Metrocar Funnel Analysis

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PROJECT CONTEXT & OBJECTIVE:

Metrocar acts as an intermediary connecting riders (passengers) and drivers through their ride-sharing mobile application, a user-friendly platform that facilitates the ride-hailing process.

This project consists of a thorough analysis of Metrocar's Customer Funnel to give us a deeper understanding of the sequential steps that our users/customers go through when interacting with our platform, enabling us to identify where users drop off or convert, with the aim of pinpointing areas for optimization leading to an increase in revenue and userbase, as well as to improve customer satisfaction and retention.

The objective is to perform queries in SQL to extract valuable insights from the data and visualize these insights as well as perform further analysis in Tableau, enabling us to make informed, data-driven recommendations in answer to the key Business Questions posed by Stakeholders.

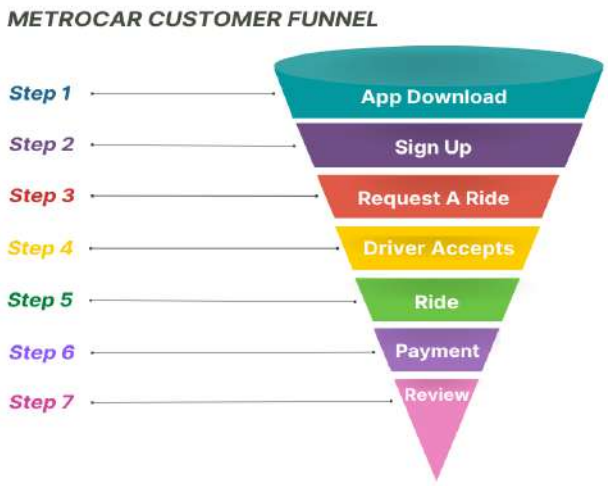
All detailed **recommendations and results can be found below** in answer to the Stakeholders' Business Questions along with further questions that arose as the analysis was performed, you will find a summary of these results and recommendations at the end of this report.

** Dataset Structure can be seen at the end of this document for reference.*

METROCAR'S FUNNEL:

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 the ride request and accepts the ride.
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.



Understanding the Metrocar Data:

The insights below derived from exploring the Metrocar database using SQL give us the deeper understanding we require as we begin analyzing the customer funnel.
* *All SQL Queries can be found in the Appendix Section of this Report.*

- The data analysis period from which we gained the following insights starts on **1 January 2021** and runs through **31 December 2021**, a full 12-month duration.

- During this period, the Metrocar App was downloaded **23,608** times (that is by 23,608 unique users).

- **17,623** users continued to the next step and signed up on the Metrocar app.

- **385,477** rides were requested from **12,406 Unique Users** through the app during the 12-month period, indicating that **70.4%** of users who **signed up** on the Metrocar app went on to **request a ride**.

- **248,379** rides were accepted by a Metrocar driver via the app.

- **223,652** rides were **completed** through the app by **6233** unique users.

- **35.4%** of users who **signed up** on the Metrocar app also **completed a ride**.

- The average time duration of a ride from pickup to drop off lasted **52 minutes and 37 seconds**.

- User-level conversion rates for the first 3 stages of the funnel when calculating the percentage from the previous funnel step, show that **74.6%** of users who **downloaded** the Metrocar App **signed up** for an Account, and, **70.4%** of **signed-up** users went on to **request a ride**.

- User-level conversion rates for the first 3 stages of the funnel, when calculating the percentage from Top of Funnel (i.e. downloads) show that **74.6%** of users who **downloaded** the Metrocar App **signed up** for an Account.
  And, **52.5%** of users who **downloaded** the app subsequently **requested a ride.**

- User-level conversion rates when calculating the percent of the previous Funnel Step *(if Signups is the Top Of Funnel)*, show that **70.4%** of users that successfully **signed up** for an account on the Metrocar app subsequently **requested a ride,** and, **50.2%** of users who **requested a ride** also **completed their ride**.

- User-level conversion rates for the following 3 steps of the funnel when calculating the percent of Top of Funnel (if *Signup is TOF*) shows that **70.4%** of users who **signed up** went on to **request a ride, and 35.4%** of users who **signed up completed a ride**. :
  - Signup
  - Ride requested
  - Ride completed

- We successfully collected payments for **212,628** rides, which led to a total USD $ sum collected of **$4,251,667.61** for these rides.

- When looking at platform data we see that iOS users requested the most rides, with Android users coming in second, and Web users significantly lower in third place.
    - ❖ **234,693** rides were requested on **iOS**.
    - ❖ **112,317** rides were requested on **Android**.
    - ❖ **38,467** rides were requested on **Web**.

