Funnel Analysis Mastery Project

Experiment: Analyze the customer funnel of Metrocar

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Abstract

This report outlines the outcomes and recommendations from the Funnel Analysis Mastery Project, centring on Metrocar—a ride-sharing app comparable to Uber and Lyft. The project's core objective is a comprehensive examination of Metrocar's customer funnel, utilizing SQL for data querying and Tableau for visualization.

The study includes a sentiment analysis of user reviews, utilizing Python and the TextBlob library to gauge overall customer sentiment. This analysis aspect yields insights into the moderate nature of customer emotions towards the service, with most reviews clustering around neutrality. This indicates that while customers do not express extreme dissatisfaction, they can enhance their experiences to evoke more positive responses, thus delivering a comprehensive perspective of the customer experience that augments the quantitative insights.

In conclusion, the report provides a nuanced understanding of Metrocar's customer interactions. It offers actionable insights for improving user experience and business strategy, enriching our examination of the customer journey within the ride-sharing context.

Introduction

Metrocar's business model is based on a platform that connects riders with drivers through a mobile application. Metrocar is an intermediary between riders and drivers, providing a userfriendly platform to connect them and facilitate the ride-hailing process.

The customer funnel for Metrocar typically includes the following stages:

1. App Download: A user downloads the Metrocar app from the App Store or Google Play Store.
2. Signup: The user creates an account in the Metrocar app, including their name, email, phone number, and payment information.
3. Request Ride: The user opens the app and requests a ride by entering their pickup location, destination, and ride capacity (2 to 6 riders).
4. Driver Acceptance: A nearby driver receives and accepts the .
5. Ride: The driver arrives at the pickup location, and the user gets in the car and rides to their destination.

6. Payment: After the ride, the user is charged automatically through the app, and a receipt is sent to their email.
7. Review: The user is prompted to rate their driver and leave a review of their ride experience.

Like other customer funnels, there will be drop-offs at every stage of the funnel, which is why funnel analysis can help identify areas for improvement and optimization. For example, Metrocar may analyze the percentage of users who download the app but still need to complete the registration process or the percentage of users who request a ride but cancel before the driver arrives.

Percent of Previous and Percent of Top are two different ways to measure the conversion rates at various funnel stages. Let's explore each term:

Percent of Previous: This metric refers to the percentage of users that move from one stage of the funnel to the next. It calculates the conversion rate by dividing the number of users or events in a specific stage by the number of users or events in the previous stage. This metric helps track the progression of users through each step of the funnel and identify potential areas of improvement or drop-offs.

Percent of Top: This metric refers to the percentage of users or events that reach a particular stage of the funnel relative to the total number of users or events at the top of the funnel. It calculates the conversion rate by dividing the number of users or events in a specific stage by the number of users or events at the top of the funnel.

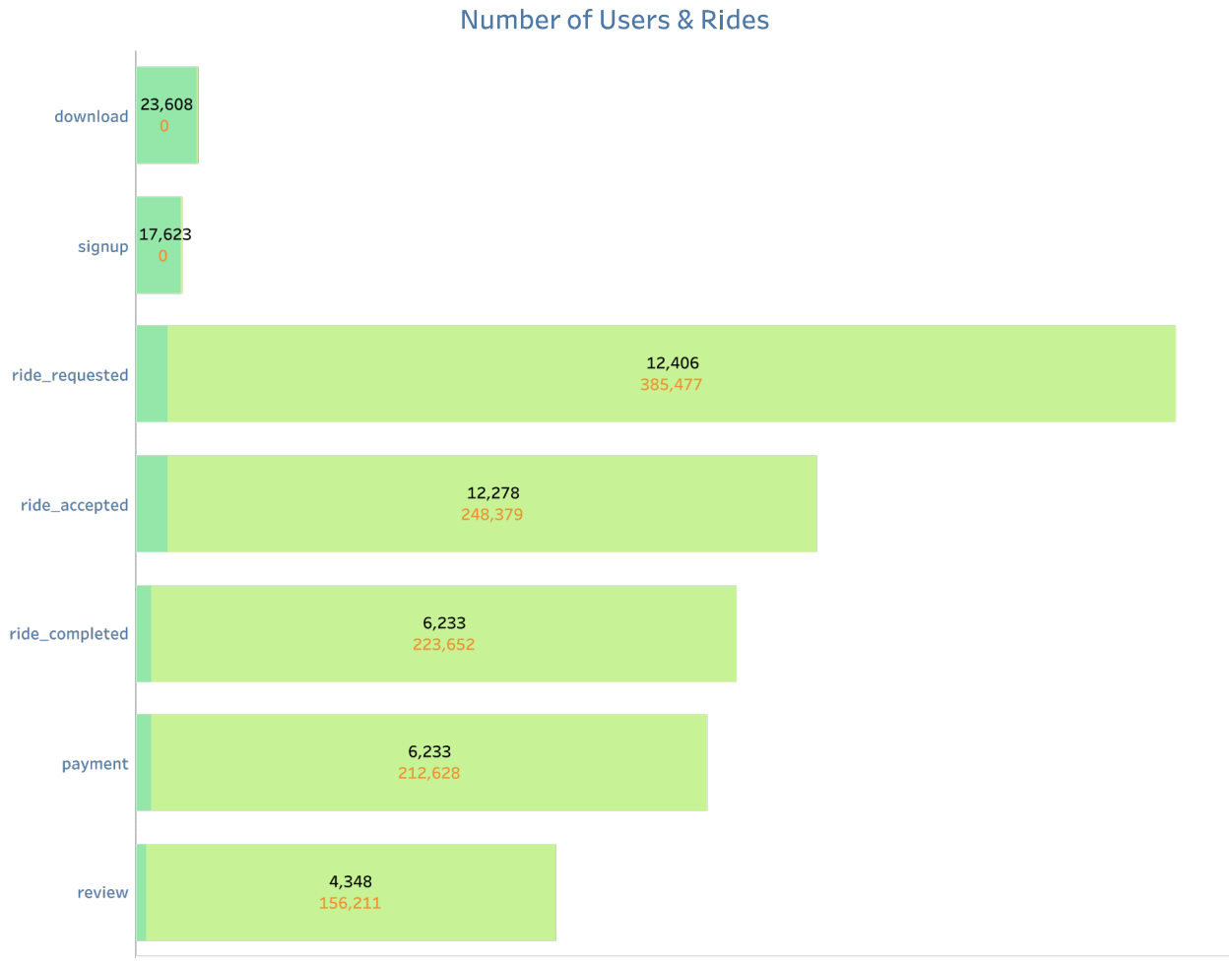
We analyzed the data and made recommendations based on the following business questions:

