POWER BI ANUDIP

PROJECT REPORT

Project title:

Uber Ride Booking Analysis Using Power BI

Submitted by:

Venu Madhava.M

Id:AF05019815

Course:

Data Pre-processing and Business Analysis

Report Duration:

January 2026 – Present

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my project guide **Mrs. Farheen Sultana**, for her valuable guidance, continuous encouragement, and constant support throughout the course of this project. Her keen interest, constructive suggestions, and timely advice played a vital role in the successful completion of this project.

I am also thankful to my parents for their motivation, encouragement, and moral support during the development of this project. I would like to extend my sincere thanks to my classmates for their cooperation, timely help, and support in completing this project.

Lastly, I express my gratitude to all those who directly or indirectly contributed to the successful completion of this **Power BI project on Uber Ride Booking Analysis**.

TABLE OF CONTENTS

1. Project Overview

This project titled **"Uber Ride Booking Analysis Using Power BI"** focuses on analyzing ride booking data to understand business performance, customer behavior, operational efficiency, and revenue trends. Power BI is used as the primary Business Intelligence tool to transform raw booking data into meaningful visual insights.

The project demonstrates how data visualization helps decision-makers monitor performance, identify demand patterns, and improve customer satisfaction in ride-hailing services.

---

2. Problem Statement

Ride-hailing companies such as Uber face several operational challenges, including fluctuating demand, ride cancellations, long waiting times, inefficient driver allocation, and varying customer satisfaction levels. Without proper data analysis, it becomes difficult to identify peak demand periods, profitable services, and service gaps.

The objective of this project is to analyze booking data and answer key business questions such as:

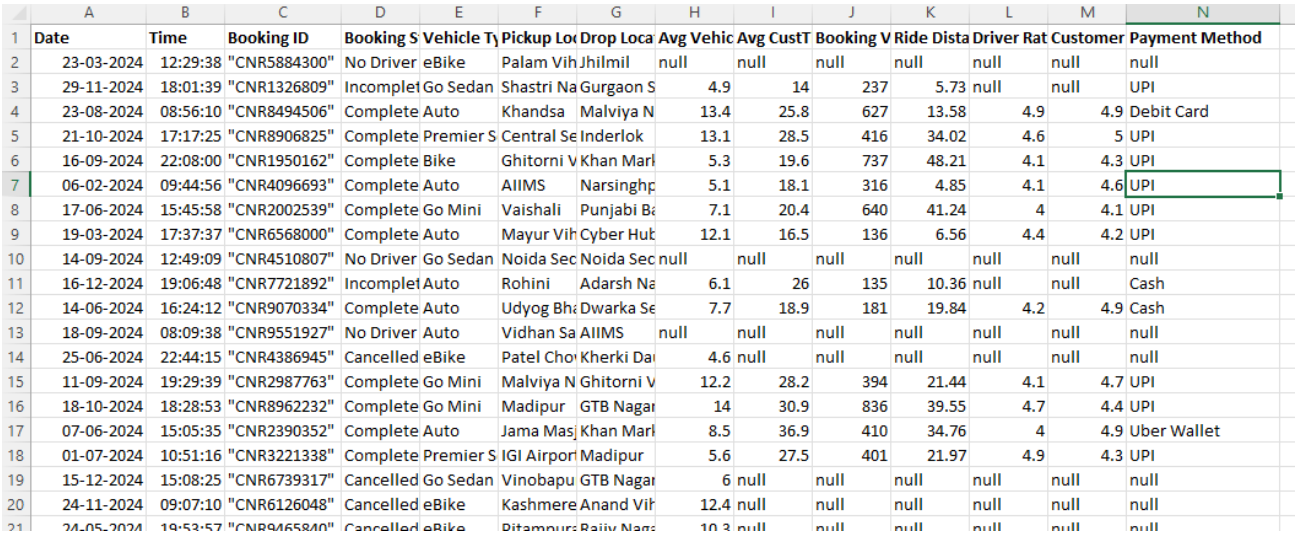
- When does maximum demand occur?
- Which vehicle types generate the highest revenue?
- How does waiting time affect customer ratings?
- Which locations have the highest ride demand?