- The data shows the **drop-off** from users **signing up** to users **requesting a ride** is at **29.6%**. Metrocar had 17,623 signups and 12,406 ride requests.

- **41.98%** of rides requested were **cancelled**. Further investigation into what is leading to the cancellations is needed so as to strategize how to reduce these.

Analysing the Data:

Analyzing the data with the following Business Questions posed by the Stakeholders helps us gain deeper insights into how we can optimize the Customer Funnel:

1. **What steps of the funnel should we research and improve? Are there any specific drop-off points preventing users from completing their first ride?**

   When looking at the data we see 3 steps that require further research and investigation:

   *** 25.4% drop-off from app_downloads to signups in our User Funnel**. This could be led by technical issues (running out of data, wifi instability, app or site crashing, etc.), data privacy concerns, do we need to optimize the user journey, are our follow-up campaigns A/B tested and optimized to pull users back into the funnel for signup stage?

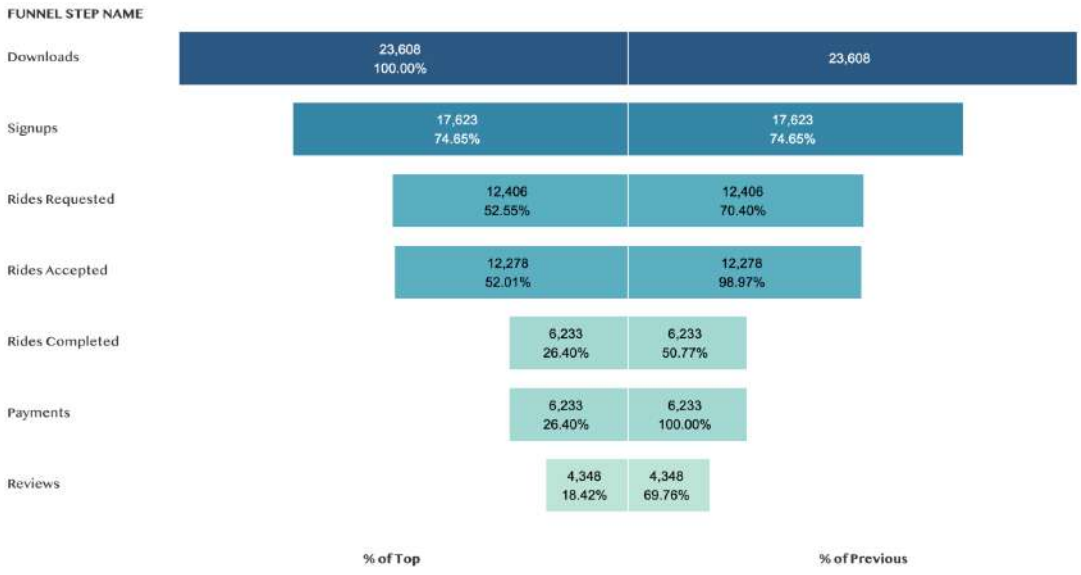
   The only age_range where this drop-off occurs is the 'Null' age_range, where there were 5,985 Downloads (25.4%), and no further steps were completed by this group, the reason for this is because the age range question is in the following step "Signup", once the Signup is complete the user_id is associated with the user's selected age_range, or 'Unknown' if they do not complete that question.

   *** 29.6% drop-off from users signing up to requesting a ride**. Further investigation and research are required here to ensure effective follow-up marketing campaigns are

being implemented successfully to our new customer signups, are we offering these users services, rates, discounts, promos that appeal to them as first-time customers, are we staying front of mind until that first ride is requested? Do we service their location successfully?

*** 49.23% user dropoff from the 'Ride Accepted' to the 'Ride Completed' stage of the User Funnel and 41.98% Cancellations (dropoffs) from Ride Requests in our Rides Funnel.** As stated previously, ride_requested and ride_accepted to ride_completed are the most significant dropoffs and the reasons behind this dropoff (cancellation rate) need to be investigated and addressed. Is this due to technical issues, location-based issues, is there relation to driver-score and/or reviews, or customer-based reasons such as finding another service provider quicker and more conveniently, or more cost-effective for them?

* Note: Keep this point in mind when reviewing **Question 6 (VOC)** below, where we may understand more of what could be causing the high cancellation rate.



** View Dynamic User & Rides Funnels in **Tableau***

2. **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?**

   The data shows that iOS users generate 60.84% of the total revenue for Metrocar, Android customers bring in 29.25% of revenue, and Web users generate 9.91%, therefore it is recommended to allocate the majority of our marketing efforts and budget for the upcoming year as follows: 50% iOS, 40% Android, 10% Web.

