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# **Namma Yatri Data Analysis: Technical Methodology & Strategic Insights**

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# Executive Summary (Technical Focus)

## Objective:

To present the technical approach, key analytical findings, and data-driven recommendations to optimize Namma Yatri's operational efficiency and marketing strategies.

## Core Achievement:

Established a robust data model, resolved inconsistencies, and developed precise DAX measures to enable deep-dive analysis.

## Key Technical Insights:

Identified critical conversion, quantified customer and driver cancellation impacts, and mapped payment method preferences.

## Outcome:

Actionable strategies informed by granular data analysis, ensuring technical feasibility and measurable impact.

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# 1. Problem Statement & Project Goal

**Business Challenge:** Namma Yatri faces the challenge of optimizing its ride-hailing operations and marketing efforts amidst fluctuating demand and high cancellation rates.

**Analytical Goal:** To conduct a comprehensive data-driven analysis to identify key performance drivers, pinpoint inefficiencies, and provide actionable, technically sound recommendations for enhanced service efficiency and customer satisfaction.

## Goal

- Identify peak demand patterns and trends.
- Uncover factors influencing cancellations and driver performance.
- Optimise payment methods and trip durations.
- Improve resource allocation and marketing strategies.



# 2. Data Sources & Model Overview

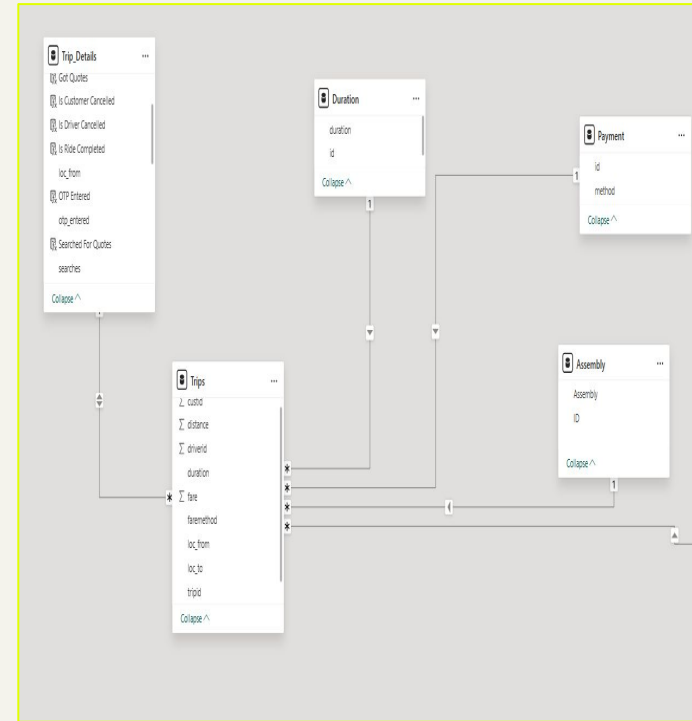
**Data Sources:** Raw transactional and master data from Namma Yatri, encompassing:

- Assembly (Geographic zones)
- Duration (Time periods of trips)
- Payment (Payment methods)
- Trip Details (Detailed trip events: searches, quotes, OTP, end ride)
- Trips (Trip metadata: fare, distance, driver/customer IDs, linked to Payment and Assembly)

## Methodology:

- All datasets imported into Power BI Desktop.
- Established a star schema-like model with Trip Details and Trips as fact tables and Assembly, Duration, Payment as dimension tables.
- Relationships verified for referential integrity (Trips[faremethod] to Payment[id], Trips[loc\_to] to Assembly[id], Trips[duration] to Duration[id], Trip\_Details[tripid] to Trips[tripid]).

**Outcome:** A robust, unified data model facilitating seamless cross-table analysis and accurate aggregation of metrics.



# 3. Data Preparation & Quality Assurance

## Methodology:

- **Data Type & Duplicates:**  
Performed rigorous data type checks and duplicate removal (specifically for tripid in Trip\_Details and Trips tables) using Power Query Editor.

**DAX Formulas:** e.g., the Overall Cancellation Rate, customer cancellations, completed trips etc. Some of examples are in this picture

**Outcome:** Clean, consistent, and analysis-ready dataset with essential calculated metrics for accurate insight generation.