3. Dataset Description

The dataset used in this project consists of Uber ride booking records with the following key attributes:

- Booking Date and Time
- Booking ID
- Booking Status (Completed, Cancelled)
- Vehicle Type
- Pickup Location and Drop Location
- Booking Value (Fare Amount)
- Ride Distance (in km)
- Avg VTAT (Vehicle Time to Arrive)
- Avg CTAT (Customer Trip Arrival Time)
- Driver Rating and Customer Rating
- Payment Method

The dataset represents real-world operational data, making the analysis realistic and business-oriented.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Date	Time	Booking ID	Booking S	Vehicle Ty	Pickup Loc	Drop Loca	Avg Vehic	Avg CustT	Booking V	Ride Dista	Driver Rat	Customer	Payment Method
2	23-03-2024	12:29:38	"CNR5884300"	No Driver	eBike	Palam Vih	Jhilmil	null	null	null	null	null	null	null
3	29-11-2024	18:01:39	"CNR1326809"	Incomplet	Go Sedan	Shastri Na	Gurgaon S	4.9	14	237	5.73	null	null	UPI
4	23-08-2024	08:56:10	"CNR8494506"	Complete	Auto	Khandsa	Malviya N	13.4	25.8	627	13.58	4.9	4.9	Debit Card
5	21-10-2024	17:17:25	"CNR8906825"	Complete	Premier S	Central Se	Inderlok	13.1	28.5	416	34.02	4.6	5	UPI
6	16-09-2024	22:08:00	"CNR1950162"	Complete	Bike	Ghitorni V	Khan Mark	5.3	19.6	737	48.21	4.1	4.3	UPI
7	06-02-2024	09:44:56	"CNR4096693"	Complete	Auto	AIIMS	Narsinghp	5.1	18.1	316	4.85	4.1	4.6	UPI
8	17-06-2024	15:45:58	"CNR2002539"	Complete	Go Mini	Vaishali	Punjabi Ba	7.1	20.4	640	41.24	4	4.1	UPI
9	19-03-2024	17:37:37	"CNR6568000"	Complete	Auto	Mayur Vih	Cyber Hub	12.1	16.5	136	6.56	4.4	4.2	UPI
10	14-09-2024	12:49:09	"CNR4510807"	No Driver	Go Sedan	Noida Sec	Noida Sec	null	null	null	null	null	null	null
11	16-12-2024	19:06:48	"CNR7721892"	Incomplet	Auto	Rohini	Adarsh Na	6.1	26	135	10.36	null	null	Cash
12	14-06-2024	16:24:12	"CNR9070334"	Complete	Auto	Udyog Bha	Dwarka Se	7.7	18.9	181	19.84	4.2	4.9	Cash
13	18-09-2024	08:09:38	"CNR9551927"	No Driver	Auto	Vidhan Sa	AIIMS	null	null	null	null	null	null	null
14	25-06-2024	22:44:15	"CNR4386945"	Cancelled	eBike	Patel Cho	Kherki Da	4.6	null	null	null	null	null	null
15	11-09-2024	19:29:39	"CNR2987763"	Complete	Go Mini	Malviya N	Ghitorni V	12.2	28.2	394	21.44	4.1	4.7	UPI
16	18-10-2024	18:28:53	"CNR8962232"	Complete	Go Mini	Madipur	GTB Naga	14	30.9	836	39.55	4.7	4.4	UPI
17	07-06-2024	15:05:35	"CNR2390352"	Complete	Auto	Jama Mas	Khan Mark	8.5	36.9	410	34.76	4	4.9	Uber Wallet
18	01-07-2024	10:51:16	"CNR3221338"	Complete	Premier S	IGI Airport	Madipur	5.6	27.5	401	21.97	4.9	4.3	UPI
19	15-12-2024	15:08:25	"CNR6739317"	Cancelled	Go Sedan	Vinobapu	GTB Naga	6	null	null	null	null	null	null
20	24-11-2024	09:07:10	"CNR6126048"	Cancelled	eBike	Kashmere	Anand Vih	12.4	null	null	null	null	null	null
21	24-05-2024	19:53:57	"CNR9465840"	Cancelled	eBike	Pitampura	Rajiv Naga	10.3	null	null	null	null	null	null

4. Data Cleaning & Preparation

Before creating dashboards, the dataset was cleaned and prepared using Power BI Power Query. The following steps were performed:

- Removal of unnecessary and duplicate columns
- Handling of null values logically based on booking status
- Conversion of date and time fields into proper formats
- Creation of derived columns such as Month, Day Name, Hour, Time Slot, and Route (Pickup → Drop)
- Ensuring correct data types for numerical and categorical fields

These steps ensured data accuracy and consistency for analysis.