- What steps of the funnel should we research and improve? Are there any specific dropoff points preventing users from completing their first ride?
- Metrocar currently supports 3 different platforms: ios, android, and web. To recommend where to focus our marketing budget for the upcoming year, what insights can we make based on the platform?
- What age groups perform best at each stage of our funnel? Which age group(s) likely contain our target customers?
- Surge pricing is the practice of increasing the price of goods or services when there is the greatest demand for them. If we want to adopt a price-surging strategy, what does the distribution of ride requests look like throughout the day?
- What part of our funnel has the lowest conversion rate? What can we do to improve this part of the funnel?

Results

The Metrocar app was downloaded 23608 times, signifying the initial entry point into the customer funnel. A total of 17623 users successfully signed up on the app, completing the

registration process and progressing to the next stage of the funnel. 385477 ride requests were initiated through the Metrocar app, showcasing user engagement in utilizing the service. Of the total ride requests, 223652 were completed, indicating the conversion from a request to a completed journey. A total of 12,406 unique users initiated ride requests, emphasizing the diversity and breadth of Metrocar's user base. The average time of a ride from pick-up to dropoff is 52 minutes and 36.74 seconds, providing insights into the typical duration of a Metrocar journey. 248379 ride requests were accepted by drivers, demonstrating the efficiency of the driver allocation process. Of the completed rides, 212628 successfully collected payments were recorded, amounting to $4251667.61. This reflects Metrocar's financial success in processing transactions.



Breakdown of ride requests by platform:
- iOS: 234693 requests
- Android: 112317 requests
- Web: 38467 requests

The drop-off from users signing up to users requesting a ride is 29.60%, indicating the percentage of users who only proceed up to the sign-up stage. Strategies to streamline onboarding processes and incentivize ride requests can address this drop-off.

Analysis of Metrocar Customer Funnel: Identifying Improvement Areas

The examination of the Metrocar customer funnel indicates significant conversion rates and identifies specific stages with notable drop-offs. Grasping these metrics is essential for identifying areas necessitating research and enhancement to improve user experience and boost overall conversion rates. The conversion rate is calculated based on the percentage of the previous stage.

App Download to Signup (Conversion Rate: 74.65%, Drop-off Rate: -25.35%):
Suggest delving into the factors contributing to user drop-offs after app download. Propose implementing a compelling onboarding experience that emphasizes the significance of user registration. Explore the possibility of introducing incentives to prompt users to sign up promptly.

Signup to Request Ride (Conversion Rate: 70.40%, Drop-off Rate: -29.60%):
Analyze the user experience during signup. Streamline the process, reduce form fields, and provide clear instructions. Offer first-ride discounts or promotions to motivate users to progress to the next stage.

Request Ride to Driver Acceptance (Conversion Rate: 98.97%, Drop-off Rate: -1.03%):
Investigate the minimal drop-off at this stage. Optimize the algorithm for efficient driver assignment. Communicate real-time driver availability to users to minimize uncertainties.

Driver Acceptance to Ride (Conversion Rate: 50.77%, Drop-off Rate: -49.23%):
Address the significant drop-off by improving driver response times. Implement incentives for drivers to accept rides promptly. Enhance communication with users regarding expected wait times.

Ride to Payment (Conversion Rate: 100%, Drop-off Rate: 0%):
Acknowledge the strong conversion rate at this stage. Ensure a seamless payment process and consider loyalty programs to encourage repeat rides.

Payment to Review (Conversion Rate: 69.76%, Drop-off Rate: -30.24%):
Focus on improving the review completion rate. Implement in-app prompts, notifications, and incentives for users to provide feedback after a ride.

Recommendations:

1. User Feedback and Surveys: Conduct user surveys to gather insights into their experiences at each stage. Identify pain points and areas for improvement based on direct user feedback.

2. Incentive Programs: Implement targeted incentive programs at critical stages to encourage user progression. This could include discounts, rewards, or exclusive offers for completing specific actions.

3. Enhanced Communication: Improve in-app communication to guide users through the funnel. Provide real-time updates, clear instructions, and notifications to enhance the overall user experience.

