Google Data Analysis Capstone project

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Data Analysis report by:
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Table of contents:

2) Executive summary:

2.1 Objectives:

Observing 3 months data of a bike company and analyse the performance of the company in terms of the types of users i.e members & casual users

Find the trends followed by the types of users and devise recommendations for the company to convert the types of users from casual to members

2.2 Methodology: The overall process included data cleaning, formatting, visualization & documentation

2.3 Tools used:

- Excel
- Python
- Sql
- Tableau
- Ms-word

Data was collected for various months and started data cleaning in all of the files from trusted data sources..

I removed the unneccessary columns having minimum correlation with the target variable “casual_member” and removed the empty entries reducing the shape of the file from **(979264,13) to (978652,8)** using python and combined all of the files into a master file .Made a copy of the master file and created pivot tables to understand the data and made appropriate visualizations and inferences

2.4 Key findings:

- The company has seen positive growth in both types of users

- The number of new casual users had always surpassed the number of new members.
- Following the trend, the count of casual users is predicted to continue to increase the number of members in the upcoming months
- The casual users are increasingly using the service towards weekends with the mode being 7 I.e Sundays while as the members show a constant and consistent use of service everyday
- The average time spent by casual users on the service is significantly high as compared to the members on any day of the weekend.
- The count of the round trips by casual users is also significantly high on any day of the week especially towards the weekends while as the members show a relatively less and consistent values of round trips on any given day.

2.5 Scope:

The analysis is based on the data of three months only and restricted to Chicago

3) Introduction:

3.1 About the company

In 2016, Cyclistic launched a successful bike-share offering. Since then, the program has grown to a fleet of 5,824 bicycles that are geotracked and locked into a network of 692 stations across Chicago. The bikes can be unlocked from one station and returned to any other station
in the system anytime.

Until now, Cyclistic's marketing strategy relied on building general awareness and appealing to broad consumer segments. One approach that helped make these things possible was the flexibility of its pricing plans: single-ride passes, full-day passes, and annual memberships.

Customers who purchase single-ride or full-day passes are referred to as casual riders.

Customers who purchase annual memberships are Cyclistic members.

Cyclistic's finance analysts have concluded that annual members are much more profitable than casual riders. Although the pricing flexibility helps Cyclistic attract more customers,The company believes that maximizing the number of annual members will be key to future growth.

Rather than creating a marketing campaign that targets all-new customers, The company believes there is a solid opportunity to convert casual riders into members. She notes that casual riders are already aware of the Cyclistic program and have chosen Cyclistic for their mobility needs.

The company has set a clear goal: Design marketing strategies aimed at converting casual riders into annual members. In order to do that, however, the team needs to better understand how annual members and casual riders differ, why casual riders would buy a membership, and how digital media could affect their marketing tactics. The company is interested in analyzing the Cyclistic historical bike trip data to identify trends.

3.2 Objective:

A report with the following deliverables:

1. A clear statement of the business task .
2. A description of all data sources used .
3. Documentation of any cleaning or manipulation of data .
4. A summary of the analysis .
5. Supporting visualizations and key findings .
6. Top recommendations based on your analysis.

3.3 Data source:

The data source consisted of three .csv files of April,June & July with shapes **(84777,13) , (343006,13) & (551481,13)** respectively provided Google Data Analytics data module.

4) Methodology

4.1 Data Cleaning:

The csv files were first loaded into Ms-Excel

Each csv file initially consisted of the following columns:

Ride_id, ridable_type, started_at, ended_at,start_station, end_station, start_lat, start_long, end_lat, end_long, start_station_id, end_station_id, member_casual.

The columns:

ridable_type,start_lat, start_long, end_lat, end_long, start_station_id, end_station_id were removed from all of the separate files

The columns :

Weekday: The day of the week starting from monday

Duration: ***Started_at - Ended_at***

were calculated.

The following columns were present after this process:

Ride_id, Started_at , Ended_at, start_station, end_station, Weekday, Duration, member_casual.

Data formatting was done for each of the obtained columns.

These changes were saved for each of the files.

The obtained files were then imported in **python IDE** and combined into **masterfile.csv** and the null values were removed from each of the files using **pandas**. The statistics of the data were calculated using pandas library. Finally, the clean masterfile.csv was exported and loaded into Ms-Excel.

4.2 Data Analysis & Visualization:

The cleaned masterfile was loaded into the Ms Excel and pivot tables were generated into a separate sheet followed by the visualization of the same.

