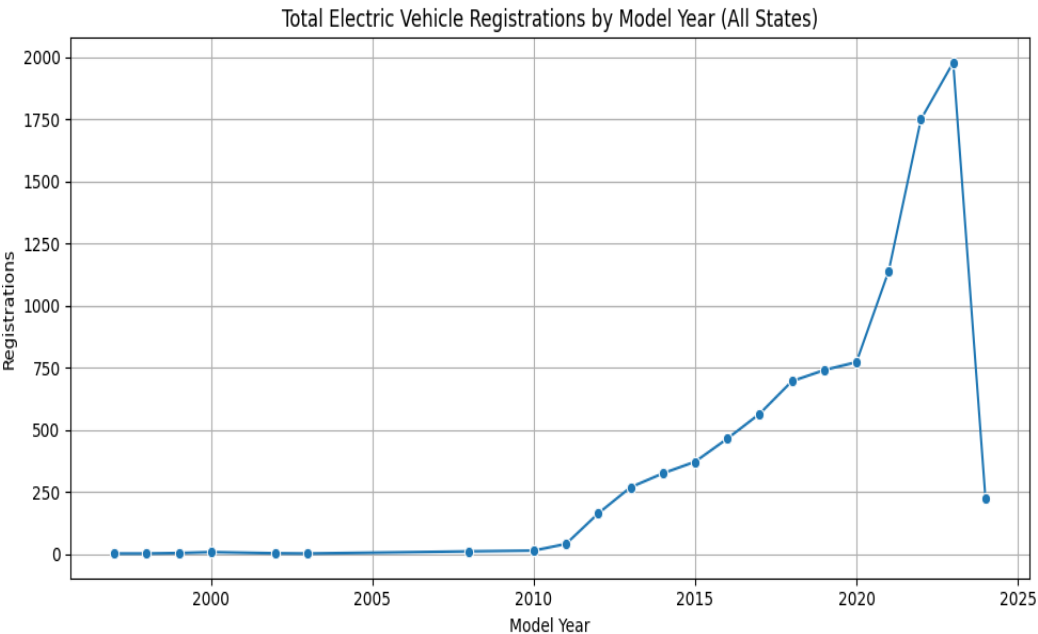# Electric Vehicle Growth Analysis and Forecast Report

