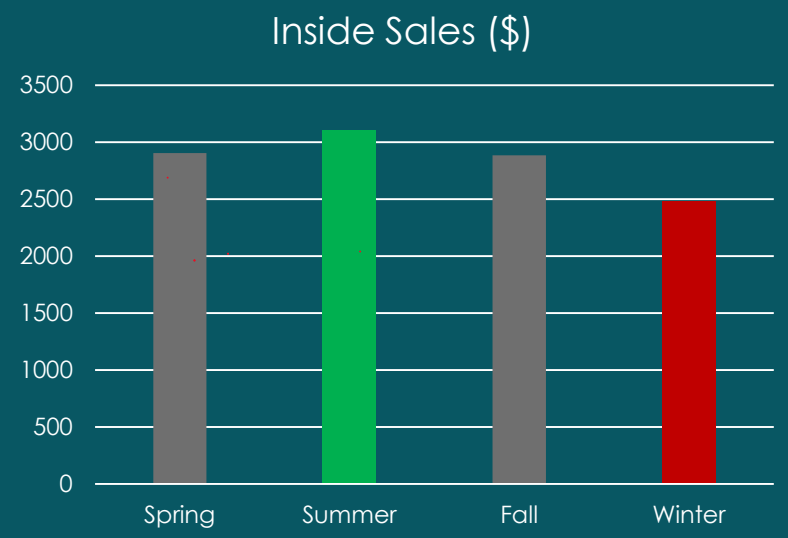
Food Services

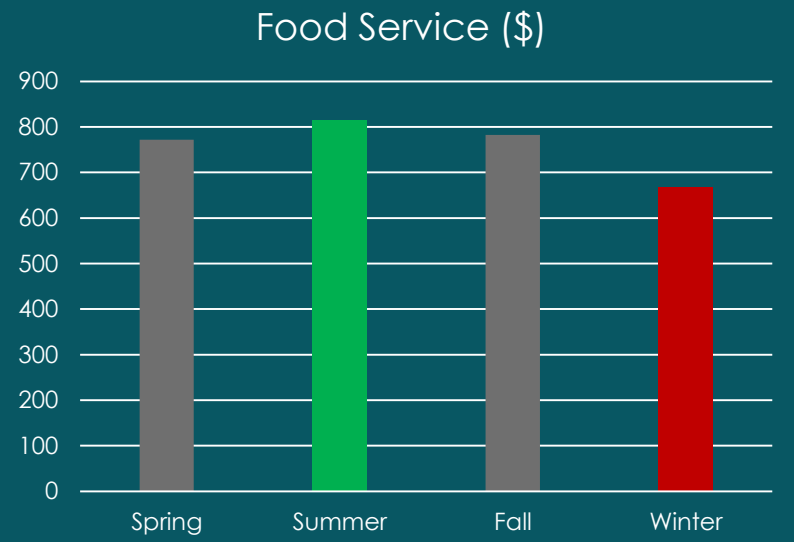
Proposed Solution

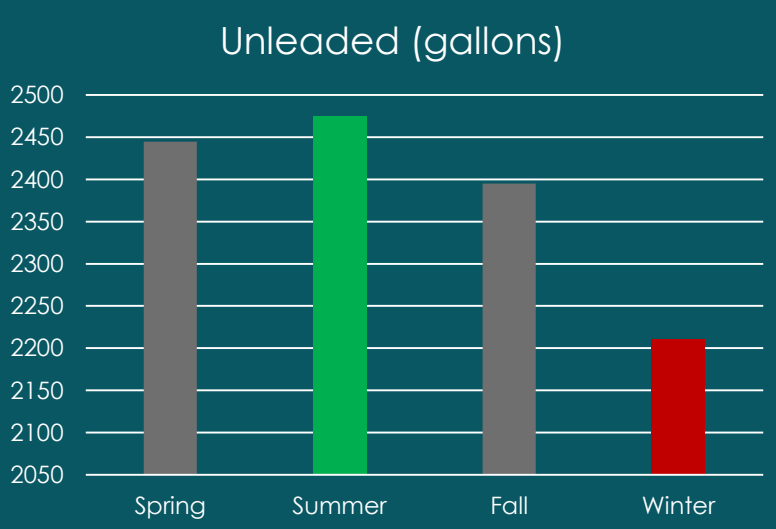
- XGB Regression Model
- Seasonality
- Store Features
- Customer Profile

