Metrocar August 2024

Introduction

This report presents a comprehensive analysis of user & ride funnels of Metrocar and exploratory data analysis to identify areas for improvement and optimization. As a ride-sharing app Metrocar connects riders with drivers through a user-friendly mobile application. The project employed Pandas, Plotly, Seaborn, and Matplotlib for in-depth analysis and visualization.

For the period (Jan 2021 - April 2022) Metrocar had a **revenue** of **$4,251,668** from **212,628 completed rides**, with a total of **6,233 users** using the app at least once. These insights and other findings offer actionable recommendations to enhance the efficiency and user experience of Metrocar's platform. Transaction approval rate was very favorable at 95% (with ~11K declined), this is excellent compared to most e-commerce platform businesses but could possibly be increased to 97% so as to match the level of in-store transactions.

Key Insights

This analysis mainly focused on the following business questions:

- Enhancing Funnel Efficiency
- Identifying Lowest Conversion Rate
- Platform-based Insights
- Performance Analysis by Age Demographics
- Strategic Approach to Surge Pricing

In addition to the above areas, we conducted a revenue analysis to get to know the company more closely and and sought answers to the following points;

- Whether there is a relationship between cancellations and surge pricing or driver availability?
- When the retention rate started to decline?
- What is the rating distribution of total rides by age range?
- How is drivers' performance and can it be the reason for cancellations?

Constructing a customer funnel provided a clear understanding of the drop-off from one step to the next, from both user and ride perspectives. The customer funnel consists of 7 steps; total app downloads, total signups, rides requested, rides accepted, rides completed, transactions approved, and user reviews. A **25% dropoff** was observed from app download to user signup. Metrocar should further investigate the significant **49% user dropoff** occurring between the rides accepted and ride completed stages in case of customer funnel to understand and address the underlying issues affecting user retention during this critical phase. Examination of the customer funnel by age group shows that at signup **30%** of the user base **(5304 users)** has an unknown age range. It would be ideal at signup that users could only provide an age range rather than allowing an unknown for marketing and streamlined user analysis. When we examine customer funnels by age group, we observe that users where age is unknown had the highest application downloads **(11289)**, critically, **53%** of that download count **did not sign up/register** with Metrocar after the app download.

When we look at the lowest conversion rate in our user funnel occurs in the transition from ride accepted to ride completed, these could be the reasons of this dropoff:

- **Driver Availability**: There may be instances where drivers accept rides but are unable to reach the pickup location due to traffic or navigational issues, leading to cancellations.
- **User Cancellation**: Users might cancel rides after acceptance for various reasons, such as changes in plans or dissatisfaction with wait times.
- **Communication Issues**: Inadequate communication between drivers and riders during the pickup process may lead to confusion, causing riders to leave the ride.

On the other hand, rides funnel has 5 steps; ride request, ride accepted, ride finished, ride paid, review. Another important dropoff point is from ride requested to ride accepted, there is a **35% dropoff** that needs to be focused on. The reasons behind this lowest conversion rate could be;

- **Driver Supply**: There may be insufficient drivers available in certain areas or at specific times, leading to fewer accepted requests.
- **User Experience**: Users may experience delays or complications during the request process, leading to frustration and abandonment.

When we look at which platform Metrocar users use the most, we see that **iOS** comes first with **60% of users,** its competitor **Android** is at **30%**, and the remaining **10%** are **web users**. At the same time, the high number of ride requests on iOS indicates strong user engagement and satisfaction on this platform. Here again, we see that in the age distribution, the unknown group has a very high share. Critically, our user base does not reflect smartphone market share where Android users represent ~70% of smartphone sales.

The **35–44 age group** performs best at each stage of our funnel, followed by the 25–34 age group. Given their high performance and the significant revenue they generate, the **35–44 age group** is likely our **target customer**.

Just as important as the 35-44 age group is the unknown group. Their total purchase is as high as the 35-44 age group and we do not know the age distribution of this group. Not only as current revenue generators, but also as potential customers, the unknown group has an important place for Metrocar. As we saw in the previous finding, there is a large potential of customers who have downloaded the app but do not use it.

Based on the analysis of ride requests throughout the day, the data shows that the **ride requests peak** during specific hours of the day, typically corresponding to traditional rush hours such as early mornings **(7 AM - 10 AM)**, and starting from late afternoons to evenings **(3 PM - 8 PM)**. These time frames represent critical opportunities for surge pricing, as demand significantly increases during these periods. By implementing surge pricing during the identified peak hours, Metrocar can increase its revenue. On the other hand, this may also be a reason for cancellation due to the higher than normal price. Anly

One of the important points that we investigated is the relation between driver availability and cancellations by hour of the day and we see that there is a **big gap** between **driver availability** and **number of ride requests**. Beyond this, **retention rate analysis** indicates that we have approximately a 50% retention rate over the first **40 days**, which drops to ~25% by 60 days, with a continued downward trend where Metrocar **loses customers**. Another point we analyzed about the data is the distribution of ratings by age group. Unfortunately, we can say that the **35-44 age group**, which is the most critical group for us, is **not satisfied** with Metrocar with a **rating of 1**.

Approximately **30% of rides (46.5K) were rated 1**, 20% were evenly split between ratings of 2 and 3. Of the remaining **50% were evenly split between ratings of 4 and 5**. Drivers who received poor ratings (1 or 2) initially often improve after 5-6 rides; around **15-20%** may benefit from customer service and communication based

training to help elevate user ratings to reach an average rating of 3+. Conversely, an unfavorable trend is visible in drivers who initially provide a very good to excellent Metrocar ride experience (i.e. 4 or 5) show a trend to receive a reduced rating with an increased ride count/increased user interaction. Providing further training and incentives could help the most active drivers raise their average rating to at least 4.

Recommendations

This analysis highlights the necessity for the company to balance supply and demand during peak hours, as the current shortage during these times leads to a high cancellation rate due to customers' reluctance to endure long wait times. Based on our insights, the recommendations we can give to Metrocar are as follows.

- **Enhance Driver Support**: Provide better navigation tools and real-time traffic updates to help drivers reach their pickup locations efficiently.
- **Improve Communication**: Establish clearer communication channels between drivers and riders, ensuring both parties can easily connect during the ride.
- **Encourage Drivers**: Offer incentives for drivers to complete rides, particularly during peak hours when demand is high.
- **Analyze Cancellations**: Add a cancellation reason section and conduct a thorough analysis to identify common reasons and address them proactively.
- **Optimize Driver Allocation**: Use data analytics to ensure that drivers are efficiently distributed across high-demand areas and times.
- **Increase Driver Base:** Increase the number of drivers in order to avoid cancellations due to lack of drivers
- **Enhance User Experience**: Streamline the ride-request process to make it more user-friendly.
- **Mandatory Age-Range Section:** If the age range section is made mandatory when registering for the application, unknown age range becomes known and more efficient results can be obtained in customer target group analysis and marketing activities.
- **Loyalty Programs:** Implement loyalty programs to incentivize repeat usage.
- **Tailored Marketing:** Allocate marketing resources towards age groups with higher conversion (35-44) and retention rates, potentially with tailored messaging that resonates with their specific needs or preferences.

In summary, Metrocar needs a multifaceted approach, focusing on driver support, user communication, supply optimization and overall user experience.

Database Link: postgresql://Test:bQNxVzJL4g6u@ep-noisy-flower-846766-pooler.us-east-2.aws.neon.tech/Metrocar
Colab Notebook Link: Metrocar_Master_File.ipynb
GitHub Link: https://github.com/smit-k-patel/Metrocar-Project