



Maverik Time Series Forecasting

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Business Problem

- **Forecast** first year sales for a new store based on the historical data.
- **Enable** well informed financial decision-making.
- **Create** more accurate initial ROI documents.



Objective

Build a model that:

- **Produces** a daily level forecast for each of the sales metrics.
- **Updates** the forecast as new data comes in.

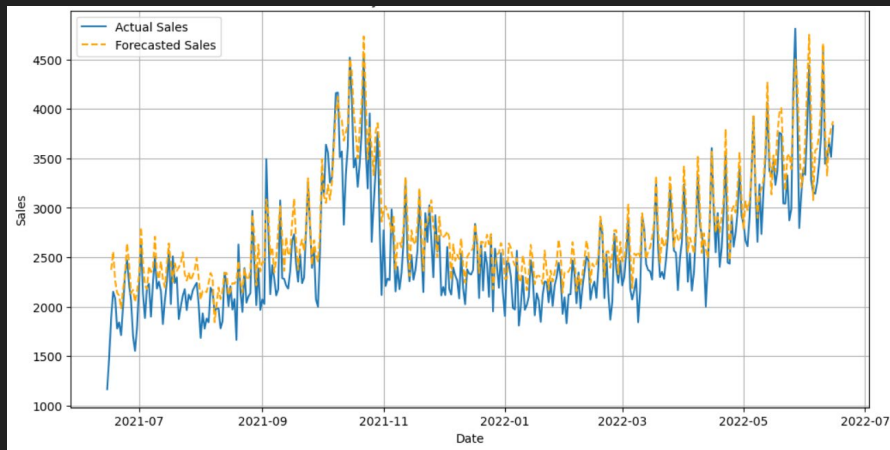


About the Model

- XGBoost
- Handles Qualitative data, and non-linear relationships

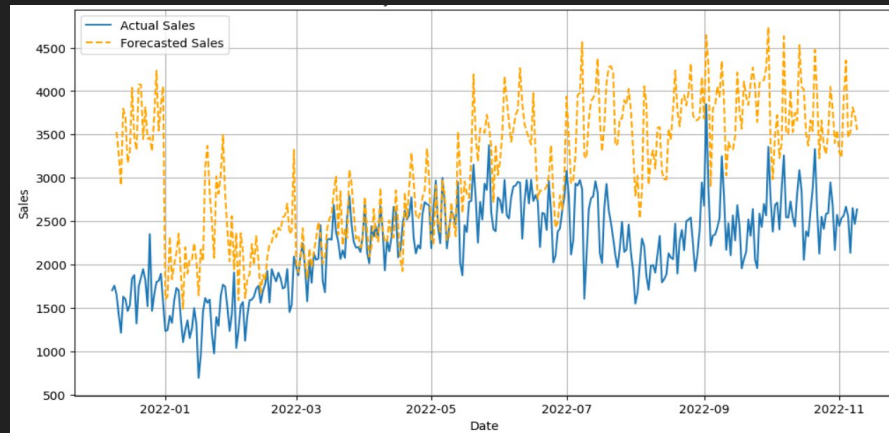


Total Inside Sales forecast from Day 1



22855

22120

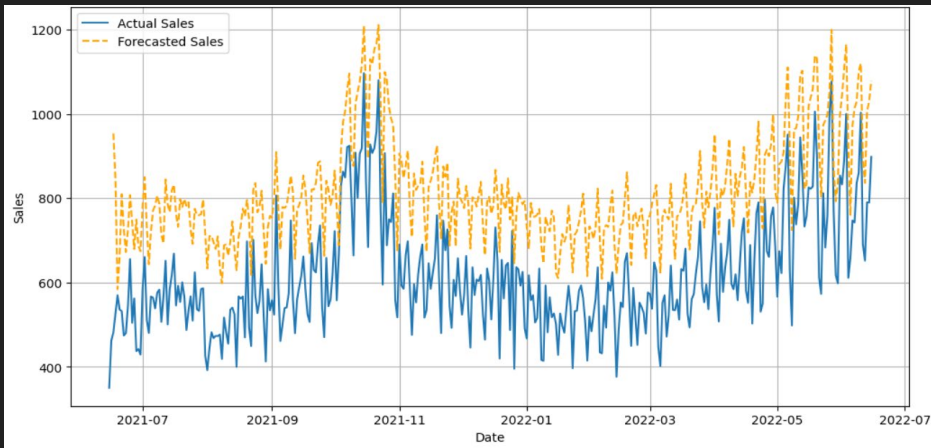


Total Inside Sales

	Maverik Benchmark	Store ID: 22855	Store ID: 22120
2-Week Pred RMSE	268521	256900 (4.3%)	24947 (90.72%)
3-Week Pred RMSE	243858	74557 (69.42%)	59781 (75.44%)