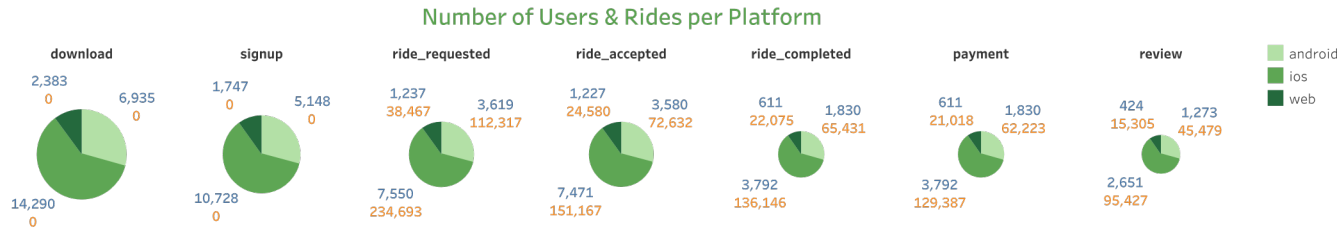
4. Data-Driven Iterations: Continuously analyze data to identify trends and patterns. Use A/B testing for feature iterations, ensuring changes positively impact user conversion rates.

5. Optimized Onboarding: Enhance the onboarding process to showcase the benefits of using Metrocar. Communicate value propositions and make the user journey intuitive and user-friendly.

Metrocar can optimize its customer funnel, increase conversion rates, and enhance the overall user experience by addressing specific drop-off points and implementing these recommendations.

Strategic Insights for Platform-Focused Marketing at Metrocar:

The analysis of platform-specific metrics for Metrocar reveals valuable insights for strategic decision-making. iOS demonstrates higher app downloads, user sign-ups, ride requests, and acceptance rates, indicating a robust user base and responsiveness.



Recommendations:

1. Primary Focus on iOS: Given the consistently strong performance metrics on iOS, a primary focus for marketing initiatives is recommended. Strategies should include user acquisition, onboarding enhancements, and loyalty programs to capitalize on the existing user base.

2. Strategic Investments in Android and Web: While iOS remains the primary focus, strategic investments in marketing efforts for Android and web platforms are crucial to further tap into their engaged user base. Tailored promotions and incentives can boost user activity.

3. Revenue Diversification: Continue efforts to diversify revenue streams by optimizing payment processes and user engagement on all platforms. This will ensure a robust and sustainable financial model.

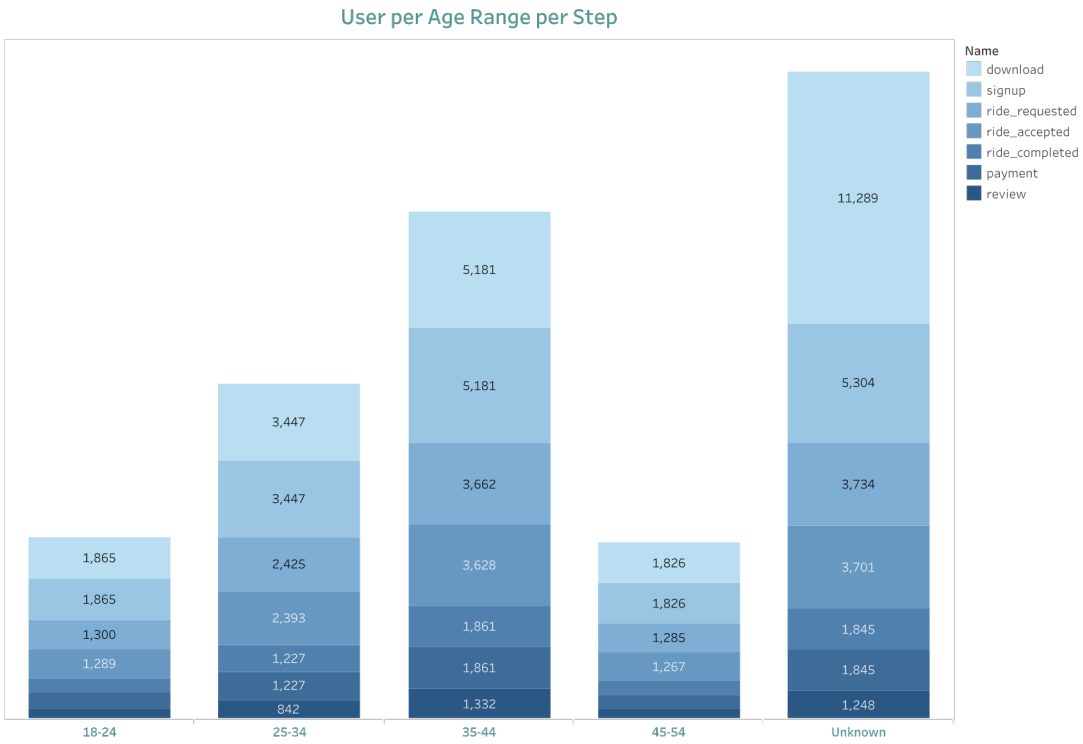
4. User Satisfaction Programs: Implement programs and features to enhance user satisfaction on all platforms, focusing on replicating the success observed on iOS.

5. Encourage Reviews Across Platforms: Develop strategies to encourage user reviews on Android and web platforms, aiming to build a positive brand image and improve the visibility of Metrocar's services.

By aligning marketing strategies with these insights, Metrocar can create a well-rounded approach that caters to the strengths of each platform, ensuring sustained growth and user satisfaction.

Age Group Performance Analysis in Metrocar Funnel:

Understanding the performance of different age groups at each funnel stage is crucial for tailoring marketing strategies and improving user engagement. Based on the provided data, the following insights can be drawn regarding age group performance:



Insights:

- The 35-44 age group leads in app downloads, suggesting a higher propensity for technology adoption. The unknown category also demonstrates substantial downloads, indicating potential interest across various age demographics.