5) Results & Findings:

5.1 Monthly User trends:

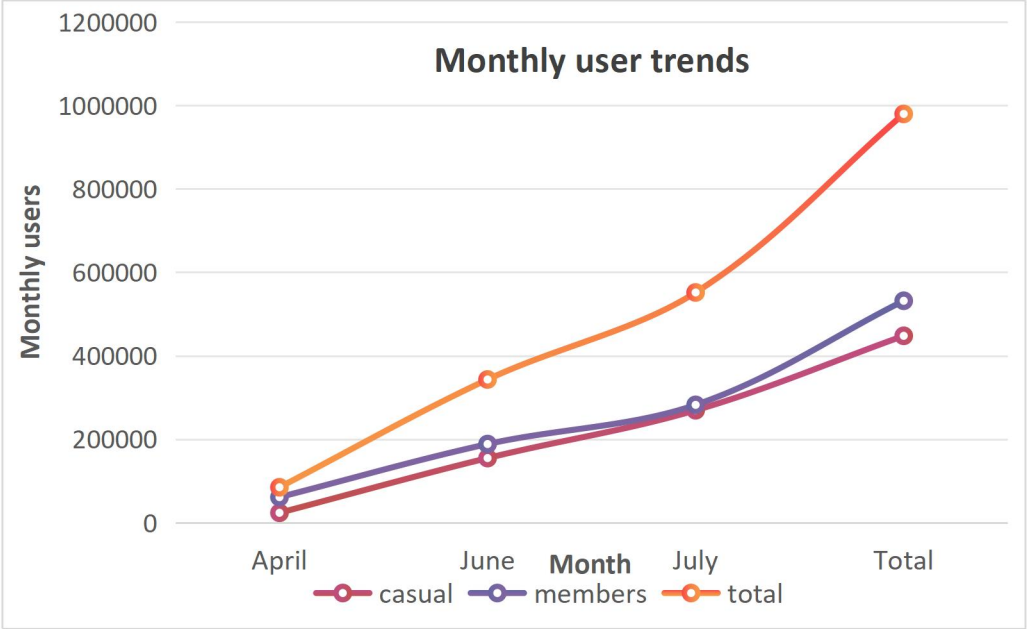

Figure1- User Trends

The company has experienced positive and steady growth in its user base, with an increase in both casual and member users over time. This growth highlights the rising popularity and demand for the company's services, attracting a diverse range of users.

5.2 Monthly contributions:

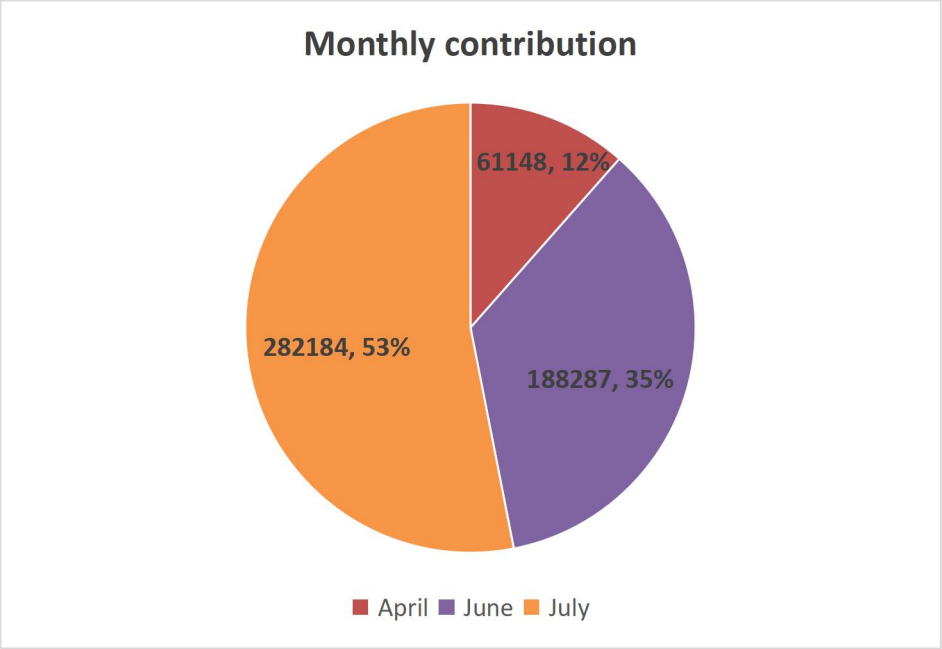

Figure2- Monthly Contributions

- Casual ride volume grew 6.5× (April to July); Member volume grew 3.9×

Based on current trends, the number of casual users is expected to continue increasing in the coming months. This anticipated growth could positively impact the company's overall user base and create further opportunities to boost memberships.