Trip_Details	% Completion after Quote Search	% Completion after Quote Search = DIVIDE( [Trips with Quote Searches and Completed], [Total Trips with Quote Searches], 0 // The '0' provides a default value for division by zero to prevent errors )
Trip_Details	% Customer Cancellations	% Customer Cancellations = DIVIDE([Customer Cancellations], [Total Trips], 0)
Trip_Details	% Customer Not Cancelled	% Customer Not Cancelled = DIVIDE([Customer Not Cancelled], [Total Trips], 0)
Trip_Details	% Driver Cancellations	% Driver Cancellations = DIVIDE([Driver Cancellations], [Total Trips], 0)
Trip_Details	% Driver Not Cancelled	% Driver Not Cancelled = DIVIDE([Driver Not Cancelled], [Total Trips], 0)
Trip_Details	% Overall Completed Rides	% Overall Completed Rides = DIVIDE([Overall Completed Rides], [Total Trips], 0)
Trip_Details	Customer Cancellations	Customer Cancellations = CALCULATE(COUNTROWS('Trip_Details'), 'Trip_Details'[customer_not_cancelled] = 0)
Trip_Details	Customer Not Cancelled	Customer Not Cancelled = CALCULATE(COUNTROWS('Trip_Details'), 'Trip_Details'[customer_not_cancelled] = 1)
Trip_Details	Driver Cancellations	Driver Cancellations = CALCULATE(COUNTROWS('Trip_Details'), 'Trip_Details'[driver_not_cancelled] = 0)
Trip_Details	Driver Not Cancelled	Driver Not Cancelled = CALCULATE(COUNTROWS('Trip_Details'), 'Trip_Details'[driver_not_cancelled] = 1)



# 4. Key Conversion Metrics & Time-Based Performance

## Metrics:

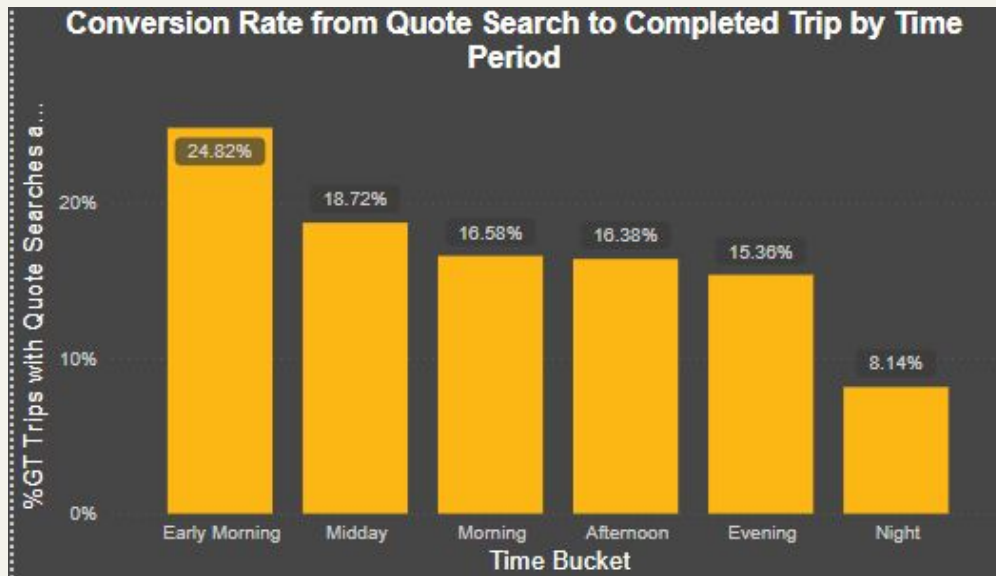
- **Quote Allotment Rate:** Percentage of "searches for quotes" that result in "searches got quotes" (Driver allotted).
- **Completion Rate after Quote Search:** (e.g., 67.56% overall).

**Analysis:** Examine the conversion efficiency at crucial stages of the user journey, specifically highlighting how the completion rate varies across different time periods.

**Technical Insight:** Highlighting specific conversion drop-off points (e.g., high rate of searches\_for\_quotes but lower searches\_got\_quotes could indicate supply issues). The analysis reveals that the **"Early Morning" (0-6 AM) time bucket has the highest completion rate after quote search at 24.82%**, while "Night" has the lowest at 8.14%. This suggests varying operational efficiencies or demand-supply dynamics by time of day.

Total trips after quote search

67.56%



# 5. Operational Deep Dive: Cancellation Rate Dynamics

**Objective:** To understand the magnitude and distribution of cancellations impacting service delivery.

**Metrics Analyzed:**

- **Customer Cancellation Rate: 48.17%**  
(Percentage of trips initiated but cancelled by the customer).
- **Driver Cancellation Rate: 47.25%** (Percentage of trips initiated but cancelled by the driver).