5. Dashboard Pages Explanation

The Power BI report is divided into **five thematic dashboard pages**, each focusing on a specific aspect of the business:

- Page 1: Revenue & Performance Overview
- Page 2: Booking & Demand Analysis
- Page 3: Trip Efficiency & Service Performance
- Page 4: Location Demand Analysis
- Page 5: Customer Experience & Ratings Analysis

Each page includes KPI cards, charts, graphs, and slicers for interactive analysis.

6. Revenue & Performance Overview (Page 1)

This dashboard provides a high-level summary of Uber's revenue performance for the selected period. It helps stakeholders quickly assess overall financial health and ride success rates.

KPI Cards Explanation

- **Total Revenue (₹51.85M):** Represents the total fare collected from all completed rides. This KPI reflects the overall earning capability of the platform.
- **Completed Rides (93K):** Shows the total number of rides successfully completed. A higher value indicates strong operational execution.
- **Average Revenue per Ride (₹508.18):** Indicates the average fare earned per completed ride, helping evaluate pricing efficiency.
- **Completion Rate (62%):** Percentage of total bookings that resulted in completed rides. This highlights operational reliability.
- **Cancelled Rides (57K):** Shows the number of rides cancelled, useful for identifying service gaps.

Revenue Contribution by Vehicle Type (Bar Chart)

This chart compares revenue generated by different vehicle categories such as Auto, Go Mini, Go Sedan, Bike, and Premium Sedan. Vehicle types with higher bars contribute

more to total revenue, indicating customer preference and fare structure effectiveness.

Payment Method Contribution to Revenue (Donut Chart)

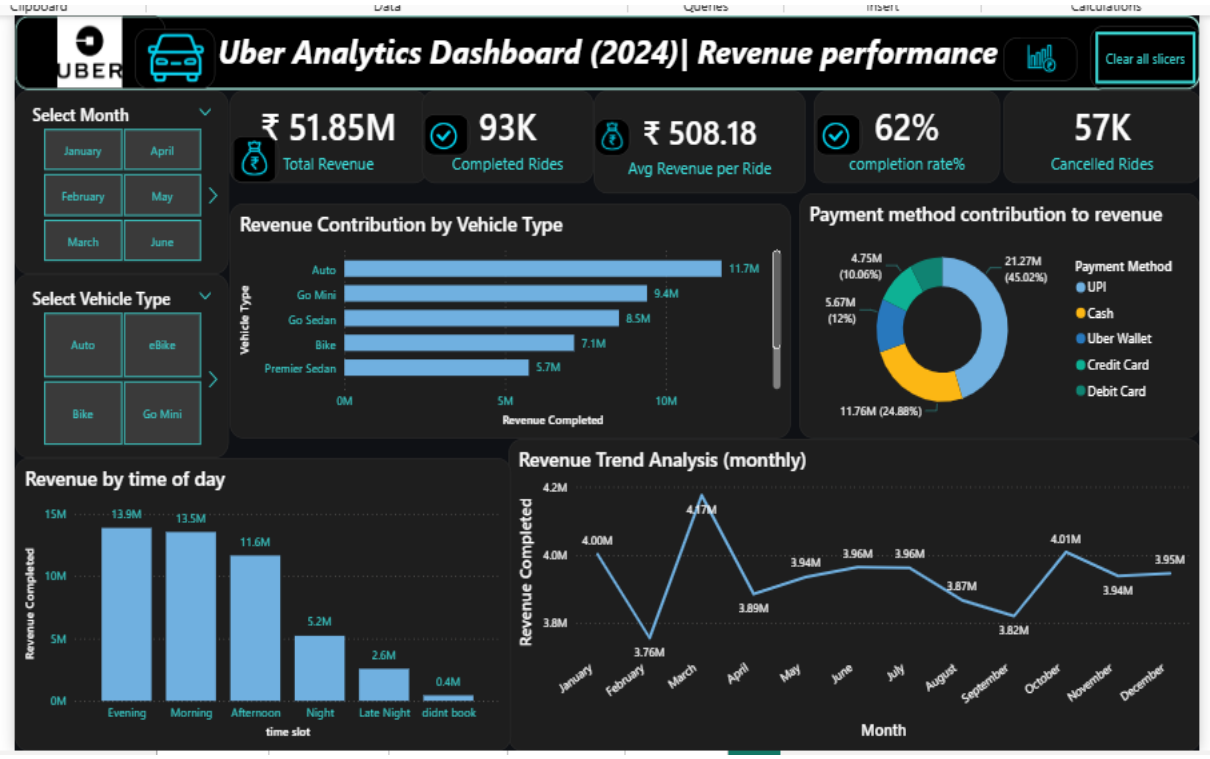
This visualization shows revenue distribution across payment modes like UPI, Cash, Wallets, and Cards. A higher digital payment share reflects customer convenience and reduced cash dependency.

