

DataCrafters

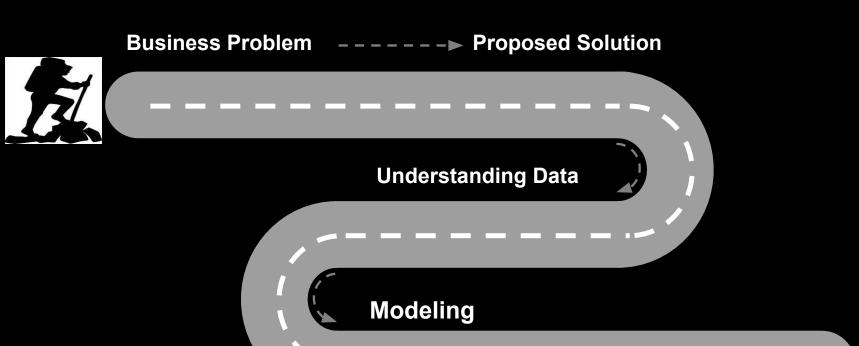
Anukriti

Krishna

Litzy

Shivi

Overview



MAN

Recommendations

Business Value

Business Problem

- Increase footprint by about 30 new stores next year
- Predict New Store's everyday sales
- Accurate forecast enhance financial planning
- Enhance Initial ROI accuracy



Target



Diesel



Food Sales



Inside Sales



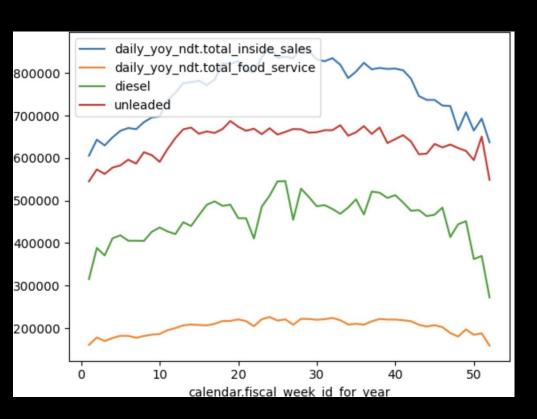
Unleaded

Proposed Solution

- Create robust predictive model: Time Series
- Forecast annual sales for upcoming year
- Suggest ways to enhance sales
- Identify influential variables for predictions

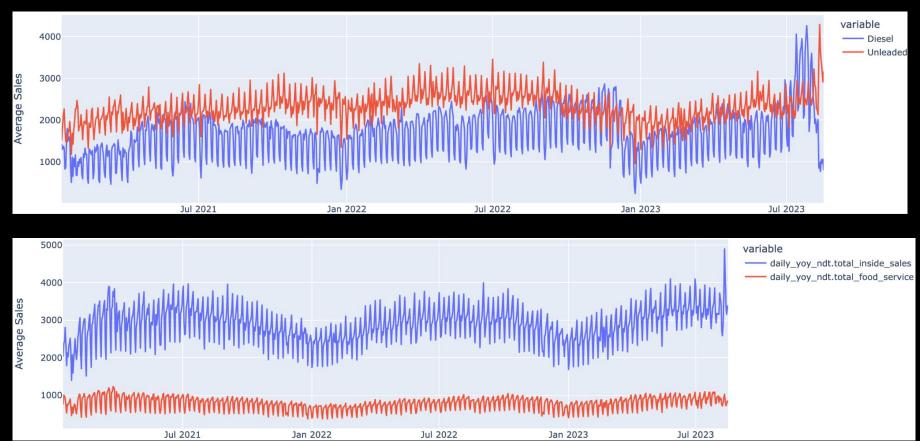


Understanding the Data

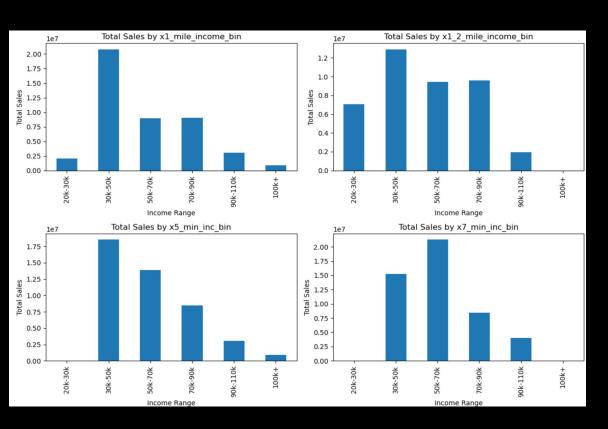


- Mid-year peak sales.
- Year-end sales decline.
- Maximum Revenue InsideSales
- Minimum Revenue Food Sales