5.3 Monthly Growth:

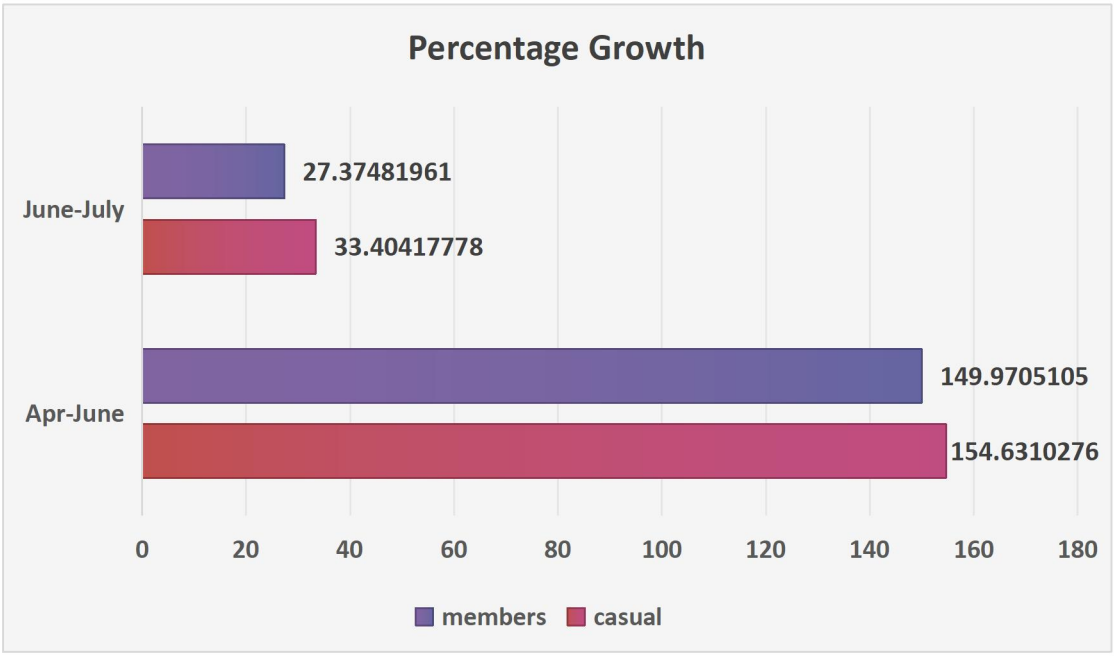

Figure3- Monthly Growth(%)

The number of new casual users joining the platform has consistently been higher than the number of new members. Casual users are currently driving the majority of growth in the user base, forming the larger proportion of new additions.

This trend indicates a potential opportunity for converting casual users into long-term members.

5.4 Daily Time Spend:

Casual users tend to spend significantly more time on the service compared to members, especially on weekends.

The average time spent by casual users peaks on Saturdays and Sundays, indicating longer rides or extended usage sessions during these days.

This prolonged engagement highlights the potential for tailoring weekend-specific services or promotions for casual users.