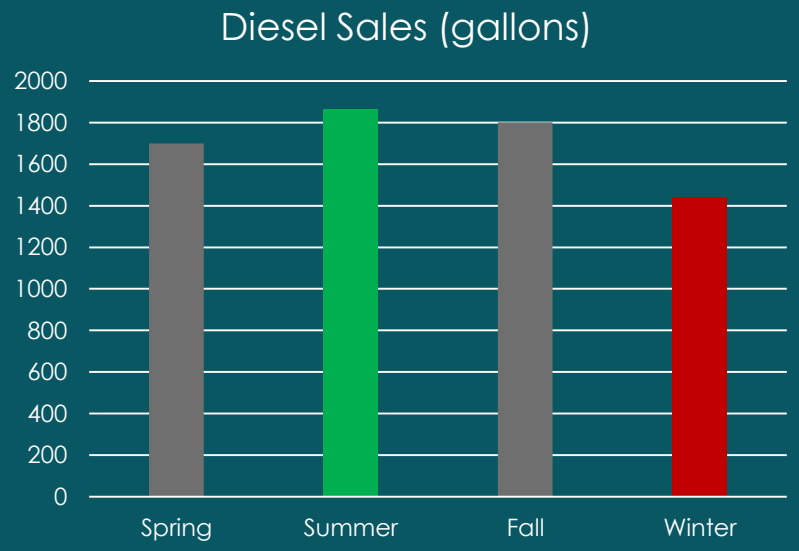
Analysis

Does season play a role?

