

A red gas pump nozzle is positioned diagonally across the frame, pointing towards the bottom left. It is resting on a dense pile of US dollar bills, primarily one-dollar bills, which are scattered and overlapping. The background is a dark, semi-transparent overlay, making the text stand out. The overall image conveys a theme of fuel costs and financial impact.

GASOLINE PRICE PREDICTION PROJECT

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Project Overview

- This project is aimed to Unlocking actionable insights in the Gasoline business through historical pricing data analysis. The ultimate goal is to inform strategic decision-making, optimize pricing strategies for energy-related businesses, and contribute to effective policymaking

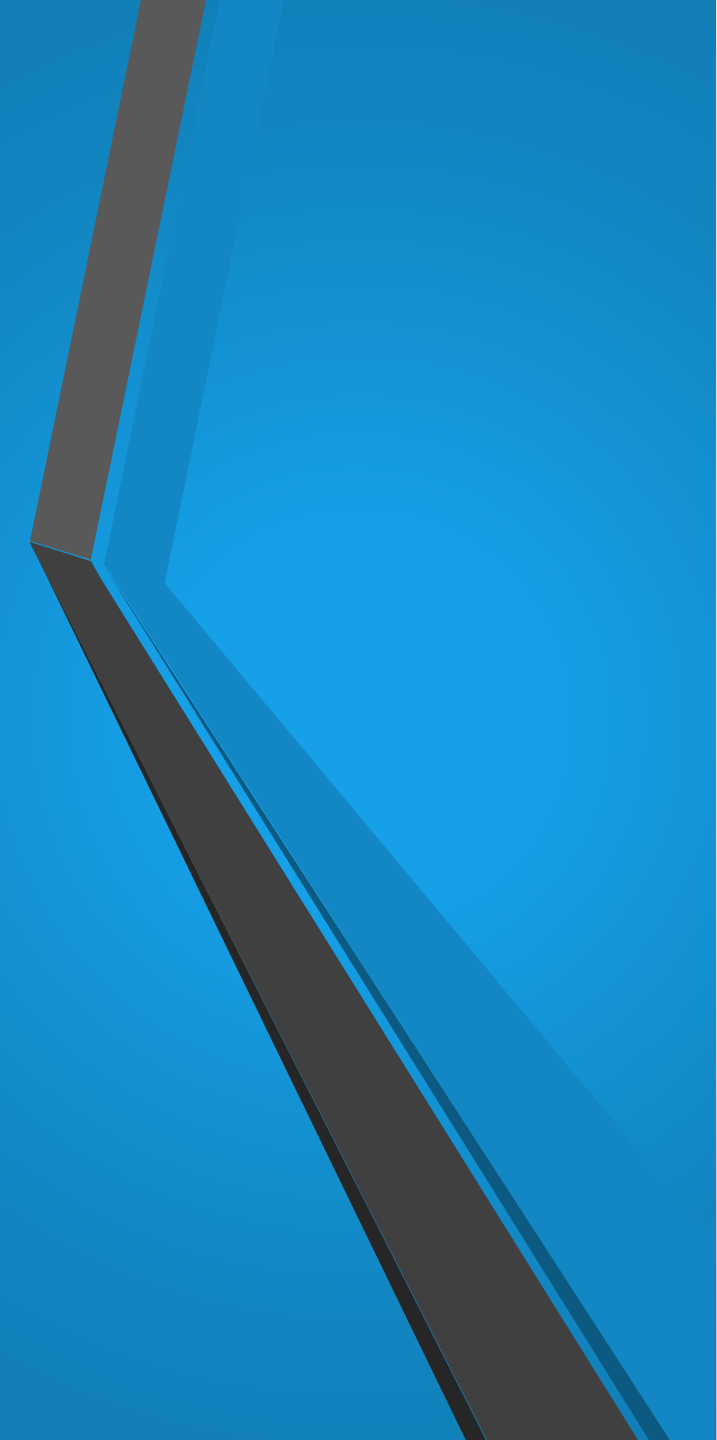
Business Problem

What are the top 5 best Cities for gasoline service providers to invest to invest in?

What are the trends in Gasoline prices in different cities?