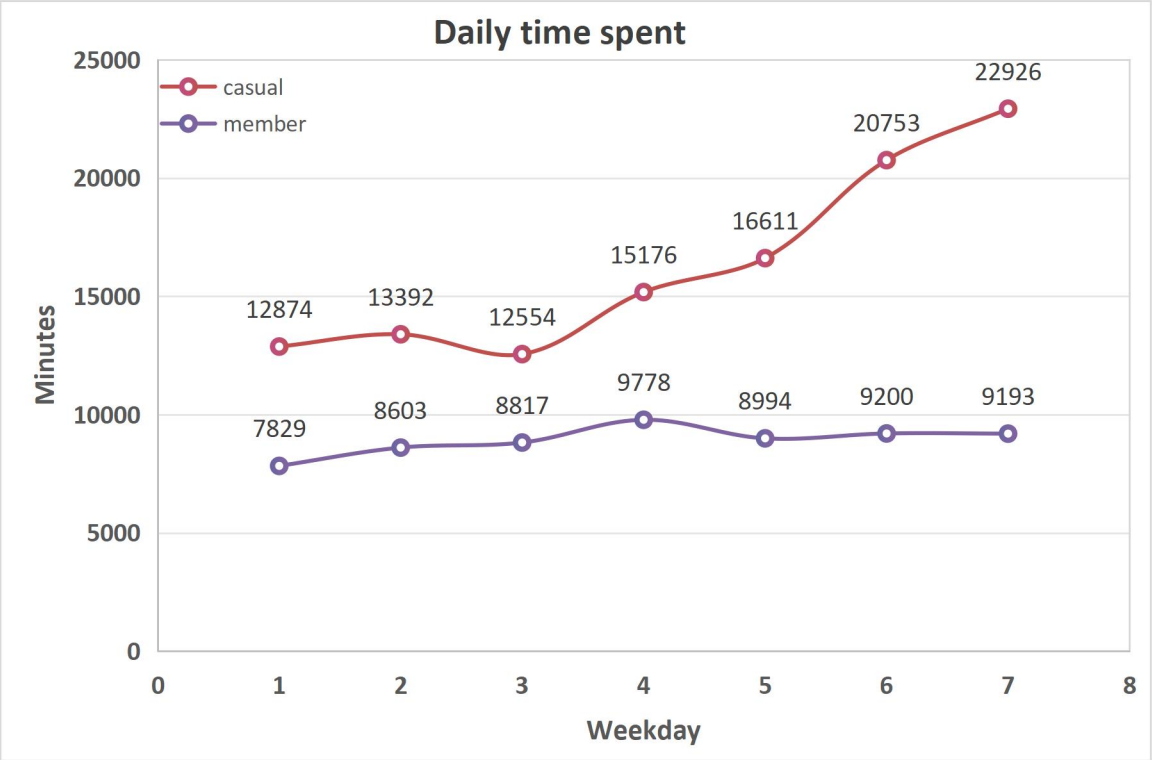

Figure4- Total time(minutes) spent per day

Casual users show a clear preference for using the service during weekends, with their activity significantly increasing on Saturdays and Sundays.

The peak usage day for casual users is Sunday, as indicated by the mode value of 7 in the data. This weekend-centric behavior suggests that casual users likely associate the service with leisure or recreational purposes.

Unlike casual users, members display a steady and uniform pattern of service usage throughout the week.Members' consistent engagement suggests they are using the service for daily or routine activities, such as commuting or errands.

5.5 Round trip count:

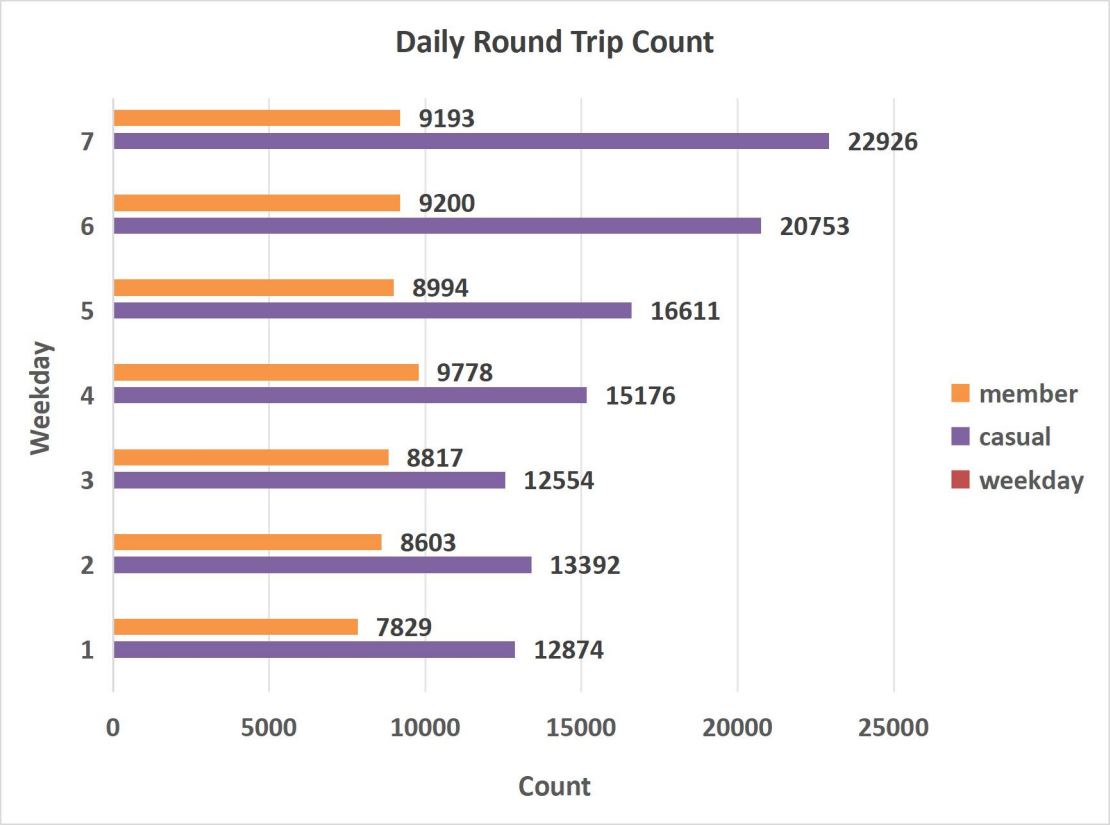

Figure 5- Daily Round trip count

Casual users take a noticeably higher number of round trips compared to members, with their round-trip activity being consistently high throughout the week.