- Like app downloads, the 35-44 age group dominates in sign-ups, reflecting an active interest in Metrocar's services. The unknown category also contributes significantly to sign-ups.

- The 35-44 age group continues to lead in ride requests, indicating sustained interest in utilizing Metrocar for transportation needs. The unknown category also shows a substantial volume of ride requests.

- The 35-44 age group maintains a leading position in ride acceptance, reflecting a positive response from this demographic. The unknown category also shows a notable acceptance rate.

- The 35-44 age group consistently demonstrates higher ride completion rates, suggesting a reliable user base. The unknown category also contributes significantly to completed rides.

- Like ride completion, the 35-44 age group leads in payment transactions. The unknown category also contributes substantially, indicating a diverse user base engaged in financial transactions.

- The 35-44 age group consistently provides the highest reviews, indicating an engaged and vocal user base. The unknown category also actively contributes to user feedback.

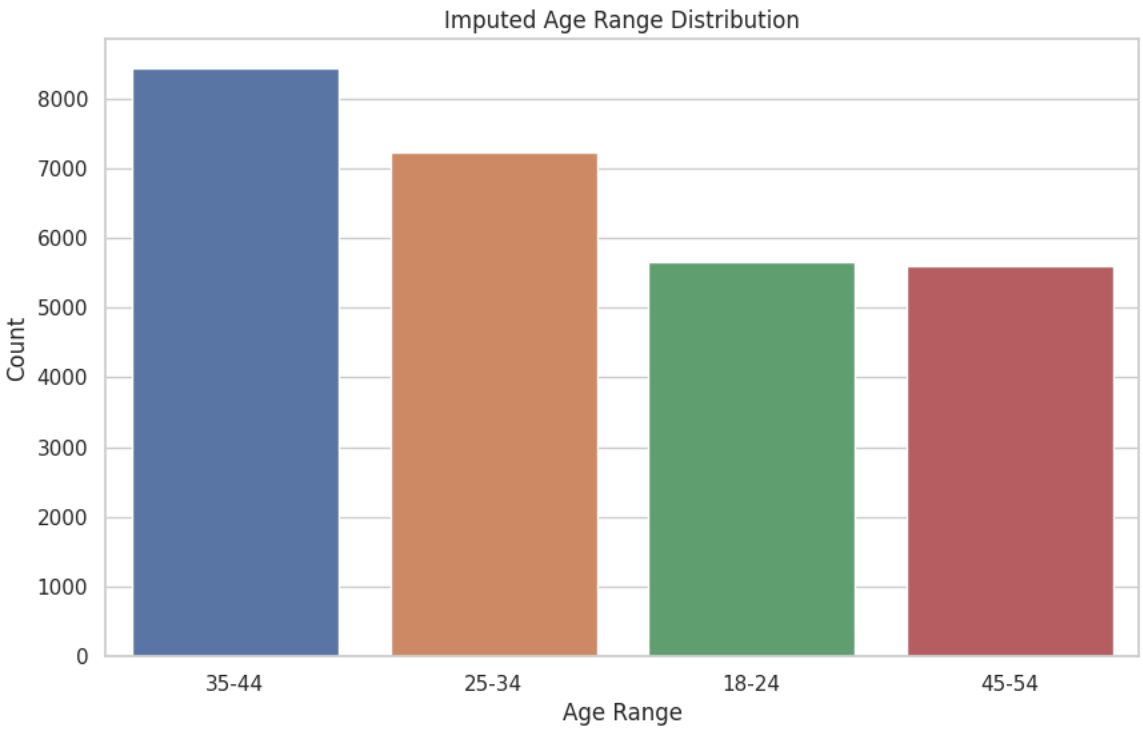
Data Imputation for Missing Age Ranges:

In the initial stages of our data analysis, we identified a set of users for whom the age range information was not provided. Recognizing the potential insights and value locked within this subset of data, we embarked on a systematic approach to impute these missing values. Our objective was to bridge this gap in a statistically sound manner, thereby enhancing the robustness of our subsequent analyses.

We replaced the 'Unknown' placeholder, originally used to indicate missing data within the 'age_range' field, with NaN to streamline the imputation process. We then employed a random imputation method, ensuring that the imputed age ranges reflected the known distribution of our user base. This method was chosen over simpler imputation techniques, such as mode or mean substitution, to maintain the original distribution of age ranges and avoid introducing bias.

The attached bar chart (image.png) illustrates the distribution of age ranges following the imputation process. As can be seen, the '35-44' age range constitutes the majority, followed closely by '25-34', '18-24', and '45-54'. This visual representation confirms that our imputation has resulted in a balanced restoration of the missing data, with no single age range disproportionately represented.

Through this exercise, we have not only improved our dataset's completeness but also upheld its original structure's integrity. This lays a solid foundation for more accurate and representative data-driven decisions.



Surge Pricing Strategy: Analysis of Ride Requests Distribution Throughout the Day

The distribution of ride requests throughout different periods provides valuable insights for implementing a surge pricing strategy. Analyzing the data for various timeframes, the following observations can guide the adoption of surge pricing:

1. 0:00 AM - 7:00 AM: (Total Request Count: 12,692, Average per Hour: 1,586.50)
    - The early morning hours exhibit a significant demand for rides, with an average of 1,586.50 requests per hour.
    - Surge pricing during this period may capitalize on the heightened demand, potentially maximizing revenue.