Project Objectives

- Examining historical gasoline price trends in different states to reveal patterns and explore the potential development of forecasting models.
- Identifying states with more stable or predictable pricing patterns.



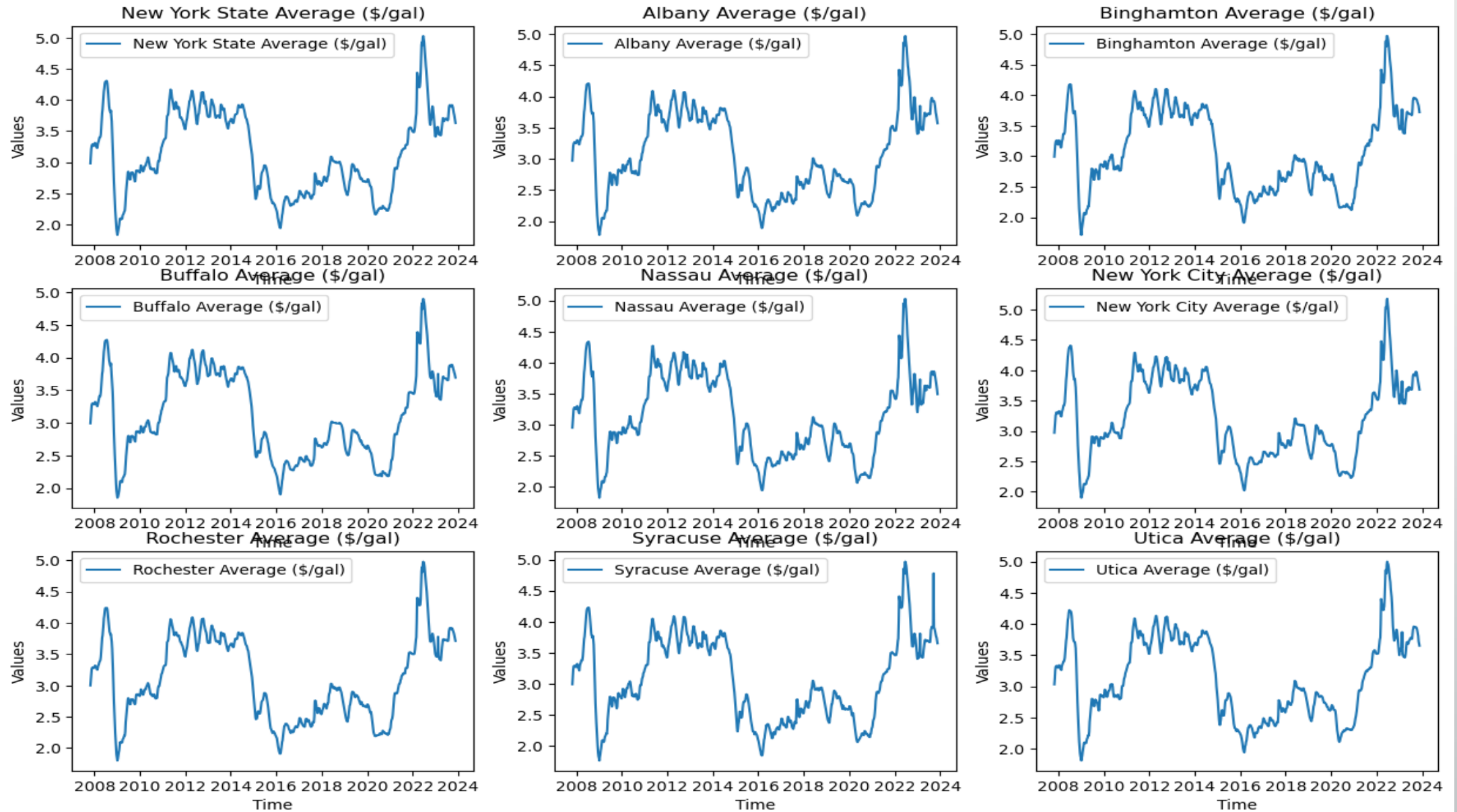
Data Understanding

- The data was collected from the American Automobile Association (AAA) Daily Fuel Gauge Report, and spans from October 2007 to November 2023
- The dataset has 17 features/columns.
- The Date column is of type object and has to be converted to datetime.
- The data is arranged in the decreasing order of date which has to be reversed.
- The data has 10 columns with complete entries and 6 with many missing values.