The number of round trips by casual users increases further during weekends, aligning with their overall peak usage patterns.

In contrast, members show a lower and more stable volume of round trips, with little variation between weekdays and weekends.

5.6 Behavioral Differences Between Casual and Member Users:

Casual users' behavior is characterized by higher engagement during weekends, longer time spent per session, and more frequent round trips.
Members exhibit a more consistent and predictable usage pattern, with moderate time spent and fewer round trips on average.
These behavioral differences suggest distinct motivations and usage purposes between the two user groups.

5.7 Insights for Strategic Opportunities:

The findings emphasize the potential to leverage casual users' weekend-centric behavior and high engagement levels to increase membership rates.
Members' consistent usage patterns provide a stable foundation for retaining long-term users and ensuring steady service demand throughout the week.

6) Recommendations:

Based on the observations and the goal of increasing the number of members, here are **recommendations**:

1. Convert Casual Users to Members

Observation: Casual users are growing in number and are more active, particularly on weekends.

Recommendations:

Introduce **weekend-exclusive membership offers** to target casual users who frequently use the service on weekends.
Offer a **trial membership** for a limited time (e.g., one week) to casual users to encourage them to experience the benefits of being a member.
Use **discounted membership plans** for casual users who have reached a certain usage threshold, e.g., after 5 rides in a month.

2. Highlight Benefits of Membership

Observation: Casual users spend more time and take more trips, especially on weekends.

Recommendations:

Emphasize the **cost-effectiveness** of membership for frequent users by showing a comparison of casual vs. member pricing for frequent trips.

Promote **exclusive perks** for members, such as:

Faster access to services

Priority support

Discounts on long-duration trips

Run a **targeted campaign** with emails or push notifications to casual users highlighting how they can save by switching to membership.

3. Focus on Weekend Engagement

Observation: Casual users are more active on weekends, while members use the service consistently.

Recommendations:

Launch **weekend campaigns** to engage casual users and encourage them to convert:

Limited-time weekend passes that also offer a discount on future membership.

Weekend promotions, such as bonus rewards for trips taken on both Saturday and Sunday.

Organize **weekend community events** (e.g., group rides, charity rides) for casual users and provide membership discounts to participants.

4. Incentivize Long-Time Usage

Observation: Casual users spend significantly more time using the service.

Recommendations:

Offer **free upgrades** or bonus minutes for casual users who frequently take longer trips to incentivize membership.

Promote the benefits of **unlimited or extended rides** with membership to appeal to casual users who enjoy longer trips.

5. Target Marketing Based on Behavioral Patterns

Observation: Casual users are active on specific days (especially weekends), while members use the service more consistently.

Recommendations:

Use **data-driven marketing campaigns** to target casual users:

Weekend-specific reminders or discounts sent on Fridays.

Push notifications highlighting their past usage trends and how membership can enhance their experience.

Develop personalized offers using historical usage data (e.g., offering membership discounts based on the number of trips they've already taken).

6. Improve Member Retention Strategies

Observation: Members exhibit consistent but lower engagement compared to casual users.

Recommendations:

Introduce a **member loyalty program** to reward consistent usage, e.g., reward points for every ride taken that can be redeemed for discounts or perks.

Regularly engage members with newsletters or app notifications about new features, benefits, or exclusive deals.

Periodically check in with members for feedback and introduce features or improvements based on their suggestions.

7. Optimize Service Around User Behavior

Observation: Casual users are more active on weekends and take more round trips.

Recommendations:

Ensure service availability and quality during peak usage times, especially on weekends.

Introduce **round-trip incentives** for both casual and member users (e.g., discounts on return trips or multi-trip passes).

Enhance service efficiency (e.g., more vehicles or resources allocated on weekends) to cater to the high demand from casual users.

8. Educate Casual Users About Membership

Observation: Casual users consistently outnumber members.

Recommendations:

Use in-app or on-website messaging to explain membership benefits, showing how it is more affordable for frequent users.

Share success stories or testimonials from existing members to build trust and showcase value.