**Technical Insight:** The near-equal high cancellation rates from both customer and driver sides indicate systemic friction points that are not unilaterally driven. This requires a dual-pronged approach addressing both rider experience post-booking and driver incentives. Further analysis (though not in this deck) could involve categorizing reasons for `customer_not_cancelled = 0` and `driver_not_cancelled = 0`.

Customer Cancellation Rate

48.17%

Driver Cancellation Rate

47.25%

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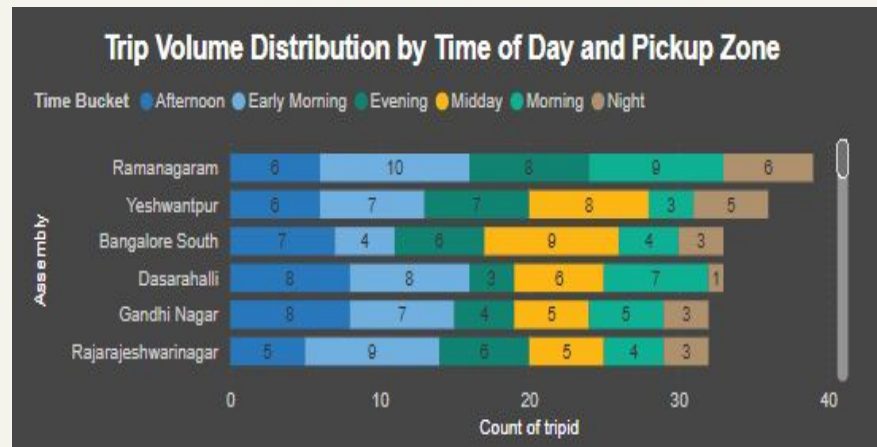
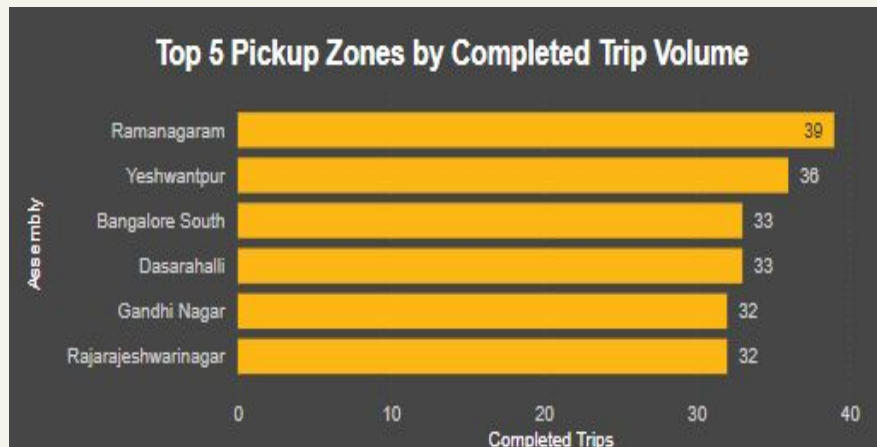
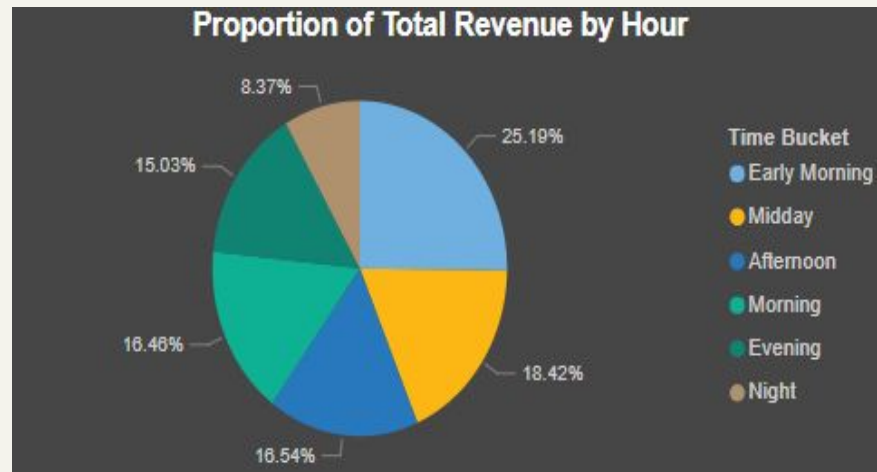
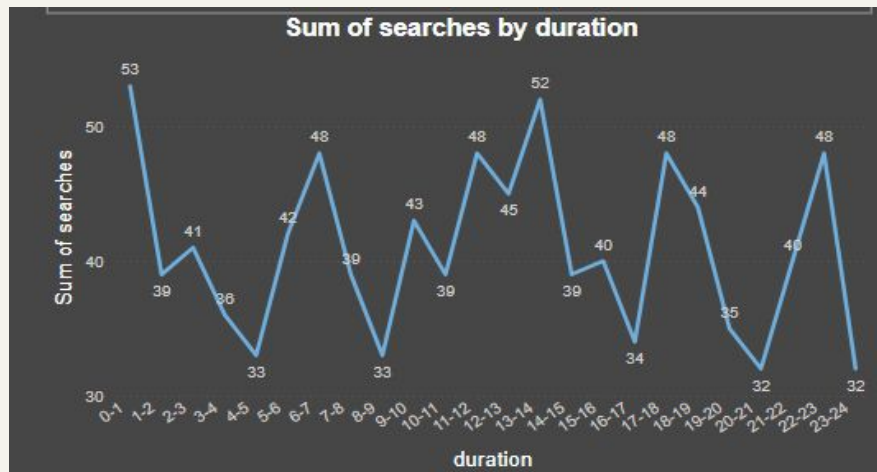
# 6. Performance Analysis: Geographic & Temporal Dimensions