Average Sales Over Time



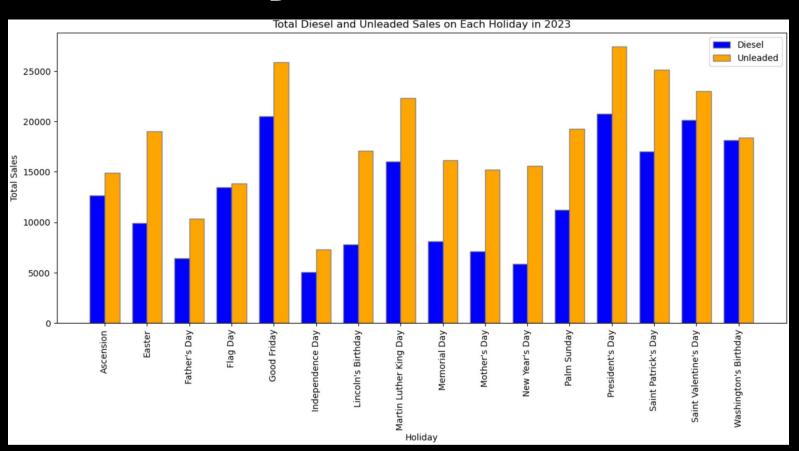
Total Store Sales by Income Type



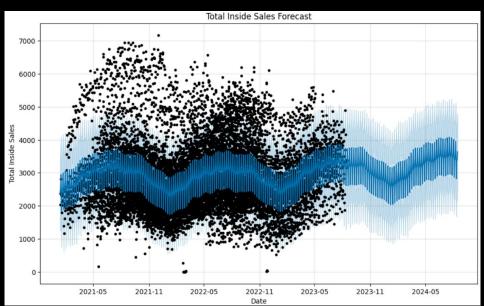
\$30k-\$90k earners drive

food and inside sales

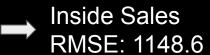
Effect of Holidays on Diesel and Unleaded Sales