Revenue by Time of Day (Column Chart)

This chart highlights revenue generated during different time slots. Evening and morning slots show higher revenue due to office commute and peak travel demand.

Monthly Revenue Trend (Line Chart)

Displays how revenue fluctuates month-wise. This helps identify seasonal patterns and evaluate consistency in revenue generation.



7. Booking & Demand Analysis (Page 2)

This page focuses on booking volume, completion behavior, and demand patterns over time.

KPI Cards Explanation

- **Total Bookings (12K):** Indicates overall customer demand for rides.
- **Completed Rides (7,542):** Shows the number of bookings that were successfully fulfilled.
- **Completion Rate (62%):** Measures the effectiveness of converting bookings into completed rides.

Peak Booking Hours (Column + Line Chart)

This chart displays total bookings across each hour of the day. Peak demand is observed during morning and evening hours, corresponding to work commute times.

Booking Status Breakdown (Donut Chart)

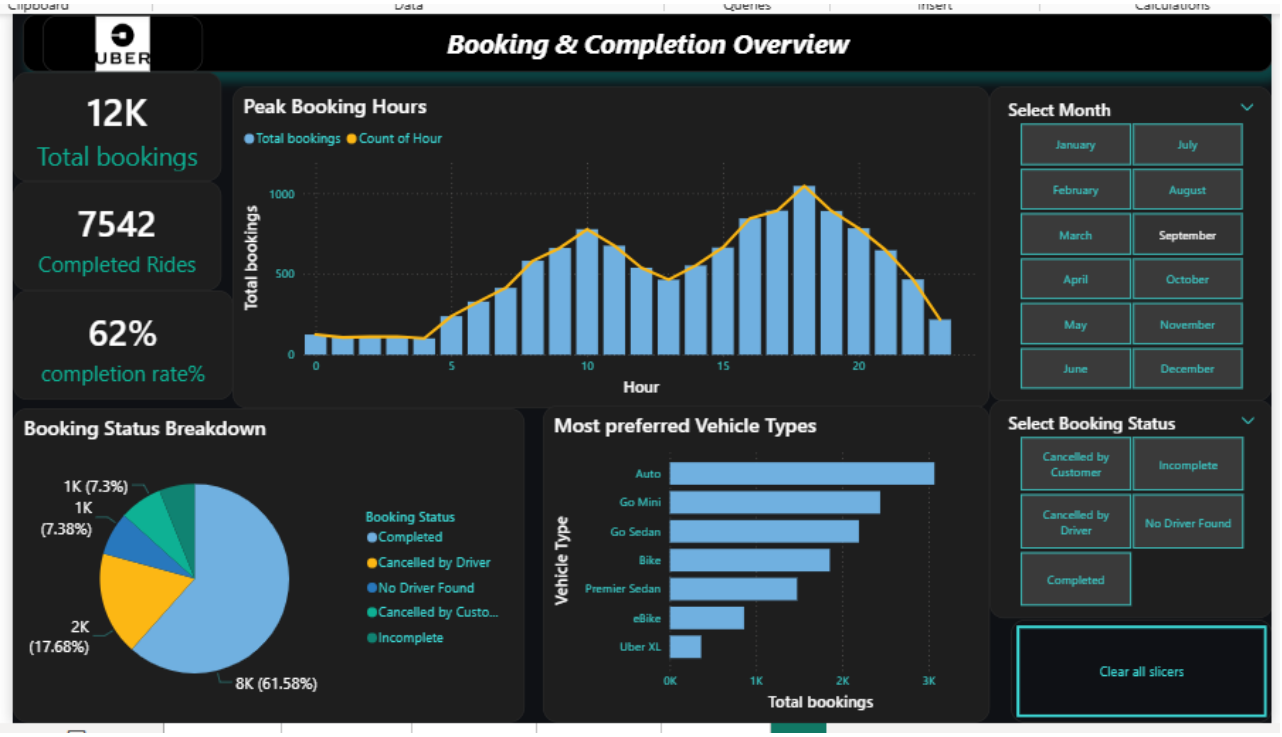
Shows the proportion of completed, cancelled, no-driver-found, and incomplete bookings. A higher completed segment reflects efficient service delivery.