2. 8:00 AM - 9:00 AM: (Total Request Count: 120,281, Average per Hour: 60,140.50)

    - This timeframe experiences an exceptionally high ride demand, with an average of 60,140.50 requests per hour.
    - Implementing surge pricing during this peak morning rush hour can be strategically advantageous to balance supply and demand dynamics.

3. 10:00 AM - 3:00 PM: (Total Request Count: 48,775, Average per Hour: 8,129.17)

- Mid-morning to early afternoon sees a moderate demand, averaging 8,129.17 requests per hour.
- Surge pricing during this period could be selectively applied based on specific highdemand hours within this timeframe.

4. 4:00 PM - 7:00 PM: (Total Request Count: 196,570, Average per Hour: 49,142.50)

- Late afternoon to early evening represents a substantial demand peak, averaging 49,142.50 requests per hour.
- Surge pricing during the evening rush hour can be effective in optimizing revenue.

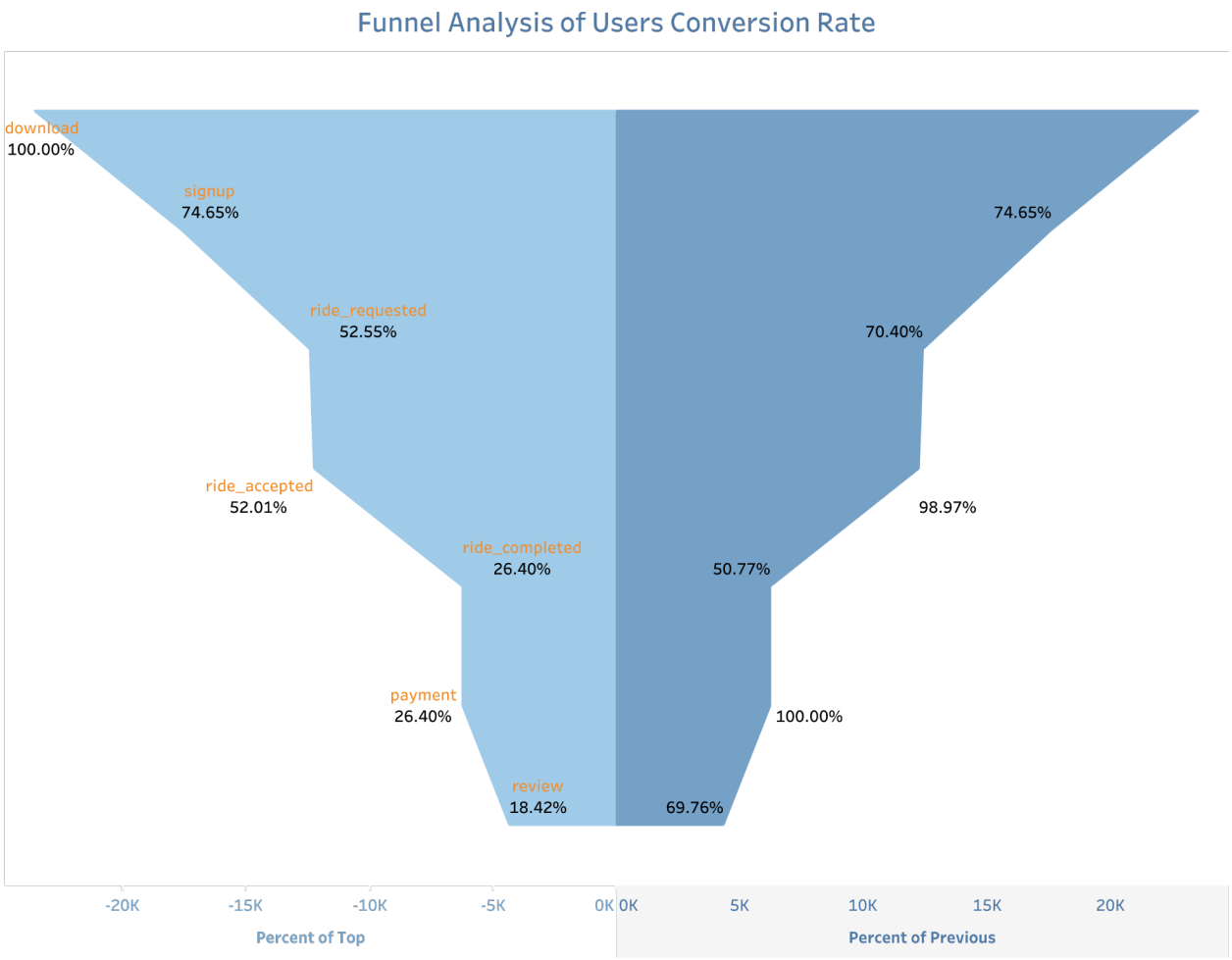
5. 7:00 PM - 0:00 AM:(Total Request Count: 7,159, Average per Hour: 1,789.75)

- The evening to midnight period indicates a lower but still considerable demand, with an average of 1,789.75 requests per hour.
- Implementing surge pricing during this timeframe may be beneficial to capture additional revenue.

Identifying the Lowest Conversion Rate and Improvement Strategies:
The conversion rates at each stage of the Metrocar funnel, based on the percentage of the previous step, are as follows:

1. App Download to Signup: 74.65%
2. Signup to Request Ride: 70.40%
3. Request Ride to Driver Acceptance: 98.97%
4. Driver Acceptance to Ride: 50.77%
5. Ride to Payment: 100%
6. Payment to Review: 69.76%

The stage with the lowest conversion rate is from “Driver Acceptance to Ride” at 50.77%.