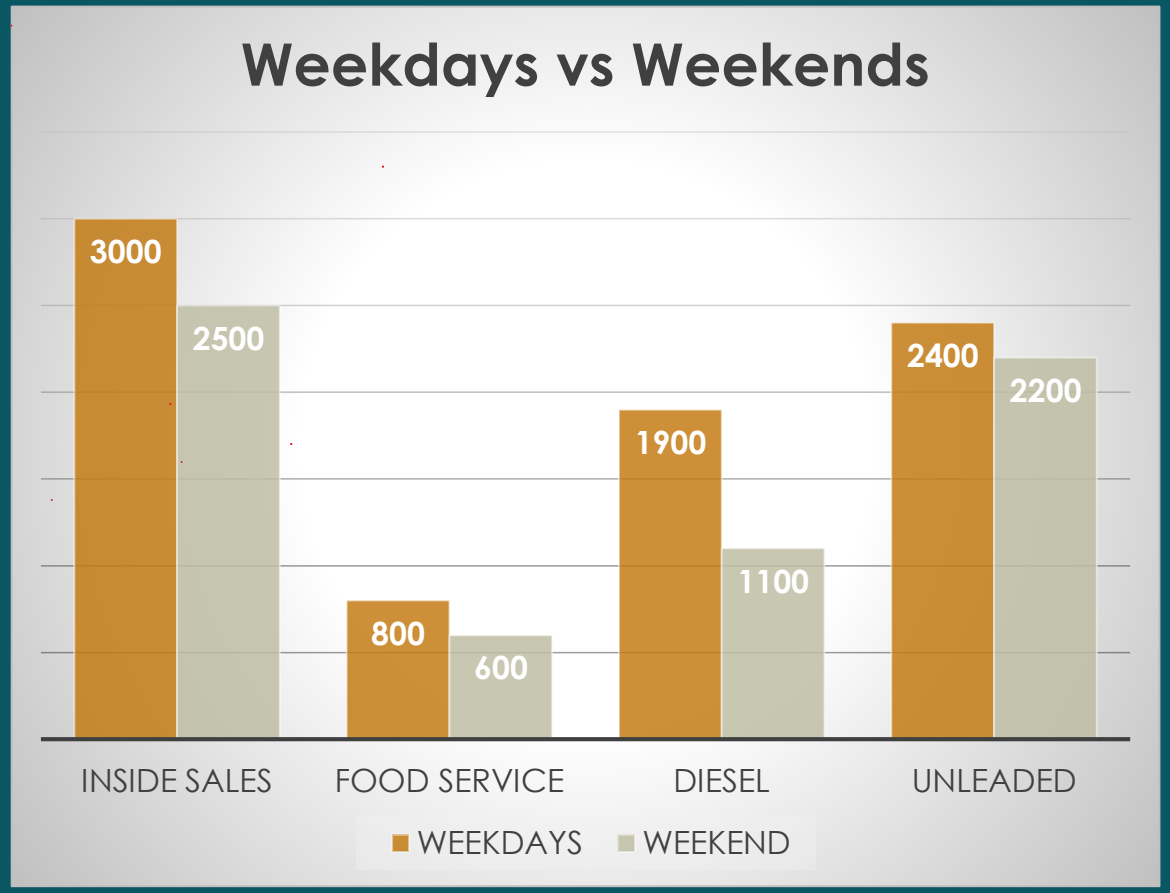


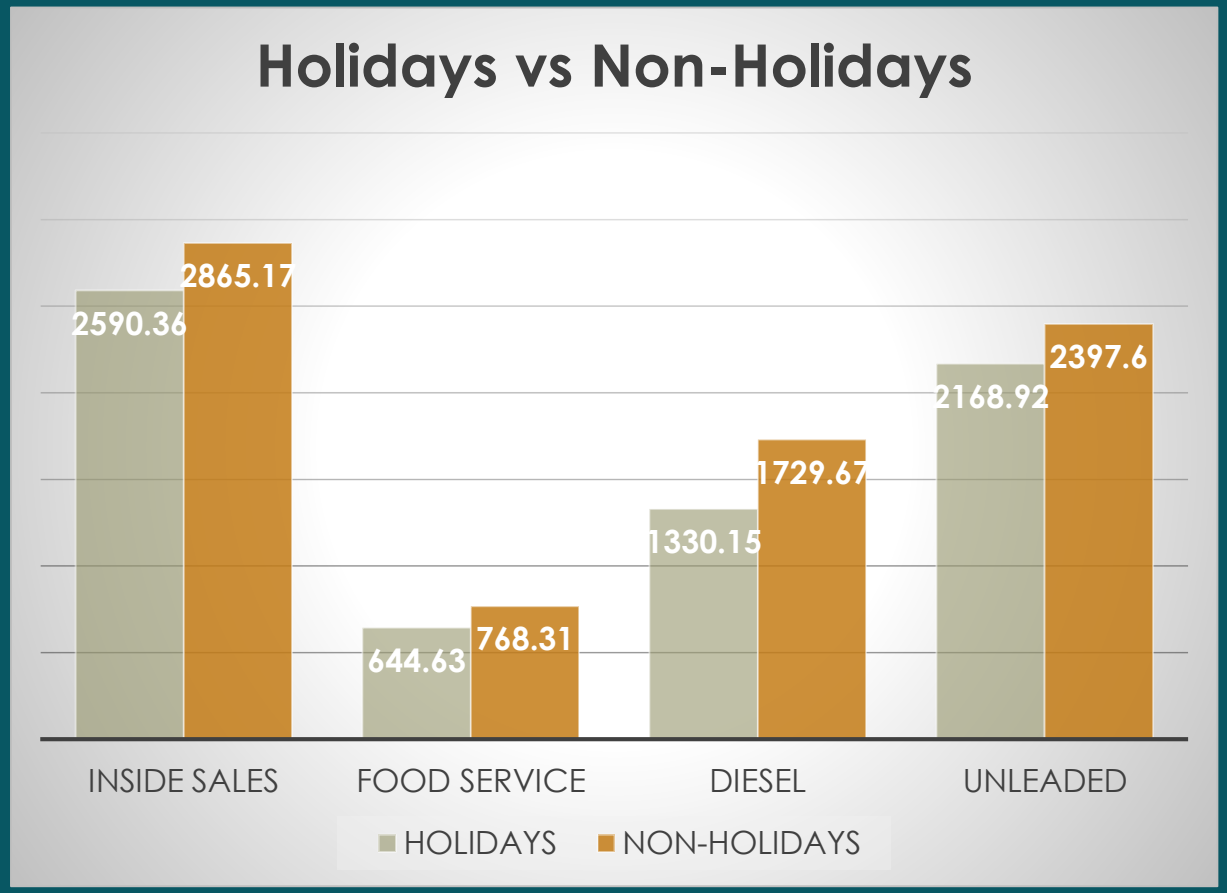






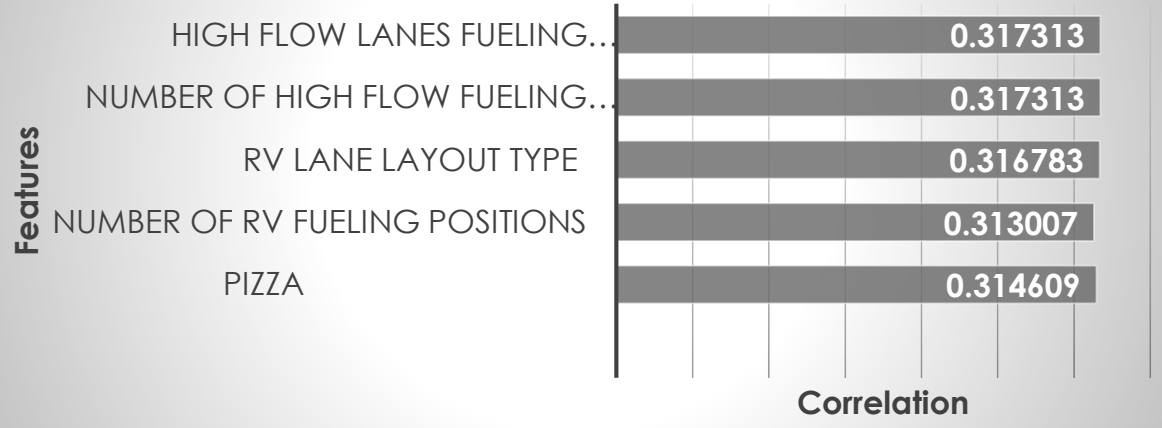
Analysis


Weekdays vs Weekends
3000
2500
800
600
1900
1100
2400
2200
INSIDE SALES
FOOD SERVICE