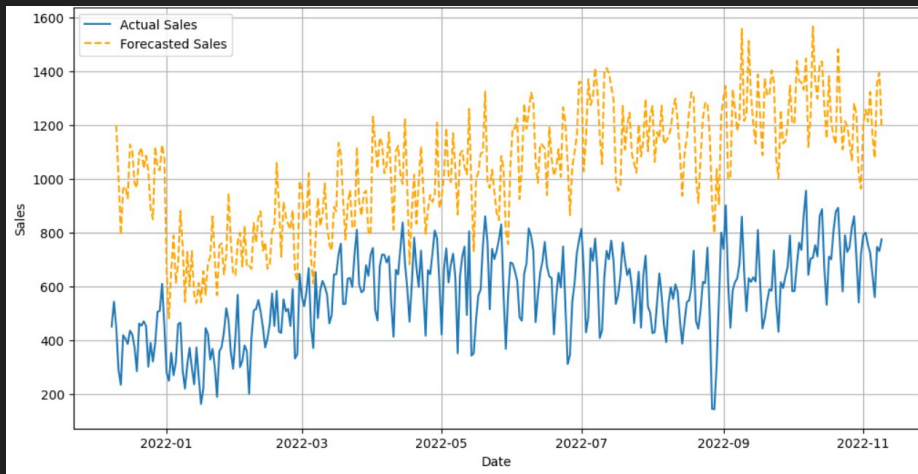


Total Food Sales forecast from Day 1



22855

22120

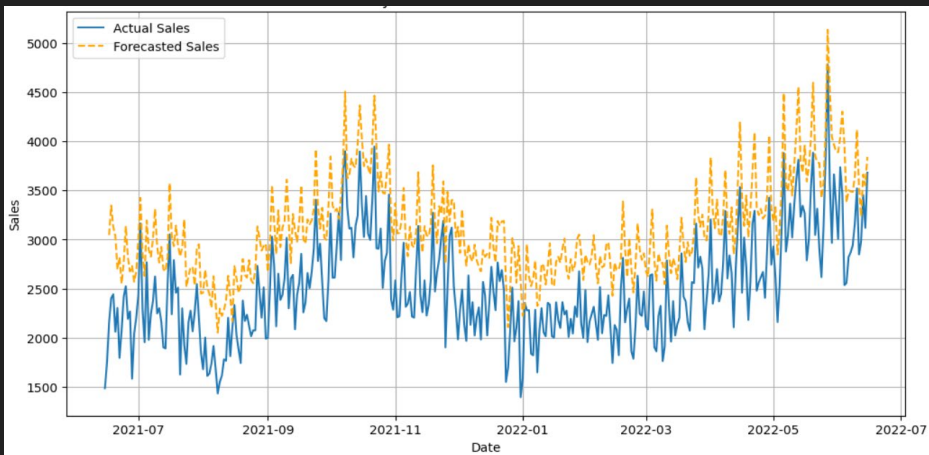


Total Food Service Sales

	Maverik Benchmark	Store ID: 22855	Store ID: 22120
2-Week Pred RMSE	68860	94836 (37.44%)	8156 (88.15%)
3-Week Pred RMSE	66252	37029 (44.07%)	1928 (97.1%)