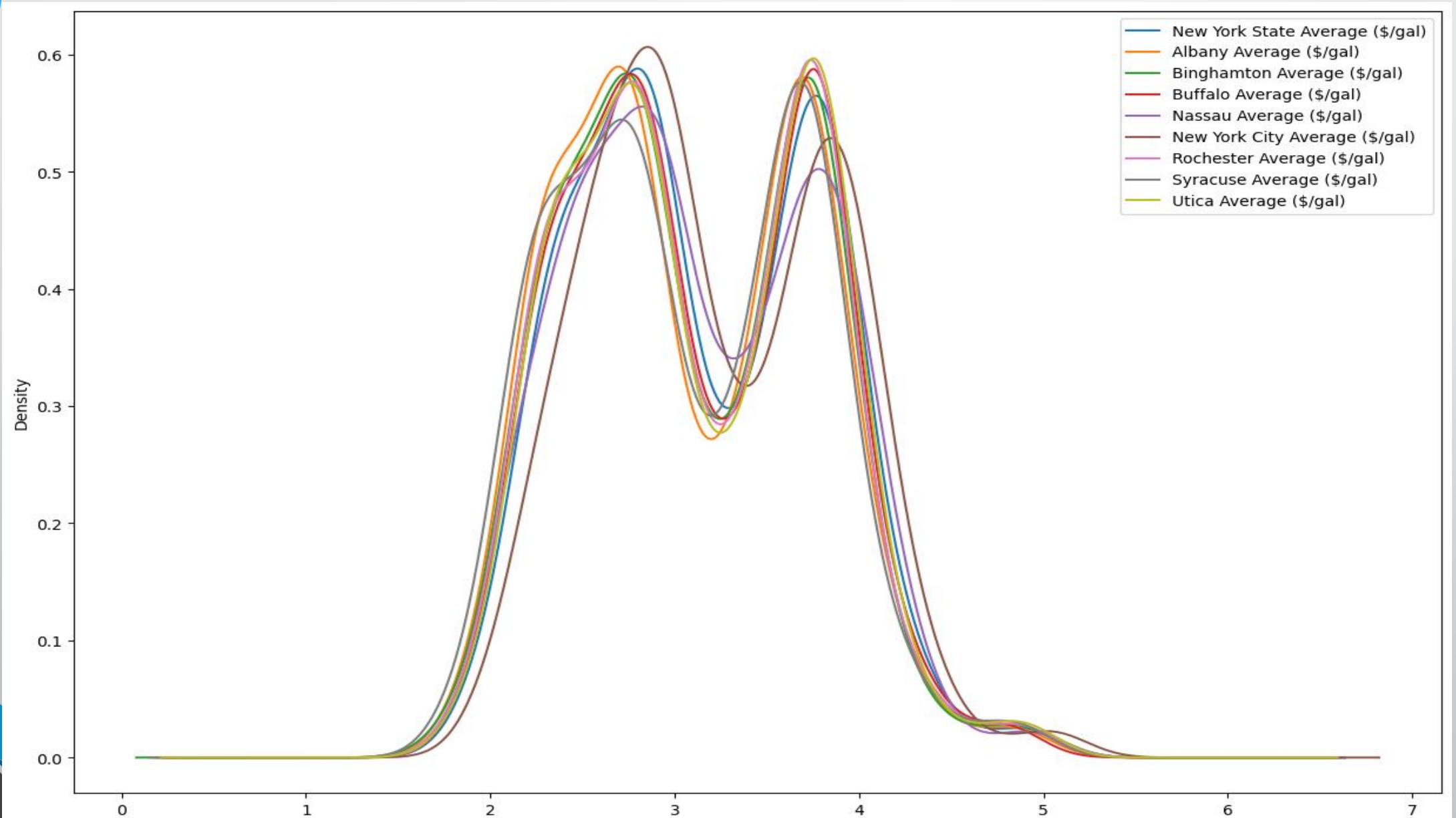
We utilized data from the following columns:

- New York State
- Albany
- Binghamton
- Buffalo
- Nassau
- New York City
- Rochester
- Syracuse
- Utica

Plots for all the cities



Density plot for the dataset

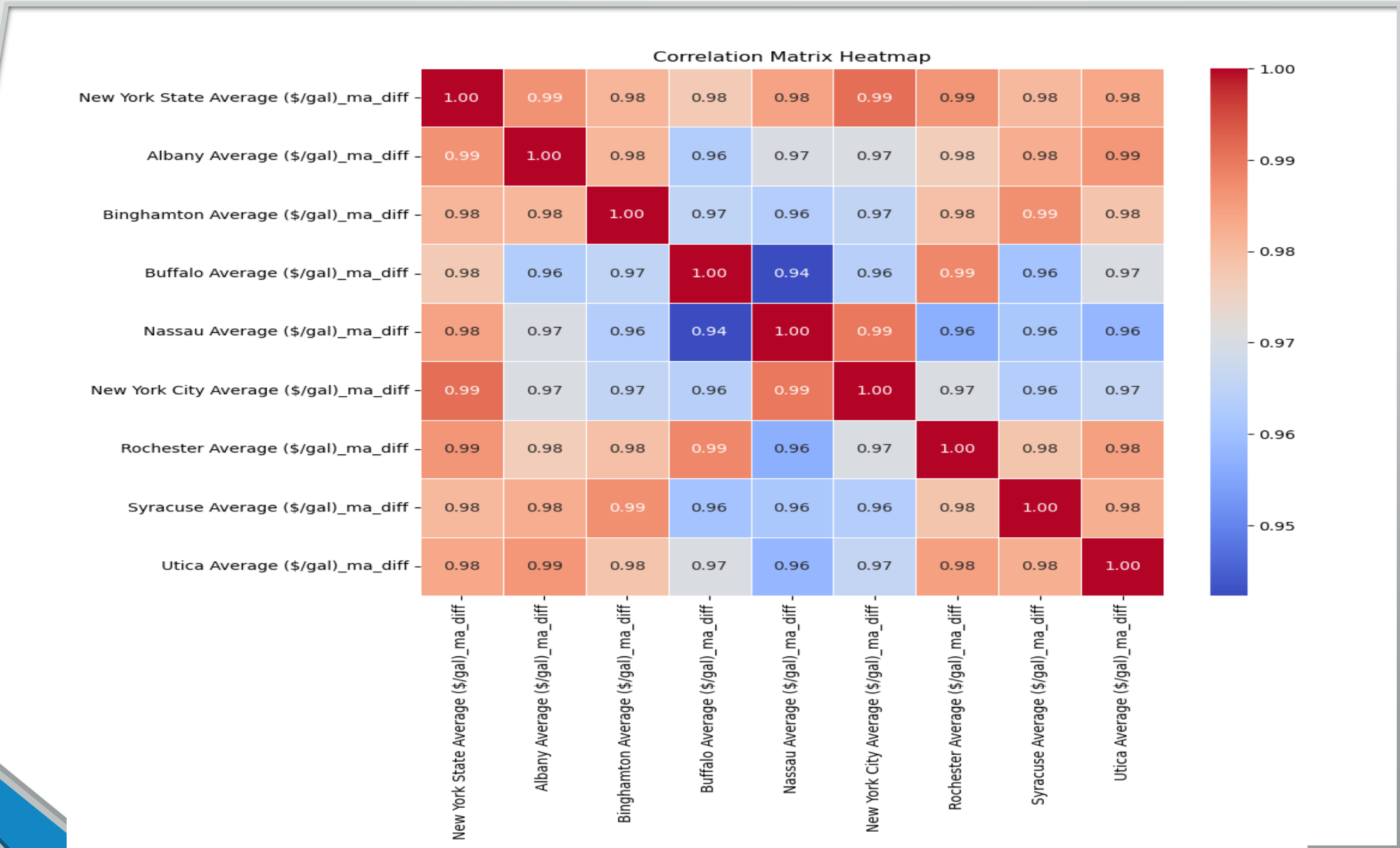


Model

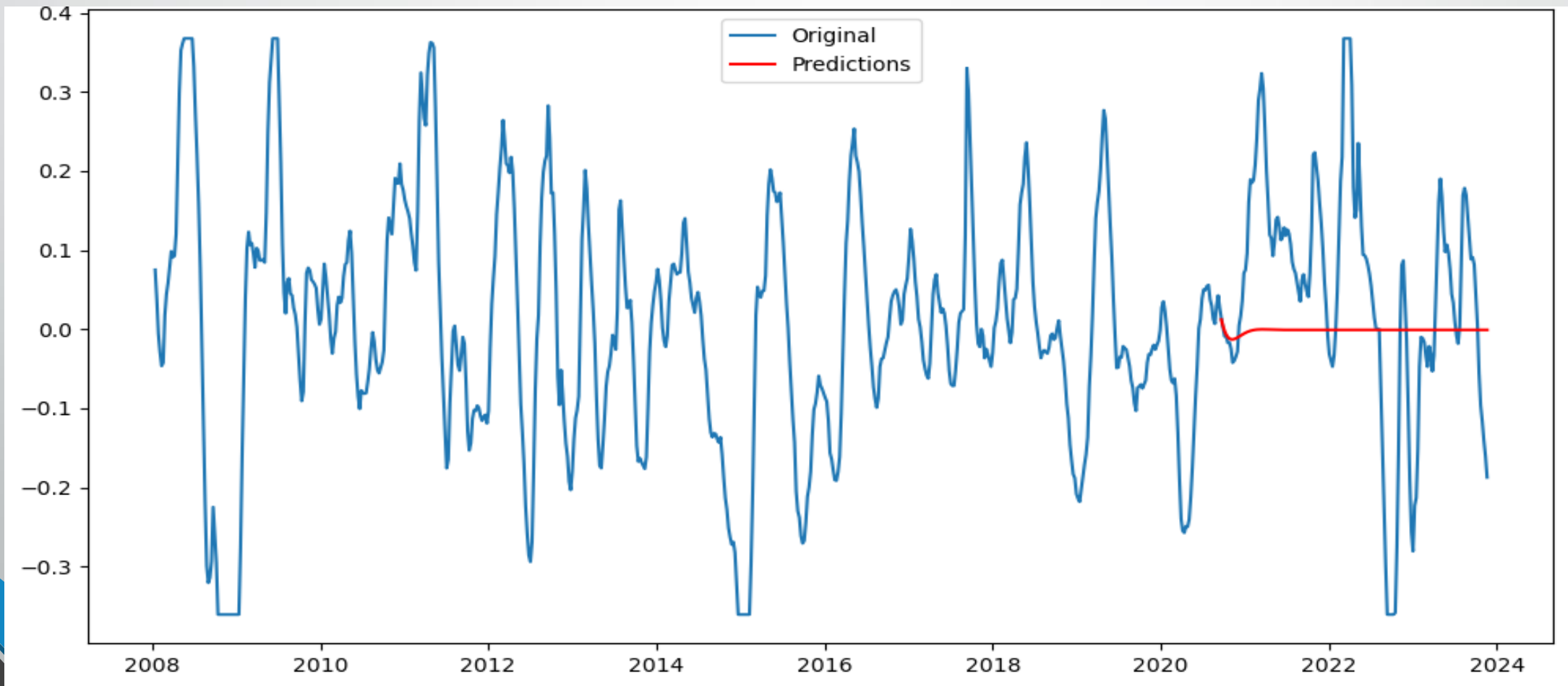
- We employed the ARIMA model to fit our data, which includes training the model on historical time series data to capture patterns and relationships.
- The model performed relatively well with Mean Squared Error values of between 0.0233 and 0.0311

Observations

- There was a high correlation (over 0.95) of the prices across all cities
- Similar trends on the predictions



A similarity was observed on the trends of the
ARIMA model Predictions across all the cities



Conclusions

- Consistency in Gasoline Price Trends:
- Common Influencing Factors
- Global Market Dynamics
- Economic Implications
- Consumer Behavior and Sensitivity

Recommendations

- **Data Quality and Generalizability** : The consistency in trends raises questions about the generalizability of the model and the quality of the data used.
- **Future Research Directions** : The discovery of a common trend in gasoline prices across cities opens avenues for future research