DIESEL
UNLEADED
WEEKDAYS
WEEKEND

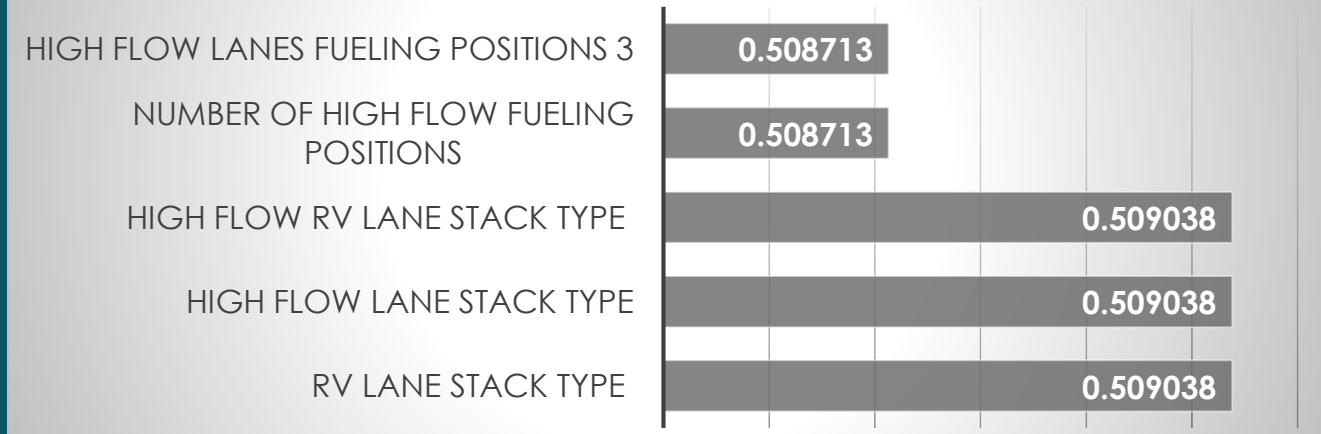

Holidays vs Non-Holidays
2590.36
2865.17
644.63
768.31
1330.15
1729.67
2168.92
2397.6
INSIDE SALES
FOOD SERVICE
DIESEL
UNLEADED
HOLIDAYS
NON-HOLIDAYS

