**Insights into Daily Public Transport Passenger Journeys by Service Type**

**✅ Insight 1:**

**Rapid Route** is the most popular transport service, carrying over **24 million passengers**, followed by Local Route and Light Rail.

**✅ Insight 2:**

On average, **Rapid Route handles 12.6K passengers daily**, making it the most frequently used service, while Peak Service lags behind with just 180 passengers per day.

**✅ Insight 3:**

All services show a consistent usage trend over time, with noticeable spikes during weekdays, indicating strong weekday commuting behavior.

**✅ Insight 4:**

The **busiest day was February 27, 2020**, when public transport recorded a total of **69,752 passenger journeys** across all services.

**✅ Insight 5:**

Strong correlations (above 0.9) exist between most services, especially **Rapid Route and Local Route**, suggesting synchronized demand patterns across transport modes.

**Technical Report: Passenger Journey Forecasting Using Prophet**

**Overview**

Accurately forecasting daily passenger journeys across multiple public transport services is key to efficient operations. We employed **Prophet**, a powerful forecasting tool from Facebook, to predict passenger counts for the next 7 days.

**Why Prophet?**

Prophet excels at capturing **trends** and **weekly seasonality** in noisy time series data — perfect for public transport patterns that fluctuate by day of the week and over time. It automatically detects trend shifts and is resilient to missing data or outliers.

**Core Features**

* **Flexible Trend Modeling:** Detects and adapts to sudden changes in passenger flow.
* **Seasonality Handling:** Captures weekly travel rhythms, such as weekday vs weekend differences.
* **Uncertainty Estimates:** Provides confidence intervals, helping gauge forecast reliability.

**Key Parameters**

* Enabled **weekly seasonality** to reflect weekly travel patterns.
* Disabled **yearly seasonality** due to limited data span.
* Forecast horizon set to 7 days for actionable short-term insights.

**Benefits**

* Simple yet robust, ideal for real-world transportation data.
* Offers interpretable forecasts that aid scheduling and resource planning.

**Limitations**

* Does not inherently factor in special events or sudden disruptions without extra inputs.

**Summary**

Prophet delivers clear, adaptable, and timely forecasts of passenger journeys, empowering transport managers with reliable short-term predictions to optimize service delivery.