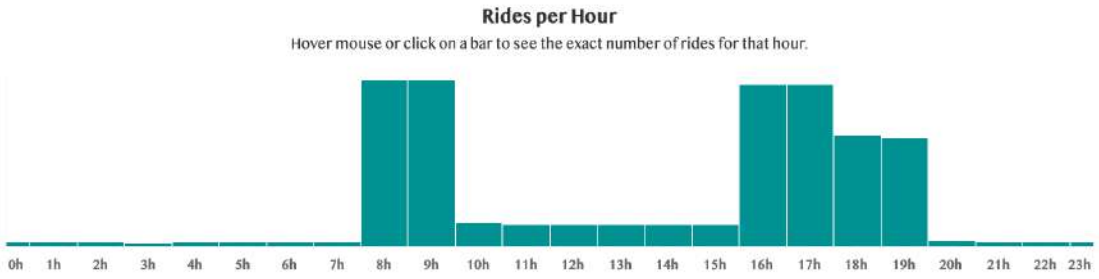
3. **What age groups perform best at each stage of our funnel? Which age group(s) likely contain our target customers?**

   Through each step of the User Funnel, we see that **35-44** is consistently the highest identifiable age range in conversions and revenue with **1861 users** completing **66,853 rides** which generated **$1,270,532.87 (29.88% of total revenue)**.
   The **25-34** age range is our second highest identifiable user base with **1,227 users** completing **44,121 rides** which generated **$838,356.05 (19.72% of total revenue)**.
   The **Unknown** age range, similarly to our 35-44 age range, generated **$1,252,842.47 (29.47% of total revenue)** from **1,845 users** who completed **65,957 rides.**
   I recommend that we target our marketing efforts and budget allocation to the 35-44 age range to grow this user base and ensure retention, Also, focus on the 25-34 age group to build brand loyalty in this economically developing demographic, ensuring continued preference for Metrocar as they transition to the next age range.

   ** View Dynamic Age Range by Funnel Step in **Tableau** & Revenue by Age in the Presentation.*

4. **Surge pricing is the practice of increasing the price of goods or services when there is 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?**

   8 am - 10:00 am and 4 pm - 6 pm high-peak (with 6 pm - 8 pm at low-peak) are the busiest 'ride request' times on the platform, therefore consider implementing a price-surge strategy during these times. These coincide with typical commuting hours for the general workforce.



5. **What part of our funnel has the lowest conversion rate? What can we do to improve this part of the funnel?**

   The lowest conversion rate is seen from the 'driver acceptance' stage to the 'ride completed' stage of the user funnel, as 49.23% of users didn't complete a ride after it was accepted by a driver. As stated in point 1 looking at the rides funnel 41.98% of rides were cancelled after the ride was requested. Further investigation is needed here to determine the causes of this significant user dropoff and cancellation rate.

funnel_step	funnel_name	no_of_users	percent_of_top	dropoffs_from_top	percent_of_previous	dropoffs_from_previous
1	app_downloads	23608	100.%	0.%	(NULL)	(NULL)
2	signups	17623	74.65%	25.35%	74.65%	-25.35%
3	ride_requested	12406	52.55%	47.45%	70.4%	-29.6%
4	driver_acceptance	12278	52.01%	47.99%	98.97%	-1.03%
5	ride	6233	26.4%	73.6%	50.77%	-49.23%
6	payment	6233	26.4%	73.6%	100.%	0.%
7	review	4348	18.42%	81.58%	69.76%	-30.24%

ride_requests	driver_accepts	cancelled_ride_request	total_pct_cancel_after_request
385477	248379	161825	41.98

6. **Voice of the Customer:**

With over 29% of riders rating the Metrocar service at a “1” star, and nearly 10% at “2” stars, that gives us nearly 40% of riders unhappy with their experience by selecting the ‘very poor’ to ‘poor’ rating options.

Based on this it’s evident that Customer/User Experience needs to be improved, it is recommended that further investigation is done to determine where customer feedback indicates Metrocar can improve, and implement strategies and protocols to create a consistently better customer experience going forward to retain and increase customers.

As a start, let’s take a look at the Word Cloud below to understand the negative sentiment of our riders that are rating in the 1 and 2 stars.

In analyzing 98 negative customer reviews, the top 18 words, bolded, may be influencing the high cancellation rate. To address this, consider implementing driver incentives for improved service and timely response. Additionally, establish a disincentivized program to reduce the number of ride requests sent to drivers with consistently low scores.