**Objective:** To identify high-performing segments based on ride volume and revenue.

**Metrics Analyzed:** Sum of searches (Trip Request Volume), Sum of fare (Revenue), Completed Trips.

**Technical Insight:**

- **Demand Trends (Sum of searches by duration):** Shows fluctuating demand with peaks (e.g., 6-7 AM, 13-14 PM) that don't always align with revenue peaks, suggesting varying fare models or trip durations.
- **Revenue Contribution (Proportion of Total Revenue by Hour):** "Early Morning" contributes the highest proportion (25.19%) to total revenue, indicating high-value trips despite overall lower search volume during those specific hours.
- **High-Performing Zones:** Ramanagaram and Yeshwantpur consistently lead in both trip requests and completed trips. Bangalore South emerges as the highest revenue-generating assembly, followed by Yeshwantpur and Hebbal, highlighting key investment areas.

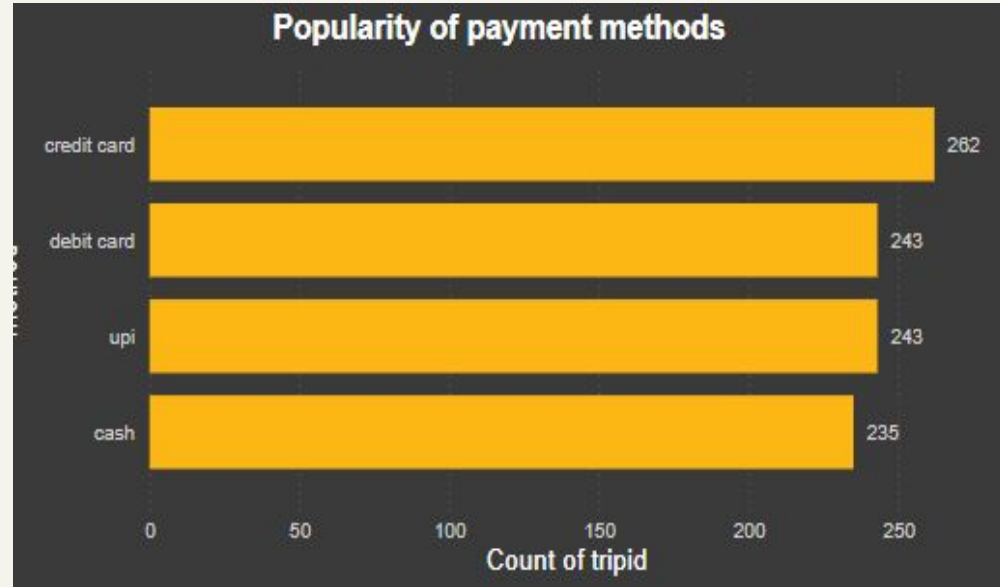


# 7. Financial Insights: Payment Method Analysis

**Objective:** To understand user preferences for payment methods and identify opportunities for operational efficiency.

**Metrics Analyzed:** Ride frequency by Payment method.

**Technical Insight:** The distribution of payment methods shows a slight inclination towards **Credit Card (26.65%)**, with Debit Card and UPI both at 24.72%, and Cash being the least used at 23.91%. This relatively balanced distribution, yet with digital methods combined significantly higher than cash, implies a need to maintain robustness across all digital payment gateways and prioritize promoting cashless options.