Most Preferred Vehicle Types (Bar Chart)

This chart highlights customer preference among vehicle types. Higher booking counts indicate greater popularity and demand.

Slicers

Month and Booking Status slicers allow focused analysis for specific periods or booking outcomes.



8. Trip Efficiency & Service Performance (Page 3)

This dashboard evaluates ride efficiency metrics for completed rides only, focusing on distance, duration, and pickup waiting time.

KPI Cards Explanation

- **Average Trip Distance (26.00 km):** Indicates the typical distance covered per ride.
- **Average Trip Duration – CTAT (30.03 mins):** Shows the average time taken to complete a trip.
- **Average Pickup Time – VTAT (8.51 mins):** Represents customer waiting time before pickup.

Pickup Time by Vehicle Type (Bar Chart)

Compares waiting time across vehicle categories. Lower pickup time indicates better availability and faster service.

Trip Duration by Vehicle Type (Bar Chart)

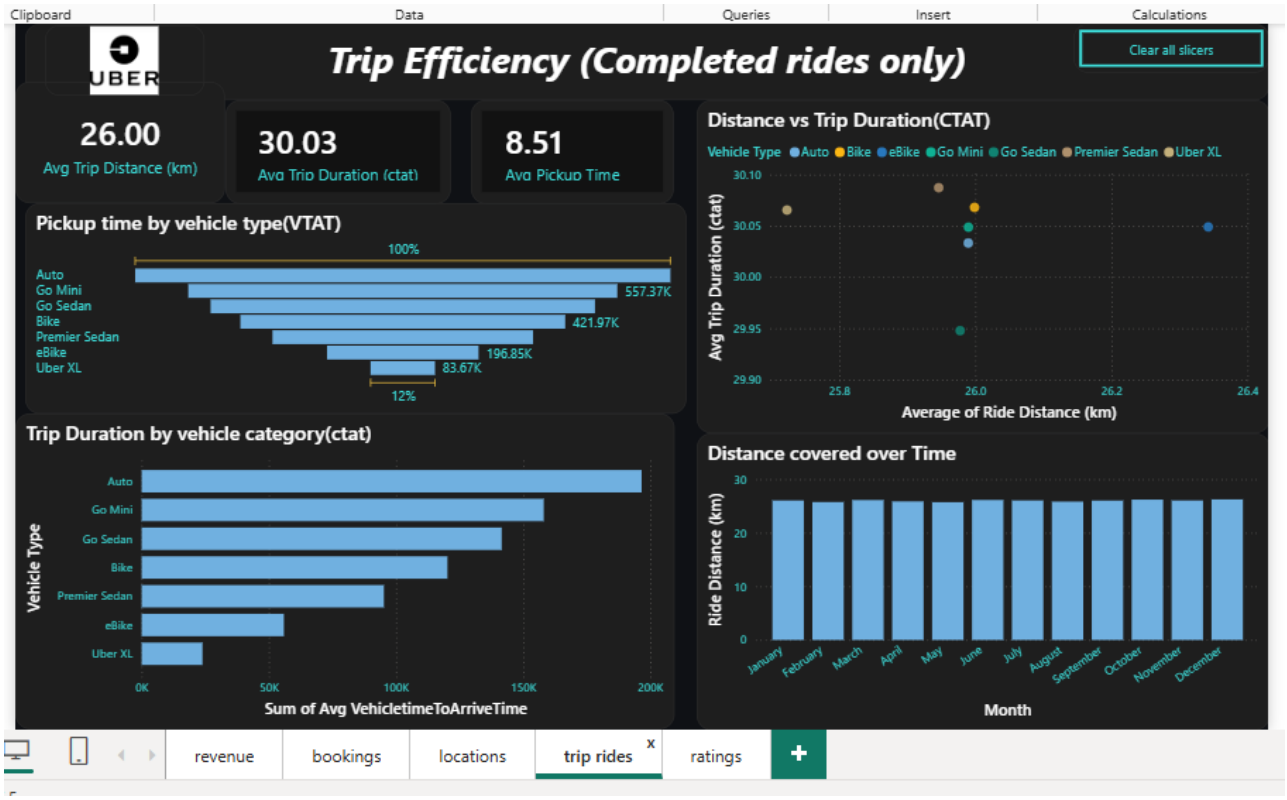
Shows how trip duration varies by vehicle type, helping evaluate operational efficiency.