Improvement Strategies:

1. Driver Availability Communication: Improve communication with users regarding driver availability. Enhance notifications or provide estimated wait times to reduce uncertainty, potentially increasing the likelihood of users proceeding to the ride stage.

2. Incentivize Driver Acceptance: Implement incentives for drivers to accept ride requests promptly. This could include bonuses, rewards, or recognition for quick response times, ensuring a higher percentage of accepted rides.

3. Dynamic Pricing Strategies: Implement dynamic pricing during peak demand periods to encourage more drivers to accept ride requests. This can optimize the balance between supply and demand, improving the conversion rate.

4. Driver Training Programs: Provide additional training or resources for drivers to enhance their responsiveness and efficiency. This can positively impact the likelihood of drivers accepting ride requests promptly.

5. Feedback Loop with Drivers: Establish a feedback loop with drivers to understand any challenges they face in accepting rides. Addressing driver concerns can lead to improved performance and higher acceptance rates.

6. Algorithm Refinement: Refine the algorithm used for assigning ride requests to drivers. This may involve considering additional factors such as driver proximity, traffic conditions, or historical acceptance rates to optimize the matching process.

7. Real-time Driver Availability Updates: Implement real-time updates on driver availability to users. This transparency can build trust and encourage users to continue with their ride requests, contributing to a higher conversion rate.

8. Driver Engagement Campaigns: Launch campaigns aimed at driver engagement, emphasizing the importance of timely ride acceptance. Motivated and engaged drivers are more likely to contribute positively to the conversion rate at this stage.

9. Surge Pricing Adjustments: Evaluate and adjust surge pricing strategies to incentivize drivers during periods of high demand. A well-calibrated surge pricing model can attract more drivers, improving the conversion rate.

10. User Education on Acceptance Factors: Educate users on factors influencing driver acceptance rates, such as location, time of day, or traffic conditions. Setting clear user expectations can lead to a smoother acceptance process.

By addressing the challenges in the Driver Acceptance to Ride conversion stage and implementing these improvement strategies, Metrocar can enhance the efficiency of its ride allocation process, leading to a higher overall conversion rate in this critical part of the funnel.

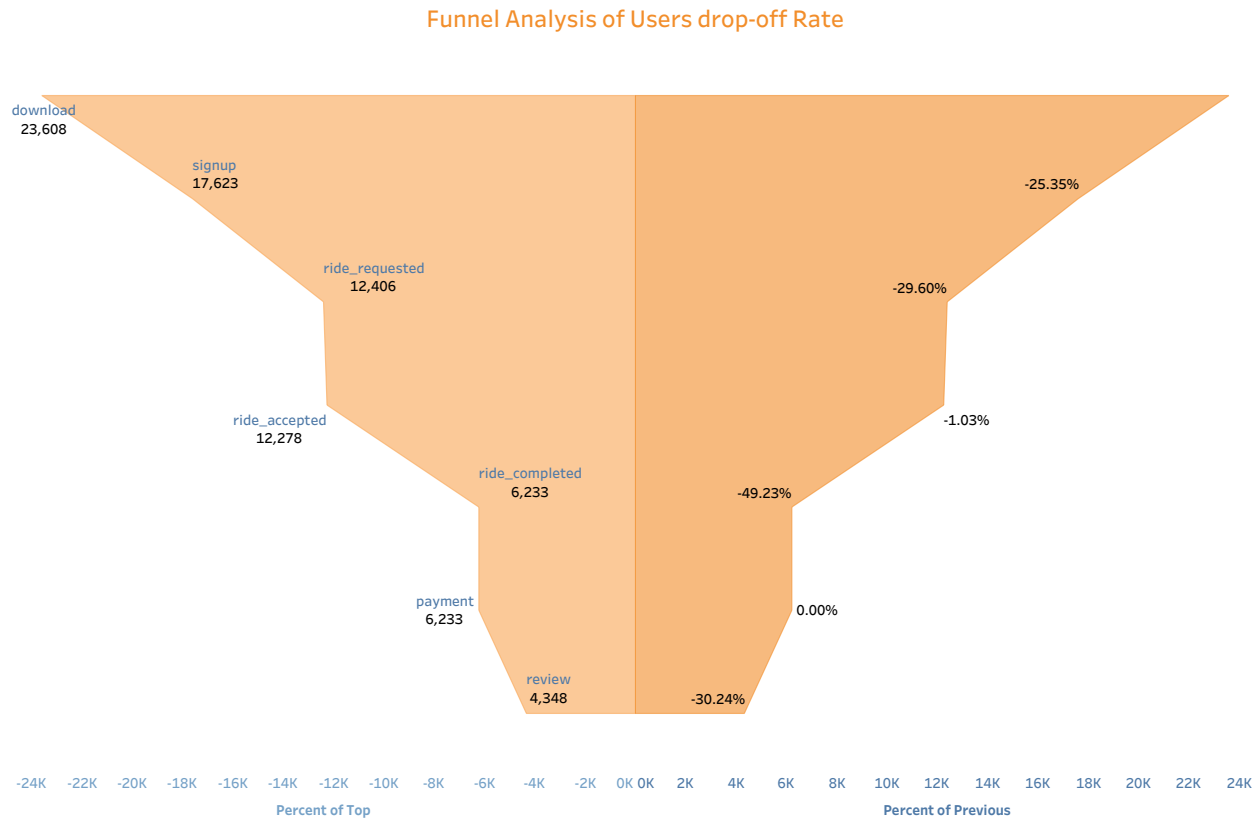
Identifying the Drop-off Rate and Improvement Strategies:

Enhancing the onboarding process could be critical for the stage from App Download to Signup, where there's a drop-off rate of approximately 25.35%. A seamless and engaging onboarding experience might include tutorial videos, the benefits of signing up, or even an introductory offer. This could motivate users to register and use the service right away.