# 8. Solution Showcase: Supporting Dashboard - Technical Design

## Dashboards:

**Purpose:** A comprehensive, interactive Power BI dashboards:

- Monitor real-time operational metrics and their underlying data integrity.
- Facilitate in-depth analysis for identifying root causes of performance variations.
- Validate the accuracy and behavior of implemented DAX measures.

## Technical Features:

- **Robust Data Model & DAX Integration:** Built directly on the optimized data model, leveraging all custom DAX measures (e.g., for conversion , various cancellation rates, revenue calculations) to ensure precise, real-time aggregation and calculation of complex Key Performance Indicators (KPIs).

## Key Visuals on Dashboard (Aligned with Technical Analysis and Document Insights):

- **Card Visuals:** Prominently display essential KPIs derived from DAX, such as:
  - Overall Conversion Rate from Quote Search to Completed Trip
  - Customer cancellation & non cancellation rate
  - Driver cancellation & non cancellation rate and more
- **Trend & Distribution Charts:**
  - Line Chart: Sum of searches by duration (displaying hourly trip request trends).
  - Pie Chart: Proportion of Total Revenue by Hour (visualizing revenue contribution across different time buckets).
  - Bar Chart: Conversion Rate from Quote Search to Completed Trip by Time Period (showing conversion efficiency breakdowns by time bucket) and more.

## Namma Yatri: Operational Efficiency & Performance Overview

Customer Cancellation Rate

48.17%

Driver Cancellation Rate

47.25%

Customer Non-Cancellation Rate

51.83%

Driver Non-Cancellation Rate

52.75%

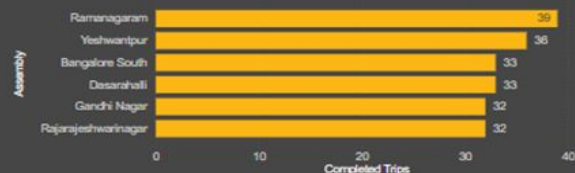
Total trips after quote search

67.56%

### Trip Volume Distribution by Time of Day and Pickup Zone



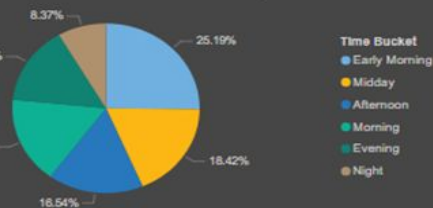
### Top 5 Pickup Zones by Completed Trip Volume



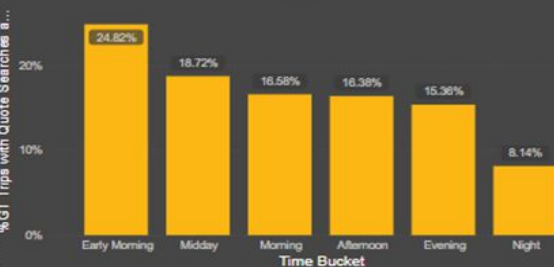
### Hourly Revenue Trends



### Proportion of Total Revenue by Hour



### Conversion Rate from Quote Search to Completed Trip by Time Period



### Sum of searches by duration





## Namma Yatri: Marketing & Strategic Growth Dashboard

Total trips after quote search

67.56%

Completed Trips

983

Total Fare

751K

Customer Cancellation

48.17%

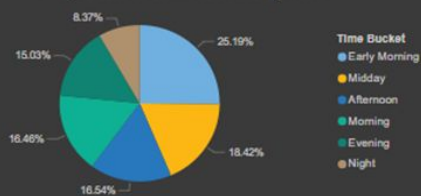
Driver Cancellation

47.25%

Digital Payment Method %

76.09%

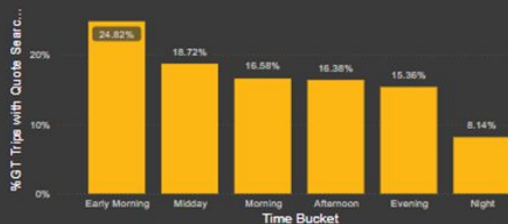
Proportion of Total Revenue by Hour



Proportion of Total Revenue by Hour



Conversion Rate from Quote Search to Completed Trip by Time Period



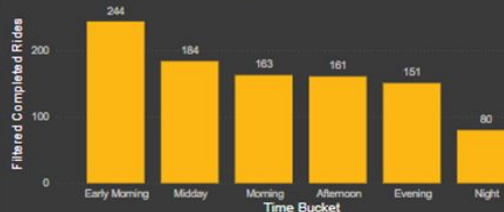
Popularity of payment methods



Sum of Top Assemblies by Total Fare (Revenue)