Distance vs Trip Duration (Scatter Plot)

Illustrates the relationship between ride distance and travel time. Clustering indicates consistent performance, while outliers show inefficiencies.

Distance Covered Over Time (Column Chart)

Displays monthly variation in average distance traveled, supporting trend analysis.



9. Location Demand Analysis (Page 4)

This page analyzes geographical demand using pickup and drop location data.

Total Bookings KPI

Represents overall booking volume across all locations.

Top Pickup & Drop Hotspots (Tree/Hierarchy Visual)

Highlights high-demand pickup-drop combinations, helping identify major travel corridors.

Pickup–Drop Table

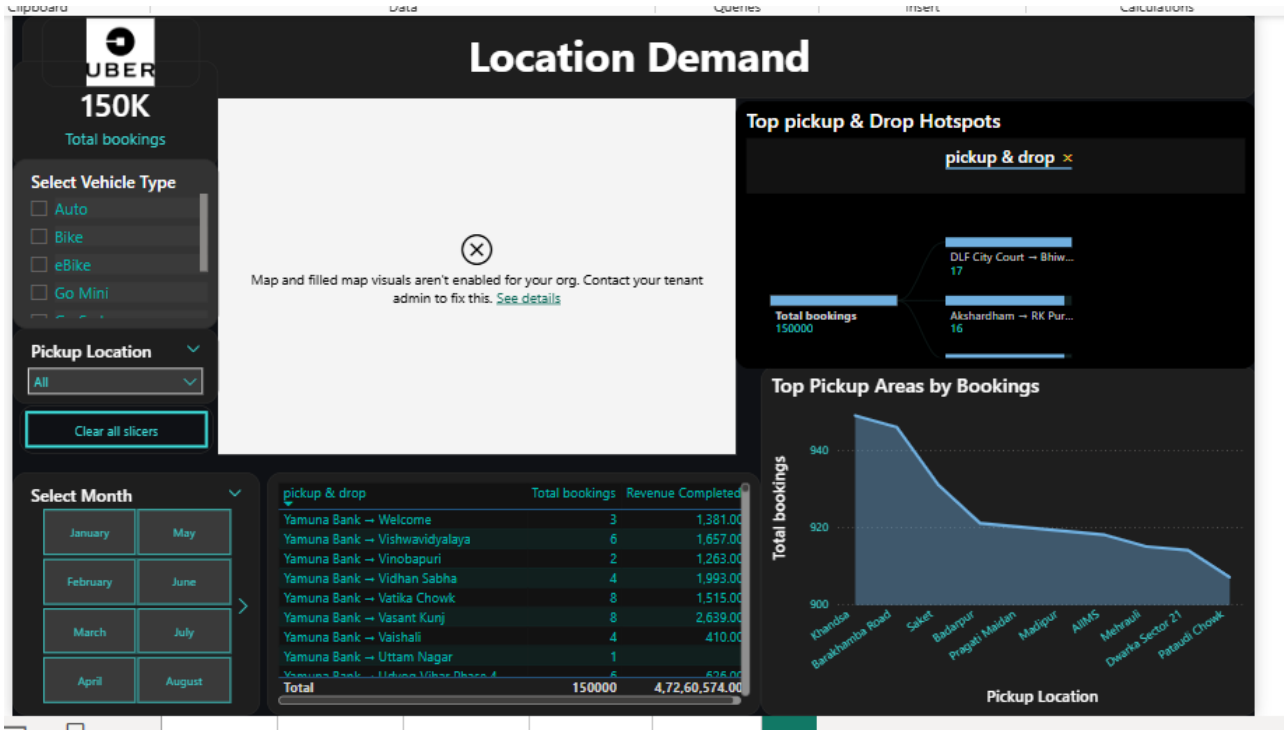
Provides detailed route-level insights, showing booking counts and revenue for each route.

