**Simple Report on Why We Used ARIMA for Forecasting Passenger Journeys**

Introduction

This report explains why we chose the ARIMA method to predict how many passengers will use different transport services in the future. The services we looked at include Local Route, Light Rail, Peak Service, Rapid Route, and School.

Why Choose ARIMA?

1. **Works Well with Trends**:
   * ARIMA is good at handling data that changes over time. For example, the number of passengers can go up or down based on seasons or special events. This makes ARIMA a smart choice for our data.
2. **Flexible**:
   * The ARIMA model can be adjusted to fit different types of data by changing its settings. This means it can be tailored to match the patterns we see in our passenger data.
3. **Easy to Understand**:
   * ARIMA is simpler than many other complex methods. It uses past data to make predictions, which makes it easier for people to understand and use.
4. **Proven Success**:
   * Many businesses and researchers have successfully used ARIMA in various fields like finance and transportation. This history of success gives us confidence that it will work well for our needs.
5. **Clear Results**:
   * ARIMA not only gives us predictions but also shows how certain we can be about those predictions. This helps us make better decisions based on the forecasted numbers.

How We Used ARIMA

1. **Preparing the Data**:
   * First, we cleaned the data to remove any mistakes and made sure all dates were in the right format.
2. **Fitting the Model**:
   * We then applied the ARIMA model to our data for each transport service type. This means we trained the model using historical passenger counts.
3. **Making Predictions**:
   * After fitting the model, we used it to predict passenger counts for the next 7 days.
4. **Visualizing Results**:
   * Finally, we created graphs to show both past data and future predictions. This makes it easy to see trends and understand what might happen next.

Conclusion

Using the ARIMA method helps us make informed guesses about future passenger journeys in public transport. Its ability to handle changing patterns, flexibility, simplicity, and proven effectiveness make it a great choice for our analysis. By understanding these future patterns, transport authorities can better plan services and allocate resources effectively to meet passenger needs.