This report presents the results of data analysis and forecasting on electric vehicle registrations across U.S. states. The project includes data cleaning, exploratory data visualization, XGBoost-based forecasting, and model interpretation through feature importance.
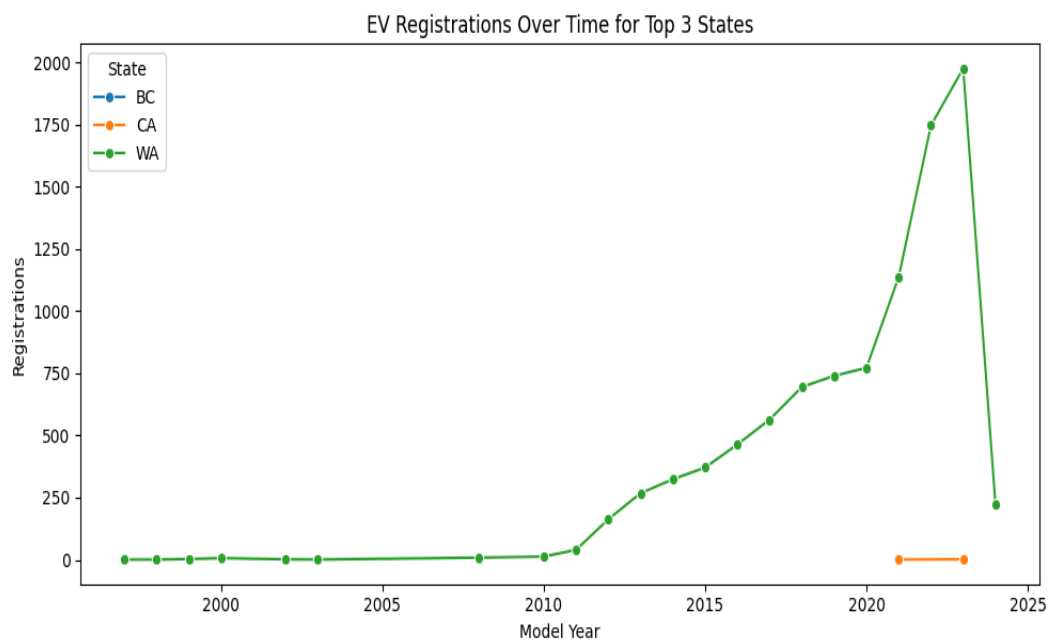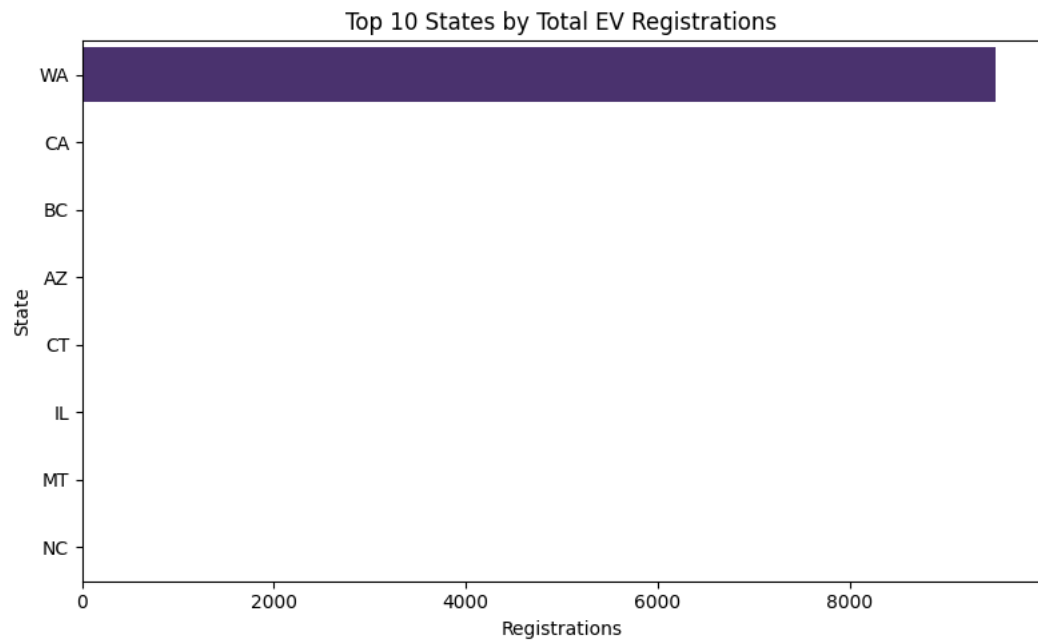
Model Performance