Top Pickup Areas by Bookings (Line/Bar Chart)

Shows the most active pickup locations based on booking volume, useful for driver allocation.

Slicers

Vehicle Type, Pickup Location, and Month slicers enable location-specific demand analysis.


Location Demand
150K
Total bookings
Select Vehicle Type
Auto
Bike
eBike
Go Mini
Pickup Location
All
Clear all slicers
Map and filled map visuals aren't enabled for your org. Contact your tenant admin to fix this. See details
Top pickup & Drop Hotspots
pickup & drop
Total bookings
150000
DLF City Court → Bhiw...
17
Akshardham → RK Pur...
16
Top Pickup Areas by Bookings
Total bookings
940
920
900
Khandsa
Barakhamba Road
Saket
Badarpur
Pragati Maidan
Madipur
AIIMS
Mehrauli
Dwarka Sector 21
Palam
Pitampura Chowk
Pickup Location
Select Month
January
February
March
April
May
June
July
August
pickup & drop
Total bookings
Revenue Completed
Yamuna Bank → Welcome 3 1,381.00
Yamuna Bank → Vishwavidyalaya 6 1,657.00
Yamuna Bank → Vinobapuri 2 1,263.00
Yamuna Bank → Vidhan Sabha 4 1,993.00
Yamuna Bank → Vatika Chowk 8 1,515.00
Yamuna Bank → Vasant Kunj 8 2,639.00
Yamuna Bank → Vaishali 4 410.00
Yamuna Bank → Uttam Nagar 1
Total 150000 4,72,60,574.00

10. Customer Experience & Ratings Analysis (Page 5)

This dashboard evaluates service quality and customer satisfaction for completed rides.

KPI Cards Explanation

- **Average Customer Rating (4.40):** Reflects overall customer satisfaction.
- **Average Driver Rating (4.23):** Indicates driver performance quality.
- **Average Pickup Time (8.51 mins):** Shows its influence on customer experience.

How Customers Rated Their Rides (Histogram)