Word used in Review	Frequency of Word	Word used in Review	Frequency of Word
driver	**50,000**	terrible	7,455
ride	20,055	app	6,318
metrocar	16,117	**late**	**6,287**
service	11,255	vehicle	6,259
experience	11,099	route	6,172
unprofessional	8,883	poor	6,148
rude	8789	**cancelled**	**5096**
uncomfortable	8759	**leaving**	**5096**
car	8695	**stranded**	**5096**

SUMMARY OF RESULTS & RECOMMENDATIONS:

- The **dropoff** from **ride_accepted to ride_completed** in the **User Funnel** at **49.23%,** and with **41.98%** of the **rides_requested being cancelled** before the ride is completed in the **rides funnel** is significant, and needs to be addressed as a **priority**. It seems probable that it is driver-related which can be addressed with incentivizing and disincentivizing programs, along with ongoing targeted training by Driver based on their low scores, but further investigation may show factors unrelated to the driver performance requiring improvement.
- **Ratings and reviews** show a **nearly 50% unsatisfactor**y result with nearly 40% in the **1** and **2 stars** and **10%** in the **3 stars**. This along with the above point needs to be addressed together. Drivers with consistently low scores need to be re-trained, and if scores do not improve their accounts need to be deactivated. Work this into the T&C's.
- Two other dropoffs to be investigated and funnel steps addressed are the **25.4%** drop-off from **app_downloads to signups** in our **User Funnel**. This could be led by technical issues (running out of data, wifi instability, app or site crashing, etc.), data privacy concerns, do we need to optimize the user journey, are our follow-up campaigns A/B tested and optimized to pull users back into the funnel for signup stage?
  *** 29.6%** drop-off from **users signing up to requesting a ride**. Further investigation and

research is required here to ensure effective follow-up marketing campaigns are being implemented successfully to our new customer signups, are we offering these users services, rates, discounts, and promos that appeal to them as first-time customers and to their demographic, are we staying front of mind until that first ride is requested? Do we service their pick-up location adequately? Is there an age range associated with this drop-off, if so, do we speak their language and align with their ride-share needs in our campaigns?

- **High peak hours** for metrocar being **8am to 10am** and **4pm to 6pm** coincide with typical peak hours due to work and school commute, with a **low peak** from **6pm to 8pm**. It's recommended that **Surge pricing** be introduced during the **high peak hours**, with a lower relative surge pricing to be implemented in the low peak hours.
- Our key identifiable **target age range** is **35-44**, followed by **25-34** age range. The "Unknown" age range is practically equal to the 35-44 in all user and rides funnel steps, hence, I recommend we send reminder notifications to users who have incomplete profiles (i.e. age_range), offering an incentive to complete it, e.g. they receive a discount code for their next ride. I recommend allocating **50%** of the **marketing budget t**o the **35-44**'s, and **40%** to the **25-34's** to increase the user base and retain existing customers, with the remainder of the marketing budget **10%** to be split allocated in majority to the **18-24** ("have fun, get home safe" / "no drinking and driving" campaigns, with student rates (for verified students) during certain times) and **the remainder of the 10% to the 45-54** age_ranges.
- Total revenue generated across all platforms was $4,251,667.61, by platform we see **iOS** users generate **60.84% of the total revenue**, **Android** brings in **29.25%**, and **Web** users generate **9.91%**, therefore it is recommended to allocate the our **annual marketing budge**t for the upcoming year as follows: **55% iOS, 40% Android, 5% Web.**

DATASET STRUCTURE:

You can find a description of each table and its columns below.

- **app_downloads:** contains information about app downloads
    - app_download_key: unique id of an app download
    - platform: ios, android or web
    - download_ts: download timestamp
- **signups:** contains information about new user signups
    - user_id: primary id for a user
    - session_id: id of app download
    - signup_ts: signup timestamp
    - age_range: the age range the user belongs to

- **ride_requests:** contains information about rides
    - ride_id: primary id for a ride
    - user_id: foreign key to user (requester)
    - driver_id: foreign key to driver
    - request_ts: ride request timestamp
    - accept_ts: driver accept timestamp
    - pickup_location: pickup coordinates
    - destination_location: destination coordinates
    - pickup_ts: pickup timestamp
    - dropoff_ts: dropoff timestamp
    - cancel_ts: ride cancel timestamp (accept, pickup and dropoff timestamps may be null)
- **transactions:** contains information about financial transactions based on completed rides:
    - ride_id: foreign key to ride
    - purchase_amount_usd: purchase amount in USD
    - charge_status: approved, cancelled
    - transaction_ts: transaction timestamp
- **reviews:** contains information about driver reviews once rides are completed
    - review_id: primary id of review
    - ride_id: foreign key to ride
    - driver_id: foreign key to driver
    - user_id: foreign key to user (requester)
    - rating: rating from 0 to 5
    - free_response: text response given by user/requester

APPENDIX:

Tableau Visualizations
SQL Queries
Video Presentation
Presentation PDF also in the projects submission folder

Thank you for reviewing this analysis!