PUBLIC TRANSPORT PASSENGER JOURNEY FORECAST

Problem Overview:

The dataset contains the information about the routes taken by the transport vehicles across various types of services available in the market. The data has attributes like Local route, Light rail, Peak service, School, Other which are categorized by the Dates. This report analyses the data by gathering multiple insights from it and forecasting the passenger journey for the next 7 days (30-Sept 2024 to 6 Oct 2024).

Key Insights:

1. Service-Specific Trends:
   * Local Route consistently recorded the highest passenger count.
   * School Services exhibit spikes during school terms but sharp declines during vacations.
2. Seasonal Patterns:
   * Passenger counts peak in December and January, likely due to holiday travel.
   * Weekend services see reduced usage for Peak Service but increased usage for Local and Rapid Routes.
3. Yearly Variations:
   * The transport varies yearly and it can ascertained to the phenomenon of external factors that occurred during the lockdown relaxations where there is sudden drop/change in transport since people got stuck in their work city and wanted to move to their hometowns during the period of Covid.
4. Impact of External Events:
   * Significant drops in passenger counts were observed during the COVID-19 pandemic in 2020-2021, especially for Peak Services and School Routes.
5. Correlation Between Services:
   * High correlation between Rapid Route and Local Route, indicating possible complementary usage patterns.
   * This further helps to forecast the model in a better and meaningful manner without any dependencies underlying dependencies.
6. Forecasting method:

* The data is forecasted to predict the transport of vehicles using the past data available for the next 7 days.
* We can infer that the public have a preference to use the rapid route and local route among all the other routes to reach their destination.

Data Preprocessing:

The data preprocessing is performed where null values are removed/filled using appropriate techniques where the data has been modelled for future applications.

The dates in the data have been transformed to the right format and sorted as per the order of months and displayed in the notebook which is then used for forecasting and to gather insights.

Forecasting Model:

The forecasting model helps the users to gain insights about which transport is used more and which can be a profitable venture for an organization when they decide to enhance the capabilities of a particular type of transport and to identify the user behaviour for various types of transport method available.

Conclusion:

From the data used here we can conclude about the types of transport used and its usage patterns. The conclusions gathered are:

* Service specific insights
* Yearly pattern trends
* Seasonal and impact of external factors
* Forecast predictions for the next 7 days.