• Mean Absolute Error (MAE): 877.00

• Root Mean Squared Error (RMSE): 1090.05

• Mean Absolute Percentage Error (MAPE): 349.14%
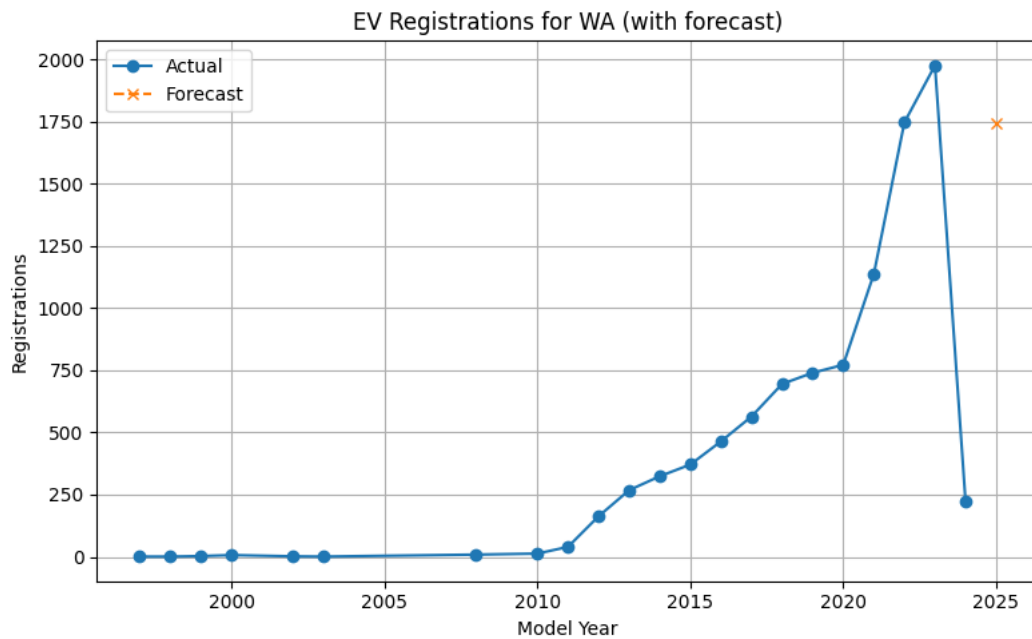
Exploratory Data Analysis

The figures below show trends in EV registrations by year and state.

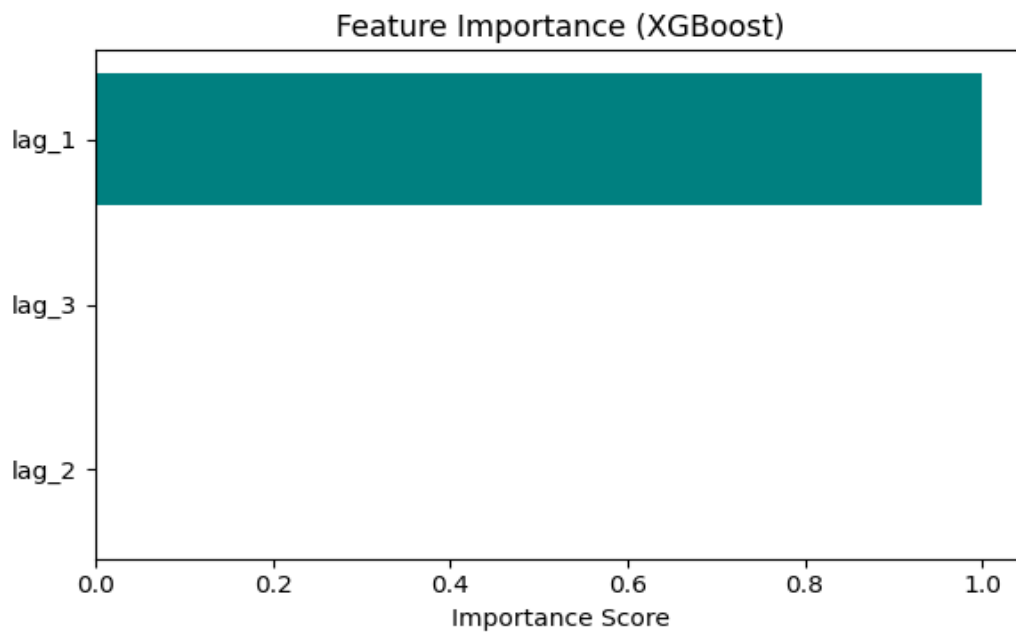Total Electric Vehicle Registrations by Model Year (All States)

Top 10 States by Total EV Registrations

EV Registrations Over Time for Top 3 States

Forecast Results

The following figure shows the predicted next-year EV registrations for Washington State.

EV Registrations for WA (with forecast)

Model Explainability

Feature importance analysis identifies which lag features have the most influence on forecasts.

Feature Importance (XGBoost)

Conclusion

The model demonstrates that recent-year trends (lag_1) are the most influential predictor of EV growth. Forecasting indicates a continued upward trajectory in electric vehicle registrations, reflecting strong consumer adoption momentum and expanding infrastructure support across states.