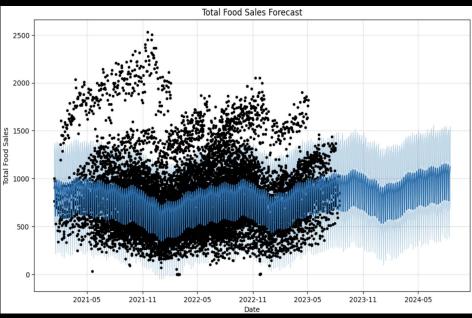


Model Building - Prophet

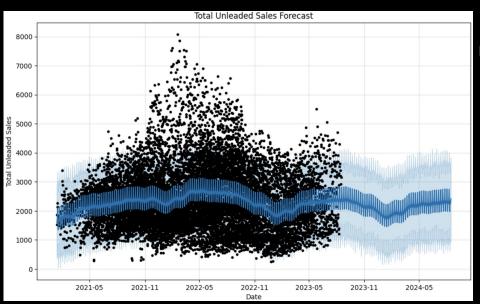


Food Sales RMSE: 542

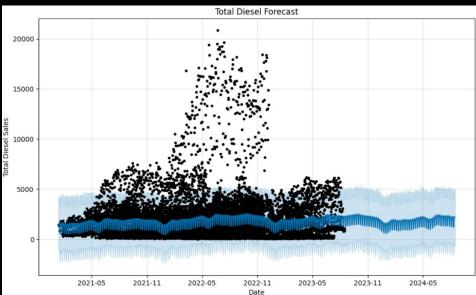




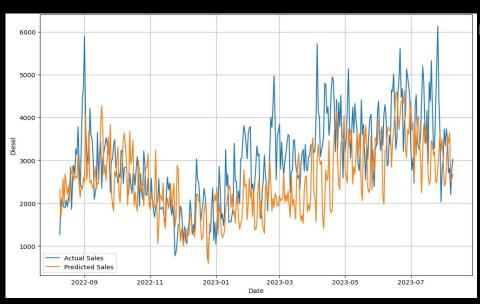
Model Building - Prophet



Diesel RMSE: 5466.9 → Unleaded RMSE: 767

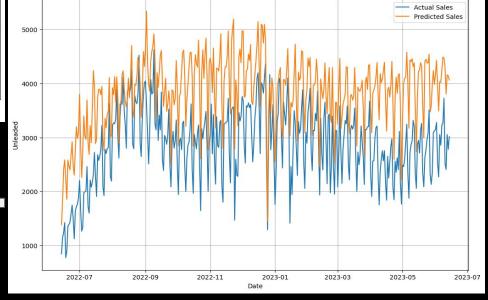


Model-XGBoost Split on Stores

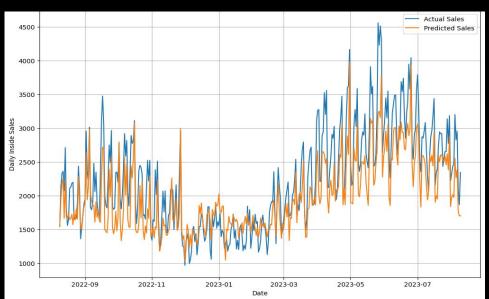


→ Diesel Unit RMSE: 1030

Unleaded Unit RMSE: 1056

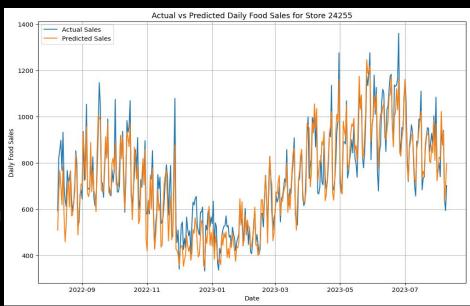


Model-XGBoost Split on Stores



→ Inside Sales
Unit RMSE: 400.62

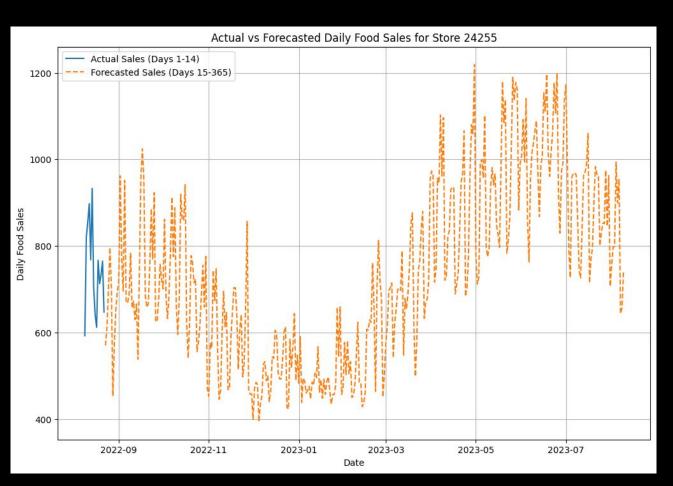
Food Sales Unit RMSE: 102.62



Test Performance

4				
1	Category	Sum of Actual	Sum of Predicted	Percentage Difference
	Food Sales	270409.83	264980.19	-2.01%
	Inside Sales Diesel	1094212.97 1097132.46	1139355.12 1035878.0	4.13% -5.58%
Ì	Unleaded	1046077.8	1174431.25	12.27%

Forecasts Based on Week's Data



Compared 365 days forecasts for all the targets based off 2, 3 weeks predictions

Comparing RMSE

Category	Prediction Period	RMSE	Prediction Period	RMSE
Food	Two-Week Prediction	36131	Three-Week Prediction	35174.5
Inside Sales	Two-Week Prediction	78191.4	Three-Week Prediction	75622.1
Unleaded	Two-Week Prediction	107417	Three-Week Prediction	98705.1