Top 5 Contributors

Inside Sales

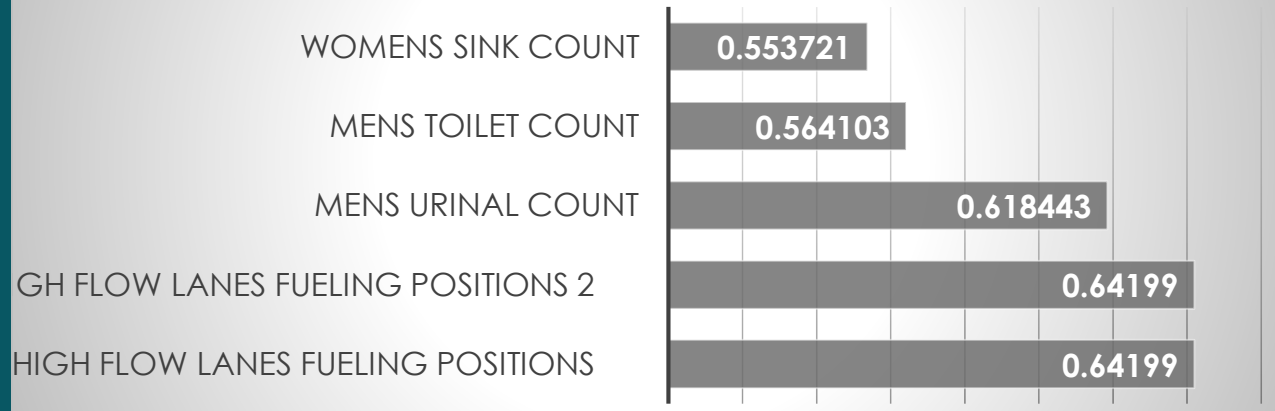


Food Sales

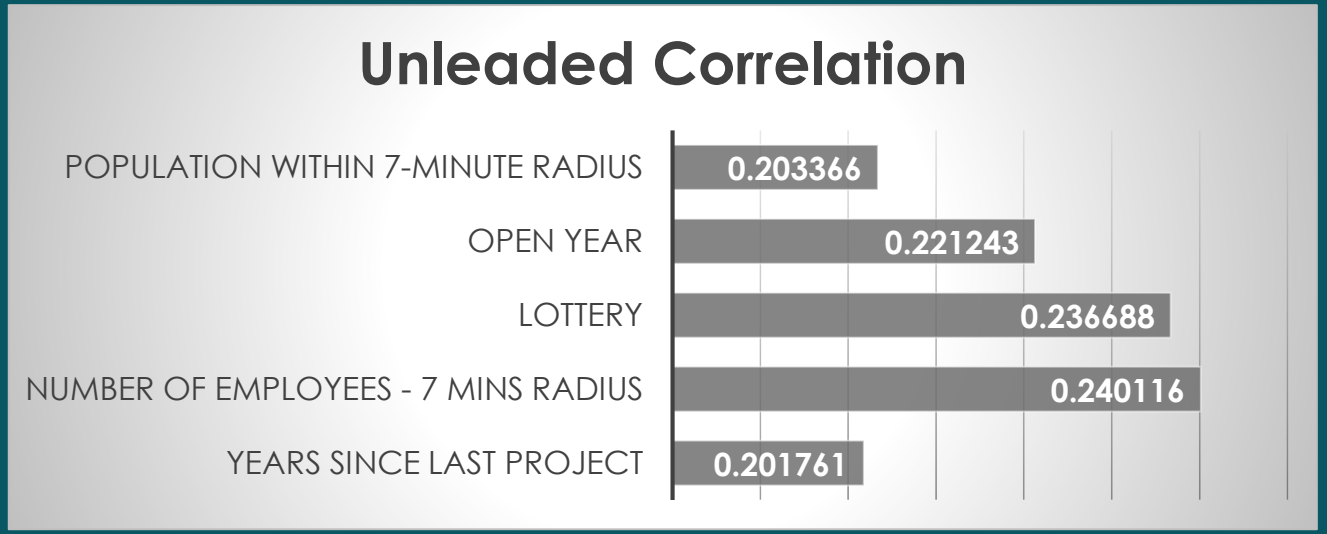


Top 5 Contributors

Diesel Correlation



