📊 Ola Ride Analysis – Project Report

1. Introduction

This project analyzes Ola ride booking data to uncover insights into customer behavior, ride patterns, cancellations, revenue streams, and service quality.

The workflow covered:

- **Data Cleaning & Preparation** (Python / SQL / Power Query)

- **Exploratory Analysis & KPIs** (SQL queries)

- **Interactive Dashboards** (Power BI)

- **Web Application for Exploration** (Streamlit + SQL integration)

The combined approach ensures that insights are validated both through SQL queries and visualized in interactive dashboards and applications.

2. Data Overview

- **Dataset**: OLA_DataSet.csv

- **Key Fields**:

    o Ride info: Booking_ID, Date, Time, Vehicle_Type, Booking_Status

    o Financials: Booking_Value, Payment_Method

    o Metrics: Ride_Distance, Driver_Ratings, Customer_Rating

    o Cancellation details: Canceled_Rides_by_Customer, Canceled_Rides_by_Driver, Incomplete_Rides, Incomplete_Rides_Reason

    o Visuals: Vehicle Images (Image URLs)

3. Methodology

3.1 Data Preparation

- Converted Date and Time into a unified StartDateTime column.

- Standardized Vehicle_Type, Booking_Status, and Payment_Method fields.

- Handled missing values in ratings and cancellations.

- Created derived fields: IsCancelled, TripDuration, and Revenue.

3.2 SQL Queries

Ten key questions were answered using SQL:

1. Retrieve all successful bookings:

2. Find the average ride distance for each vehicle type:

3. Get the total number of cancelled rides by customers:

4. List the top 5 customers who booked the highest number of rides:

5. Get the number of rides cancelled by drivers due to personal and car-related issues:

6. Find the maximum and minimum driver ratings for Prime Sedan bookings:

7. Retrieve all rides where payment was made using UPI:

8. Find the average customer rating per vehicle type:

9. Calculate the total booking value of rides completed successfully:

10. List all incomplete rides along with the reason

These queries were implemented in SQLite and also integrated into the **Streamlit app** for live filtering and results.

3.3 Power BI Dashboard

- Built an interactive dashboard covering **ride volume, cancellations, payments, revenue, ratings**, and **vehicle performance**.
- Used slicers for filtering (Date, Vehicle Type, Payment Method, Status).
- Leveraged the Image URL column to display vehicle icons.

3.4 Streamlit Web Application

- Developed a Python Streamlit app connected to SQL database.
- Users can:
  - Run the same 10 analytical queries.
  - Apply filters (date range, vehicle type, payment method).
  - View query results in tables and charts.
  - Access the embedded Power BI dashboard for richer visuals.
  - Stremlit app acess :- https://hvfrpay72pufqhzad623ca.streamlit.app/

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4. Insights

4.1 Ride Trends

- Ride demand peaks during **weekends** and **nights and afternoon** .
- Mid-week dips suggest weekday travel saturation.

4.2 Booking Status

- Around **62.09% rides completed successfully**.

- **37.91% cancellations** (customer-driven: wrong address, change of plans; driver-driven: personal/car issues).

4.3 Vehicle Performance

- **Autos** dominate in short-distance travel.

- **Sedans & SUVs and e-bikes** generate the highest revenue from longer rides.

4.4 Ratings

- **Average Customer Rating ≈** 4.0.

- Drivers generally rate customers slightly higher.

- Strong positive correlation between customer and driver ratings.

4.5 Payment Analysis

- **Cash still dominates** but **UPI adoption is increasing fast**.

- Premium customers prefer card-based payments.

4.6 Revenue & Segmentation

- A handful of **top 5 customers contribute a large revenue share**.