Moving on to the Signup to Request Ride stage, with a drop-off rate of 29.60%, the process could be streamlined by reducing the number of form fields, providing clearer instructions, or offering incentives like discounts or referral bonuses for the first ride. Simplifying and making the process less time-consuming can help retain users through this stage.

There's a substantial drop-off of 49.23% at the Driver Acceptance to Ride stage. This indicates possible issues in the time it takes for drivers to accept ride requests or a mismatch in the availability of drivers. Addressing this may require analyzing the matching algorithm and driver behavior. Strategies such as dynamic surge pricing to attract more drivers during peak times, incentives for quick ride acceptance, and improving communication about wait times could mitigate these drop-offs.

In the Payment to Review stage, with a drop-off rate of 30.24%, improving the rate at which users complete reviews after their ride could involve in-app prompts or notifications right after the ride ends. A small discount or reward for completing a review could encourage more users to provide feedback.



Improvement Strategies:

1. Enhanced Onboarding Process: Elaborate on incentives and the user-friendly journey from app download to signup.
2. Streamlined Signup to Ride Request: Discuss simplifying the signup process and first-ride incentives.
3. Driver Response Optimization: Dive into the driver acceptance rate improvements and communication enhancements.
4. Post-Ride Engagement: Detail the initiatives to boost review rates, such as in-app prompts and feedback incentives.

Sentiment Analysis of User Reviews:

Methodology

In our comprehensive analysis of Metrocar's service, we included a sentiment analysis of user reviews to gauge customer perceptions. This component was crucial for understanding the overall sentiment towards Metrocar's services. We conducted this analysis using Python with the TextBlob library, which is renowned for its effectiveness in natural language processing.

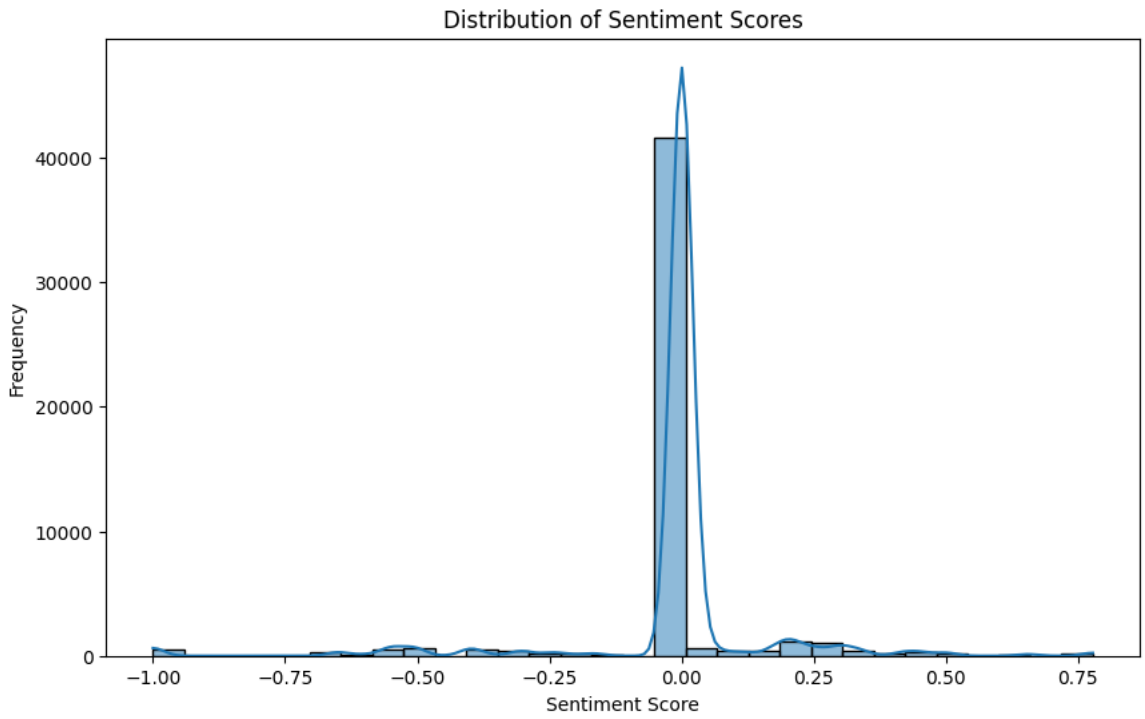
Data Processing

The dataset, consisting of user reviews in a CSV file, was processed using Python. Each review was analyzed textually to determine sentiment polarity. The sentiment polarity, computed by TextBlob, ranges from -1 to 1, with -1 representing highly negative sentiment, 0 indicating neutrality, and 1 suggesting a highly positive sentiment.

Analysis and Visualization

We calculated sentiment scores for each review and integrated these into our dataset. This step provided an additional layer of insight into customer feedback.

A histogram was used to depict the distribution of sentiment scores. This visualization is essential for discerning the overall sentiment trend in the user reviews, showing the range and frequency of sentiments from negative to positive.



