1. **Determine when the weekday departures will be past 125,000 passenger departures and 3,900 bus departures. Setup your forecasting visuals by year and month. Try to determine the factors that lead to those spikes. For example, a holiday, a taxi strike, a UN week, or anything else.**

**Solution:**

To determine when weekday departures will surpass 125,000 passenger departures and 3,900 bus.

By using the SARIMA Forecasting model, we observed that More than 100,000 People are projected to use the bus terminal, The passenger departure exceeds 125,000 on **2023-10-02** and The bus departure will exist at 3900 is **2030-08-05.**

**Method:**

1. Utilize historical data on bus departures and passenger counts throughout the workweek.   
2. To predict future departures, apply time series forecasting techniques.   
3. Examine the effects of weather conditions, such as temperature, snowfall, and holidays, on departures.   
4. Produced the SARIMA forecasting visuals with departure data unique to the year and month, along with other factors.

**2. Forecast into 2030 to** **see how many people are projected to use the bus terminal in the years leading up to the completion of the renovation. This can be done by carrier to make it clearer and help with analysis but it’s important to know the overall usage of all carriers included.**

**Solution:**

A usage projection for the bus station until 2030 has been produced. These are the estimated numbers for the number of departures of passengers. In early April 2029, it is anticipated that between 194,817 and 195,026 passengers will depart daily. This forecast sheds light on how the bus terminal is anticipated to be used in the upcoming years.

**Method:**

1. Data Preparation as importing pandas, numpy as important libraries.

2. Data Pre-processing with Descriptive Statistics as extracting the month and year data.

3. Visualization of Data using matplotlib, Seaborn libraries.

4. Forecasting the Linear Regression model with Python code to identify how many people are projected to use the bus terminal in the upcoming years.

**3. Develop three forecasting models, train them, and test them to see which one works best. Include in your final project submission the model/tool that the Port Authority can use with future data to make accurate predictions. Document, justify, and support your choices and proposals with evidence.**

1. All the models which we created was shared through Python file as pdf.

2. We have used Sarima forecasting model for both BUS and PASSENGER departures.

3. We have done ML models to predict the future DEPARTURES and ML models description will be shared through a Project Document

**NOTE: PDF and projectdocument were in ZIPfolder**