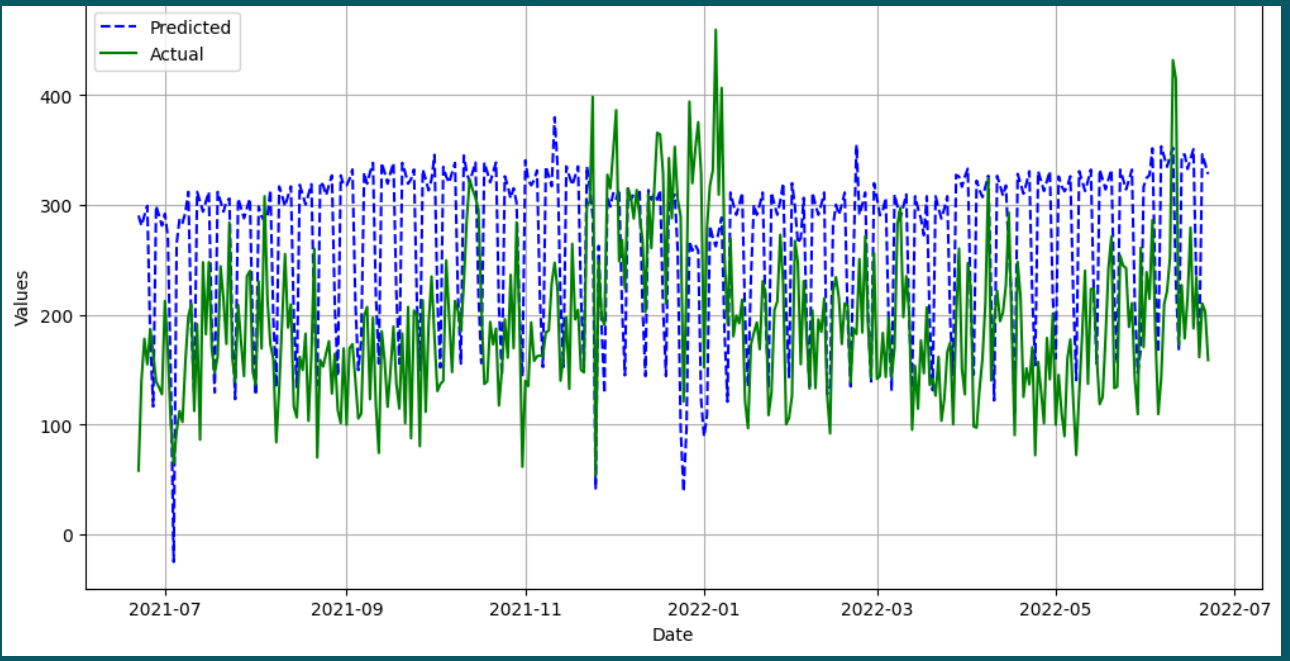
Unleaded Correlation



Model Development

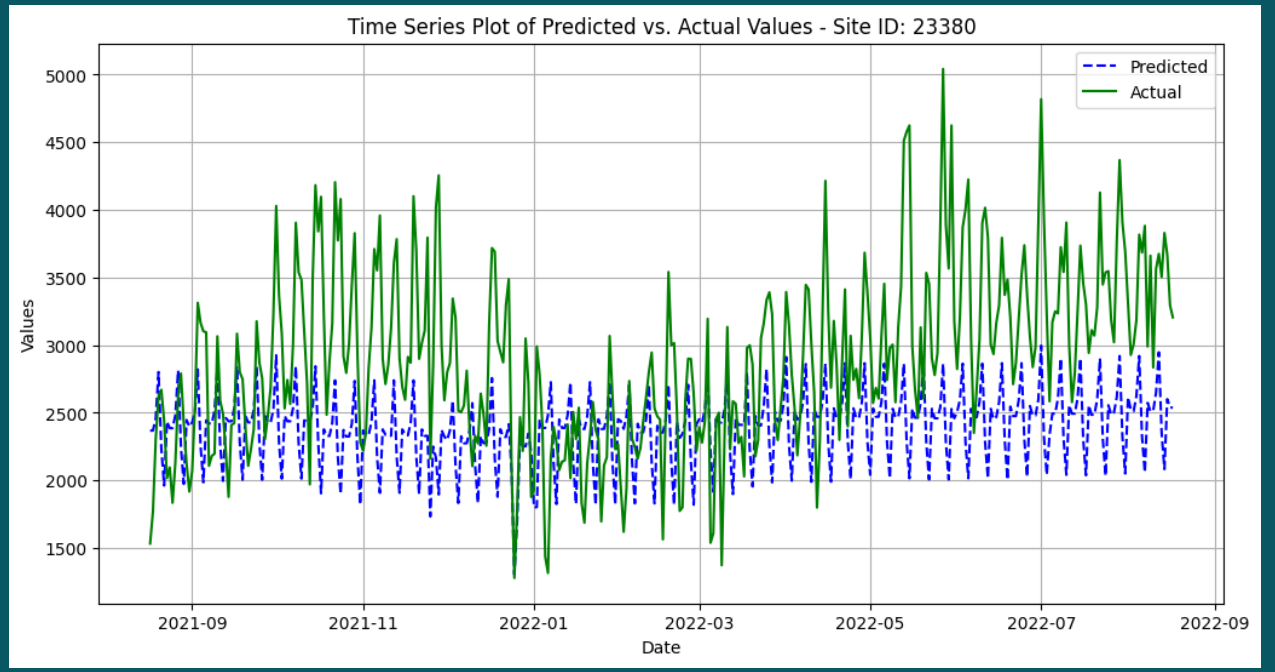
- XGB Regression
- Prophet Model
- ARIMA/SARIMA
- ETS