192934

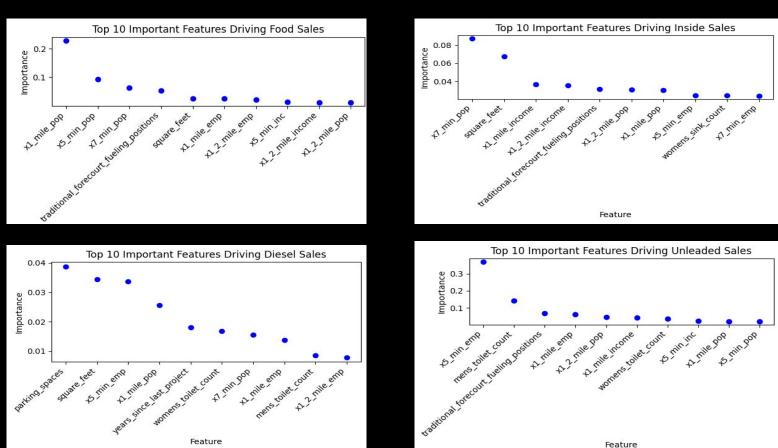
Three-Week Prediction

183067

Two-Week Prediction

Diesel

Important Features Driving Sales



Key Features' Correlation with Targets

Correlation between Importance Features and Targets												1.0				
x1_mile_emp -	1.00	0.29	0.54	-0.15	0.89	0.61	-0.20	-0.14	0.73	0.33	-0.07	-0.12	-0.20	-0.12		- 1.0
parking_spaces -	0.29	1.00	0.13	0.05	0.34	0.05	0.12	-0.03	0.08	0.06	0.14	-0.01	-0.18	-0.22		- 0.8
x1_mile_pop -	0.54	0.13	1.00	-0.61	0.33	0.31	0.29	0.37	0.44	0.72	-0.41	-0.13	-0.37	-0.17		
hi_flow_lanes_fueling_positions -	-0.15	0.05	-0.61	1.00	0.06	-0.10	-0.26	-0.42		-0.45		-0.07	0.51	0.34		- 0.6
x1_2_mile_emp -	0.89	0.34	0.33	0.06	1.00	0.35	-0.16		0.51	0.12	0.11	-0.03	-0.09	-0.05		
x7_min_emp -	0.61	0.05	0.31	-0.10	0.35	1.00	-0.02	0.01	0.91	0.55	-0.12		-0.21	-0.16		- 0.4
x1_mile_income -	-0.20	0.12	0.29		-0.16	-0.02	1.00		-0.01	0.48	-0.17	0.02		-0.14		- 0.2
x7_min_inc -	-0.14	-0.03	0.37	-0.42		0.01	0.76	1.00	0.03	0.53	-0.25	0.02	-0.19	-0.07		0.2
x5_min_emp -		0.08	0.44		0.51	0.91	-0.01	0.03	1.00	0.56	-0.18			-0.20		- 0.0
x7_min_pop -	0.33	0.06	0.72	-0.45	0.12	0.55	0.48	0.53	0.56	1.00	-0.32	-0.27	-0.30	-0.12		
diesel_x -	-0.07	0.14	-0.41		0.11	-0.12	-0.17		-0.18	-0.32	1.00	0.13	0.56	0.42		0.2
unleaded -	-0.12	-0.01	-0.13	-0.07	-0.03	-0.32	0.02	0.02	-0.29	-0.27	0.13	1.00	0.16	0.26		
daily_yoy_ndt.total_food_service -	-0.20	-0.18	-0.37	0.51	-0.09	-0.21	-0.24	-0.19	-0.26	-0.30	0.56	0.16	1.00	0.89		0.4
daily_yoy_ndt.total_inside_sales -	-0.12	-0.22	-0.17	0.34	-0.05	-0.16	-0.14	-0.07	-0.20	-0.12	0.42	0.26	0.89	1.00		0.6
	x1_mile_emp -	parking_spaces -	x1_mile_pop -	hi_flow_lanes_fueling_positions -	x1_2_mile_emp -	x7_min_emp -	x1_mile_income -	x7_min_inc -	x5_min_emp -	- dod_min_pop	diesel_x -	- nnleaded	daily_yoy_ndt.total_food_service -	daily_yoy_ndt.total_inside_sales -		0.0

Recommendations



Features:

- Employed people living around
- Parking Spaces
- Facilities easing fueling

Business Value