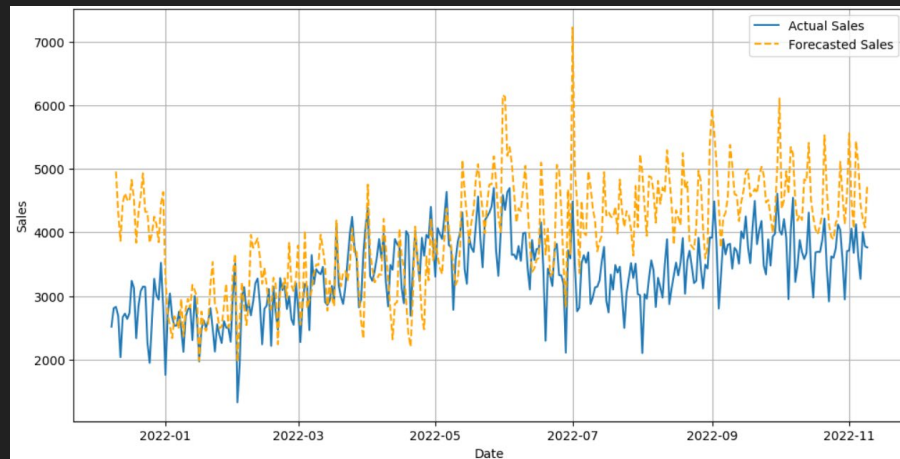


Total Unleaded sales from Day 1



22855

22120

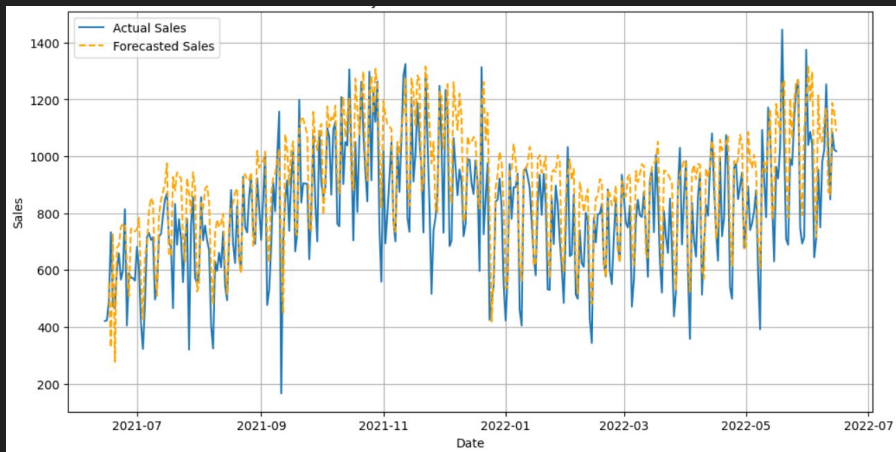


Unleaded Sales

	Maverik Benchmark	Store ID: 22855	Store ID: 22120
2-Week Pred RMSE	302827	95811 (68.36%)	392773 (22.83%)
3-Week Pred RMSE	259909	37976 (85.39%)	421755 (62.09%)

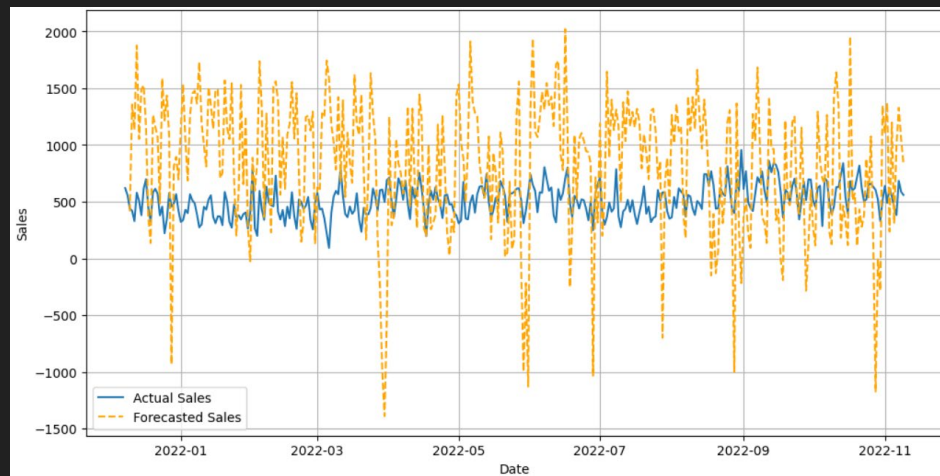


Total Diesel sales from Day 1



22855

22120

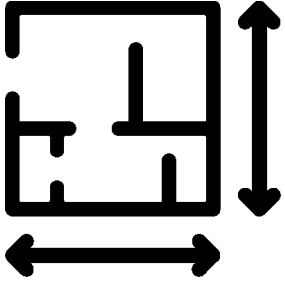


Diesel Sales

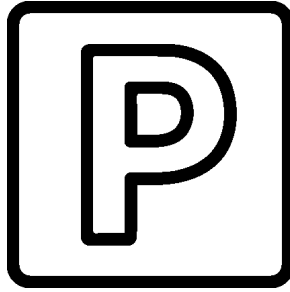
	Maverik Benchmark	Store ID: 22855	Store ID: 22120
2-Week Pred RMSE	558546	570140 (2.08%)	320856 (42.57%)
3-Week Pred RMSE	482976	389503 (19.38%)	339429 (29.62%)



Features of an Ideal New Store



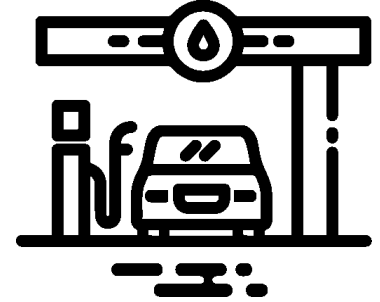
Square_feet > 4970



Parking_space > 25



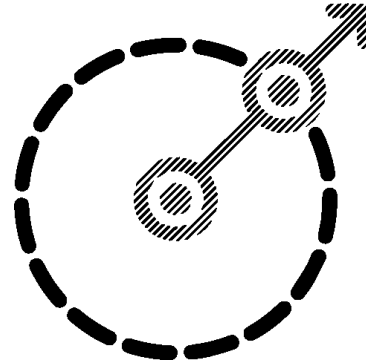
freal



Traditional fueling positions >19



1 mile radius median income > \$40,000



1 mile radius population > 7,500

Forecasted Outcome/Business Value

Inside Sales	Food Sales	Unleaded Sales	Diesel Sales
\$867,003.87	\$214,006.12	\$3,335,149.28	\$979,496.56

Unleaded - \$3.14/gal

Diesel - \$4.1/gal

Sum of all 4 Target variables - \$5,395,655.83



Thank you!