Diesel and unleaded- Forecast & Actual

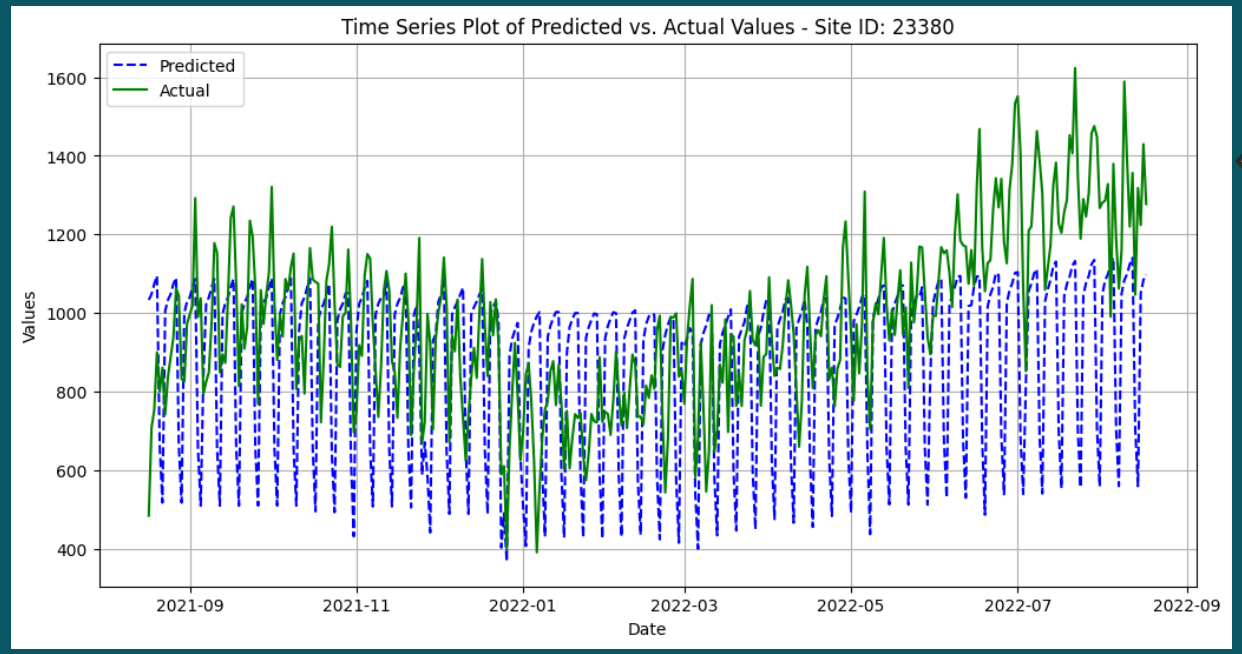


1. Diesel (RMSE): 460.40
2. R^2 Score: 0.95

1. Unleaded (RMSE): 396.98
2. R^2 Score: 0.85



Food and Inside Sales- Actual & Predicted



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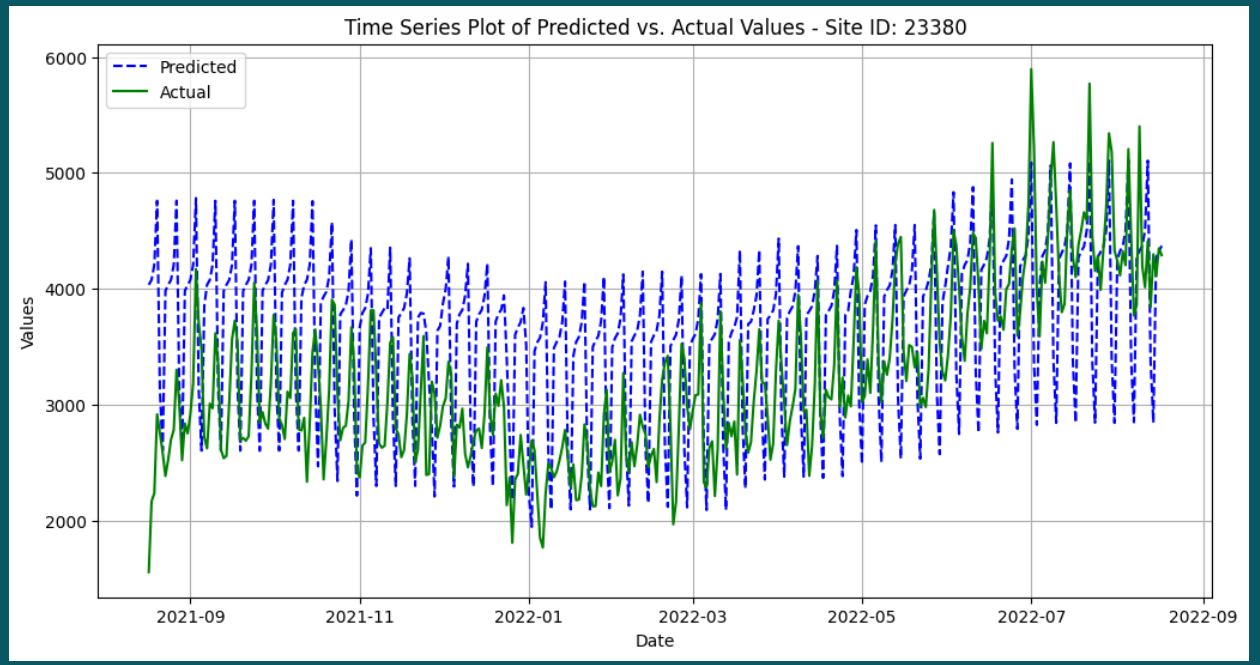

Model Performance Metrices

	Inside Sales	Food Service	Unleaded	Diesel
Inside Two Weeks Pred RMSE	138874			
Inside Three Weeks Pred RMSE	135114			
Food Service Two Weeks Pred RMSE		34018		
Food Service Three Weeks Pred RMSE		33144		
Unleaded Two Weeks Pred RMSE			120453	
Unleaded Three Weeks Pred RMSE			126471	
Diesel Two Weeks Pred RMSE				187907
Diesel Three Weeks Pred RMSE				185542

Forecasted 365 Days(Store Id: 23380)

Values

	Unleaded (gallons)	Diesel (gallons)	Food Service ($)	Inside Sales ($)
Actual	970127	776461	357002	1185017
Forecasted	874191	671849	324169	1341221
Percentage	9.8%	13.4%	9.1%	-(13.1%)

Recommendations

- Store Opening
- Food Combo
- Lottery
- High Flow Lanes
  Fueling Positions
- Employee to
  Population Ratio

BonFire Analytics

THANK YOU

REFERENCE SLIDES AFTER THIS!

XGB Model Performance

Best Hyperparamters

1. 'learning_rate': 0.03,
2. 'max_depth': 5,
3. 'n_estimators': 250

Inside- Sales

1. Root Mean Squared Error (RMSE): 352.98
2. Mean Absolute Error (MAE): 256.03
3. R^2 Score: 0.87

Food- Sales

1. Root Mean Squared Error (RMSE): 105.07
2. Mean Absolute Error (MAE): 75.6
3. R^2 Score: 0.90

Diesel- Sales

1. Root Mean Squared Error (RMSE): 460.40
2. Mean Absolute Error (MAE): 271.58
3. R^2 Score: 0.95

unleaded- Sales

1. Root Mean Squared Error (RMSE): 396.98
2. Mean Absolute Error (MAE): 276.79
3. R^2 Score: 0.85