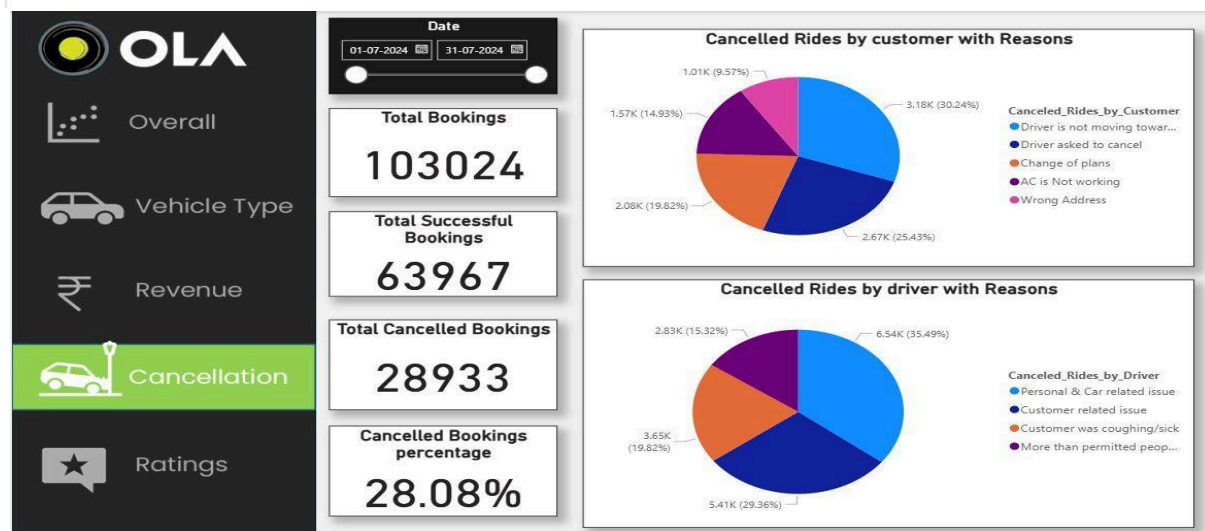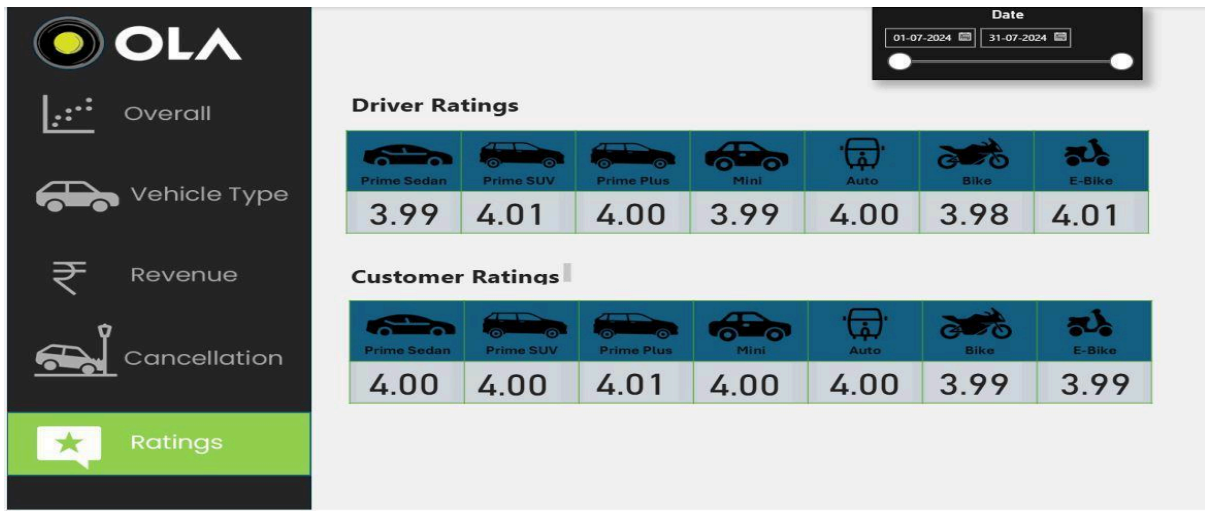- Long-distance rides (>40 km) are higher and bring **high revenue**.

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5. Business Recommendations

1. **Reduce cancellations** with driver incentives and customer-friendly cancellation policies.

2. **Vehicle allocation optimization**: SUVs near airports, bikes/autos in city hubs.

3. **Promote digital payments** via UPI cashback and card offers.

4. **Customer engagement**: loyalty perks for top-spending customers.