Filtered Completed Rides by Assembly



Parameter

Time Bucket



# 9. Key Insights for Namma Yatri

- **High and Symmetrical Cancellation Rates:** Customer cancellation rates stand at **48.17%** and driver cancellation rates at **47.25%**. This near-equal distribution indicates underlying systemic friction points affecting both sides of the platform, requiring a comprehensive technical approach to identify and resolve.
- **Variable Conversion Efficiency Across Time Buckets:** The overall conversion rate from quote search to a completed trip is **67.56%**. However, this efficiency varies significantly; "Early Morning" (0-6 AM) shows the highest conversion at **24.82%** (of its conversions), while "Night" records the lowest at **8.14%**. This suggests that different operational or demand-supply dynamics are at play during distinct time periods.
- **Discrepancy Between Demand Volume and Revenue Peaks:** Analysis reveals that peak trip request volumes (Sum of searches by duration) do not always directly correlate with peak revenue-generating periods (Proportion of Total Revenue by Hour). For example, "Early Morning" contributes a disproportionately high **25.19%** to total revenue, suggesting higher-value trips or more efficient conversions during these hours, despite not always having the highest *number* of searches. This highlights the complexity of optimizing dynamic pricing and driver allocation.
- **Diversified Digital Payment Adoption:** There is a strong and relatively even preference for digital payment methods: Credit Card (26.65%), Debit Card (24.72%), and UPI (24.72%) are all closely utilized, collectively dominating over Cash (23.91%). This signals a robust digital payment ecosystem that needs continued technical optimization and integration.

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# 10. Recommendations (Technical Implementation)

## 1. **Optimized Dynamic Driver Allocation & Incentive Systems:**

- **Implement a dynamic driver deployment strategy** leveraging real-time data on demand peaks (e.g., 8-10 AM, 6-8 PM) and high-revenue periods ("Early Morning"). Prioritize driver availability in high-performing zones like Ramanagaram, Yeshwantpur, Bangalore South by deploying location-aware algorithms.
- **Develop a performance-based bonus structure** with a technical backbone that tracks granular metrics like ride completion rates (especially during peak hours) and service in high-demand/high-revenue zones. Incentivize acceptance of longer trips or rides to less popular areas to reduce driver cancellations in these specific scenarios.

## 2. **Algorithmic & System Refinement for Cancellation Reduction:**

- **Conduct in-depth data-driven root cause analysis** on both customer and driver cancellation patterns, focusing on variables like fare discrepancies, dispatch distance, and real-time ETA accuracy.
- **Refine real-time ETA and dynamic fare estimation algorithms** to enhance transparency and predictability for users.
- **Optimize the matchmaking algorithm** to minimize the time between a customer's request and a driver's acceptance, thereby directly impacting pre-trip cancellation rates.

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### 3. Conversion Funnel Optimization Through UI/UX & System Logic:

- **Implement targeted system improvements** to boost conversion in lower-performing time buckets (e.g., "Night") by analyzing specific drop-off points in the funnel during those periods.
- **Enhance the in-app experience** focusing on the technical performance of quick quote generation and streamlining the booking flow based on user analytics.
- **Explore mechanisms for "guaranteed driver acceptance" post-quote** by adjusting allocation logic or implementing temporary incentives that lock in a driver upon quote acceptance, building user confidence.
- **Integrate a robust, accessible in-app feedback loop system** to collect granular data on user pain points and quickly inform technical adjustments to the customer journey.

### 4. Digital Payment Ecosystem Optimization & Promotion:

- **Continuously optimize the integration and performance of multiple digital payment gateways** (Credit Card, Debit Card, UPI) to ensure seamless, secure, and fast transactions, minimizing technical friction points.
- **Develop technical capabilities for automated loyalty programs or cashback offers** tied to specific digital payment methods, leveraging the existing user preference for cashless transactions to further drive adoption and reduce reliance on cash handling.

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# Thank You!

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Thank you for reviewing our data-driven insights. We welcome your questions.

-Deepanjali Bhatt

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