Findings

The histogram illustrates the distribution of sentiment scores, ranging from -1 to 1, where -1 represents a highly negative sentiment, 0 indicates neutrality, and 1 signifies a highly positive sentiment. The graph shows a pronounced peak around the zero mark, indicating that most reviews have a neutral sentiment. There is a very narrow distribution of scores, suggesting that there is not a wide variation in sentiment among the user reviews. The peak's symmetry around the zero point suggests that positive and negative sentiments are almost equally balanced, with a slight inclination towards the positive side, as observed by the small tail extending towards the positive end of the scale.

Notably, there are very few reviews with extreme sentiment scores (close to -1 or 1), which would indicate strong negative or positive emotions. The concentration of scores around the center suggests that users tend to give moderate feedback rather than expressing strong feelings. This could imply that while users might be generally satisfied with the service, there are not enough standout experiences that elicit strong positive reactions or that any negative experiences are not severe enough to provoke strong negative reviews.

This distribution provides valuable insight into the customer experience with Metrocar, indicating that while users may not have significant complaints, there is room for improvement to shift the overall sentiment towards a more positive experience.

Conclusion

The sentiment analysis of user reviews offers valuable insights into customer satisfaction and potential areas for improvement. Adding a qualitative dimension to our study enriches our quantitative analysis and deepens our understanding of user experiences with Metrocar. These findings are crucial for informing future enhancements and better catering to user needs.

Recommendation

Based on the comprehensive Funnel Analysis Mastery Project conducted on Metrocar, several strategic recommendations emerge to optimize user experience and drive sustained growth. These recommendations span various facets of Metrocar's operations, targeting specific funnel stages, platforms, user demographics, and revenue streams.

1. Streamlined Onboarding and Incentives:
    - Objective: Address the drop-off from app download to sign-up.
    - Recommendation: Implement an engaging onboarding process emphasizing the value of signing up. Consider offering incentives, such as discounts or promotions, to encourage immediate sign-up.

2. Platform-Focused Marketing:
    - Objective: Maximize the impact of marketing efforts for platform-specific user bases.
    - Recommendation: Prioritize marketing initiatives on iOS, where performance metrics indicate a strong user base. Simultaneously, strategically invest in Android and web platforms to tap into their engaged audiences.

3. User Feedback and Iterative Improvements:
    - Objective: Continuously enhance the overall user experience.
    - Recommendation: Conduct regular user feedback surveys to understand pain points and preferences. Utilize data-driven iterations and A/B testing to refine features and processes, ensuring positive impacts on user conversion rates.

4. Diversification of Revenue Streams:

- Objective: Optimize payment processes and user engagement on all platforms.
- Recommendation: Focus on diversifying revenue streams by optimizing payment processes on iOS, Android, and the web. Explore loyalty programs and features that can encourage repeat rides and transactions.

5. Targeted Marketing for Age Demographics:
    - Objective: Tailor marketing strategies to specific age groups.
    - Recommendation: Leverage insights into age group performance to target marketing messages effectively. Develop campaigns and promotions that resonate with the preferences and behaviours of different age demographics.

6. Strategic Surge Pricing Implementation:
    - Objective: Capitalize on peak demand periods effectively.
    - Recommendation: Implement surge pricing strategically during peak demand periods identified in the analysis. Adjust pricing models to balance supply and demand dynamics, optimizing revenue without compromising user satisfaction.

7. Improving Driver Acceptance to Ride Conversion:
    - Objective: Address the stage with the lowest conversion rate.
    - Recommendation: Enhance communication with users regarding driver availability. Implement incentives for prompt driver acceptance, refine algorithms for efficient driver assignment, and establish feedback loops with drivers to address challenges and enhance responsiveness.

8. Enhanced In-App Communication:
    - Objective: Improve guidance through the customer funnel.
    - Recommendation: Enhance in-app communication to guide users seamlessly through each funnel stage. Provide real-time updates, clear instructions, and notifications to enhance the user experience.

When strategically implemented, these recommendations are poised to strengthen Metrocar's market position, increase user satisfaction, and contribute to sustained growth. Regular monitoring and adaptation to evolving market trends will be essential for continued success in the competitive ride-sharing landscape.

Conclusion

The Funnel Analysis Mastery Project conducted on Metrocar has provided comprehensive insights into the dynamics of its customer journey, revealing crucial patterns and areas for improvement. Leveraging SQL for data querying and Tableau for visualization, this project aimed to optimize Metrocar's operations and enhance user experience.

The detailed analysis of each funnel stage unveiled substantial data on app downloads, sign-ups, ride requests, driver acceptance, rides, payments, and reviews. Examining conversion rates at various stages sheds light on specific drop-off points, necessitating strategic interventions.

The performance breakdown across different platforms highlighted the dominance of iOS, suggesting a focused marketing approach. Similarly, age group analysis emphasized the significance of the 35-44 demographic in various funnel stages.

Insights from the surge pricing strategy analysis outlined peak demand periods, guiding Metrocar in implementing dynamic pricing effectively. Furthermore, identifying the lowest conversion rate at the "Driver Acceptance to Ride" stage prompted targeted improvement strategies.

Recommendations encompassed user feedback surveys, incentive programs, enhanced communication, data-driven iterations, and optimized onboarding. Tailored marketing strategies for each platform, prioritizing iOS, were suggested, focusing on revenue diversification and user satisfaction programs.

In conclusion, this Funnel Analysis Mastery Project equips Metrocar with actionable insights to refine its customer funnel, engage users effectively, and strategically allocate resources for sustained growth. Implementing the outlined recommendations will enhance Metrocar's position in the competitive ride-sharing landscape.

Appendix

SQL Queries

Tableau Visualization

MetrocarTableauDashboard

Sentiment Score

Age_Range Imputation