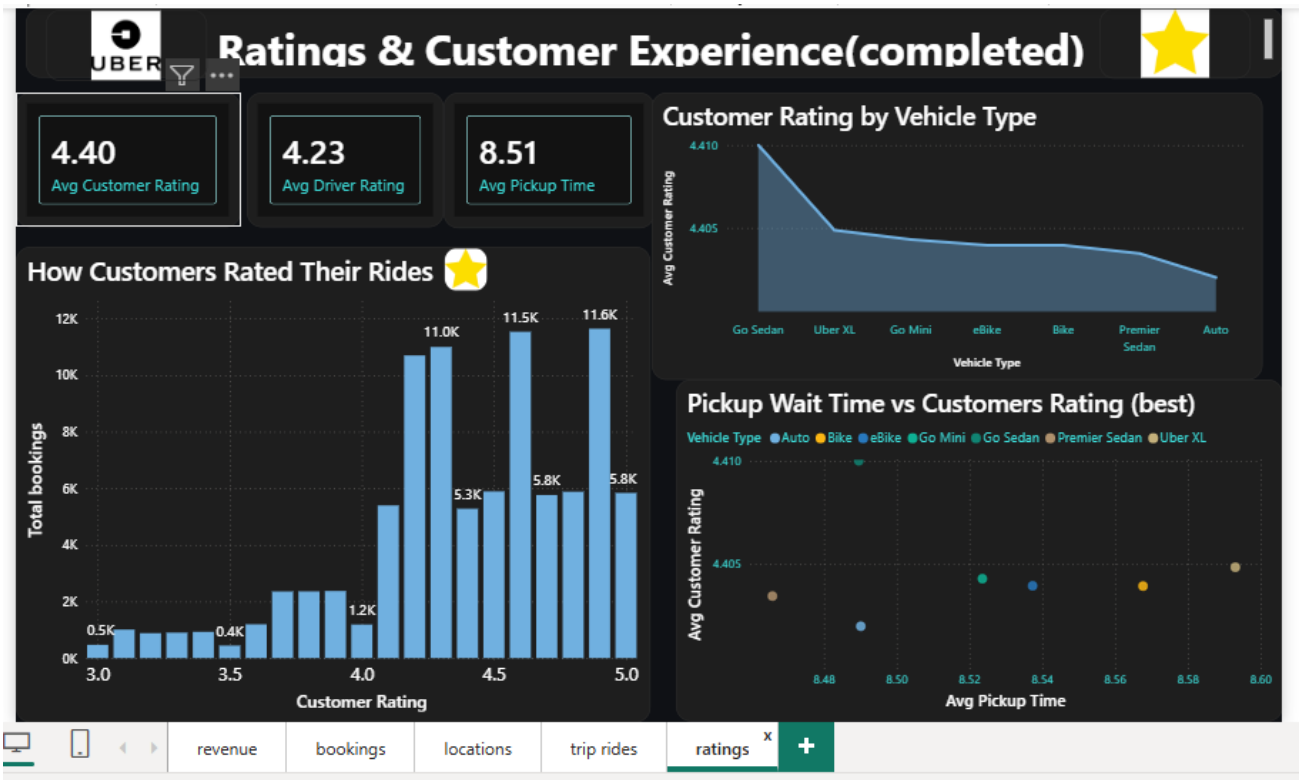
Displays distribution of ratings from 3 to 5. A higher concentration above 4 indicates strong satisfaction.

Customer Rating by Vehicle Type (Line/Area Chart)

Compares average ratings across vehicle categories, highlighting best-performing services.

Pickup Wait Time vs Customer Rating (Scatter Plot)

Demonstrates the inverse relationship between waiting time and ratings—longer waits generally reduce satisfaction.



11. Key Insights

 Peak Revenue Concentration
A large portion of revenue is generated during **morning and evening peak hours**, confirming that commuter travel is the primary revenue driver.

 Vehicle Type Performance Gap
Economy vehicle types (Auto, Go Mini) dominate booking volume, while premium vehicles generate **higher revenue per ride but lower demand**, indicating a price–demand tradeoff.

 Impact of Pickup Waiting Time (VTAT)
There is a clear **inverse relationship between pickup waiting time and customer ratings**—longer wait times reduce customer satisfaction.

 Cancellation Influence on Revenue
High cancellation volumes directly impact overall revenue and completion rate, highlighting the need for better driver availability and ride matching.

 Location-Based Demand Clustering
Booking demand is **concentrated in specific pickup and drop locations**, making them critical zones for driver positioning and operational planning.

 Digital Payment Dominance
UPI and card payments contribute a significant share of revenue, showing strong adoption of **cashless transactions**.

 Stable Trip Distance Trend
Average ride distance remains relatively consistent across months, indicating predictable travel behavior.

 Customer Satisfaction Consistency
Average customer ratings remain above **4.0**, reflecting generally positive service quality.

 Operational Efficiency Variation
Trip duration (CTAT) varies by vehicle type, suggesting differences in routing efficiency and traffic exposure.

 Dashboard Interactivity Value
Use of slicers enables **dynamic, scenario-based analysis**, improving decision-making flexibility.

12. Conclusion & Future Improvements

This Power BI project successfully demonstrates how data analytics can improve operational decision-making in ride-hailing platforms. The analysis provides actionable insights into revenue optimization, demand management, and service quality improvement.

Future Enhancements:

- Integration of real-time data
- Predictive analysis for demand forecasting
- Advanced machine learning models for ride cancellation prediction
- Geographic map visualizations for deeper location analysis