5. **Quality improvements** through driver training and preventive vehicle checks.
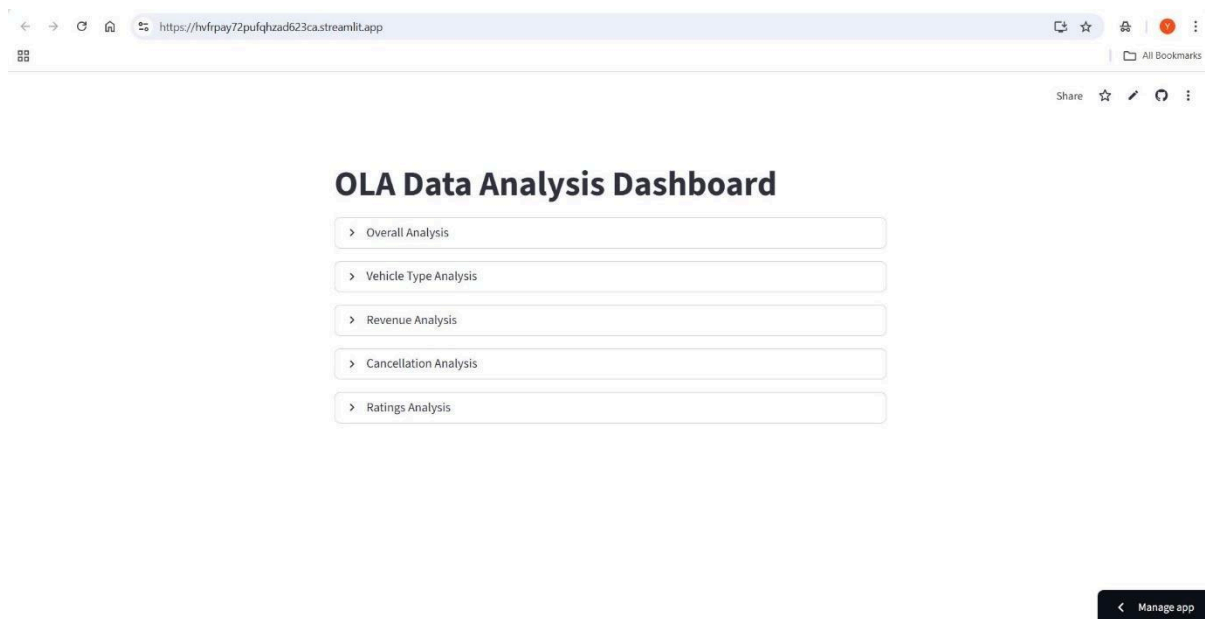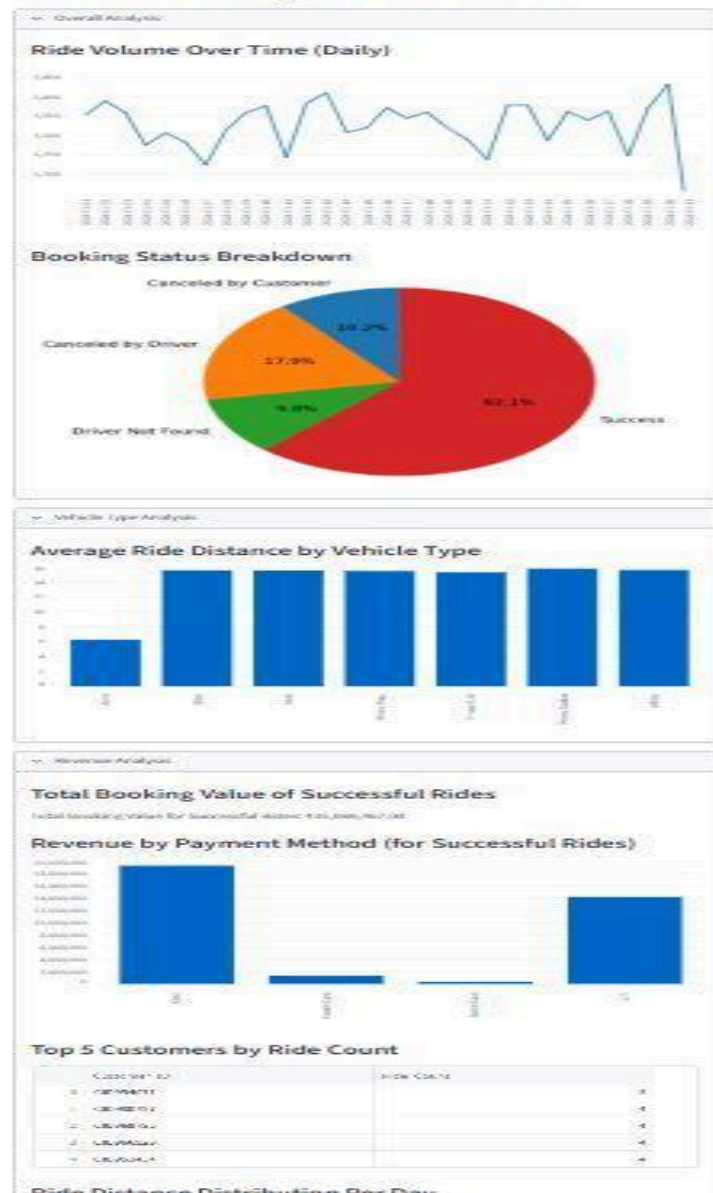
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6. Deliverables

- **SQL Query Scripts** – answering 10 business questions.

- **Power BI Dashboard** – interactive report with visuals.

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- **Streamlit App** – SQL-powered exploration & BI embedding.

OLA Data Analysis Dashboard

> Overall Analysis

> Vehicle Type Analysis

> Revenue Analysis

> Cancellation Analysis

> Ratings Analysis

OLA Data Analysis Dashboard

Overall Analysis

Ride Volume Over Time (Daily)

Booking Status Breakdown

Vehicle Type Analysis

Average Ride Distance by Vehicle Type

Revenue Analysis

Total Booking Value of Successful Rides

Revenue by Payment Method (for Successful Rides)

Top 5 Customers by Ride Count

Ride Distance Distribution Per Day

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7. Conclusion

The project demonstrates how combining **SQL queries, Power BI dashboards, and Streamlit apps** provides a 360° view of business operations.

- SQL ensures accurate **data-driven answers**.

- Power BI offers **executive dashboards** for decision-making.

- Streamlit provides an **interactive app** for on-demand exploration.

With this system, Ola can continuously monitor performance, identify problem areas, and take timely action to improve both customer satisfaction and revenue.