Cyclistic Bicycle Usage Analysis: Comparison Between Members and Casual Users

Data analysis to identify patterns and propose strategies based on user behavior.

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Introduction and Objectives

Cyclistic, a fictional bike-sharing company based in Chicago, seeks to better understand the behavior of its users to optimize its business strategies. Cyclistic currently offers two types of users: **Annual members** and **Casual users,** who pay per ride. These user groups have different usage patterns, and understanding these differences is key to improving customer retention and acquisition.

The goal is to **identify how usage patterns differ** between Annual members and Casual users. From the available data, I aim to extract insights that will help to **design strategies** focused on **increasing the conversion of casual users into annual members**, improving the retention and profitability.

Dataset Analysis and Key Features

The data used for this analysis comes from an **internal data set** provided by Cyclistic, which records details of every bike ride taken by Casual users and Annual Members. To take into account possible seasonal biases, a merger was performed with another database, allowing a more complete and **representative analysis of usage patterns.**

The dataset contains a total of **32,758 rows and 6 columns. 31% of the trips belong to Casual users, while 69% are Annual Members.** The key columns include variables such as: **Ride ID** (unique identifier of each ride), **Started At** (date and time of start of the journey), **Ended At** (end date and time of the journey), **Member Casual** (type of user), **Ride Length** (duration of the ride in time, calculated from "Started At" and "Ended At"), **Day of the Week** (day of the week in which the trip was made, calculated from "Started At").

Data Cleaning and Preparation Process

Issues found: **Missing values** were identified in key columns such as "Ride ID" and in "Member/Casual" category. In addition, **duplicate records** were detected, which could be due to errors in data collection or import. And, some observations presented **inconsistent dates and times** in "Started at" and "Ended at" categories, which affected the accuracy of the calculation of the duration of the journeys. Furthermore, another of the limitations found in the database is the **lack of demographic variables**, such as the age or gender of the users. This prevents a more detailed analysis of which segments of the population are more likely to use the service as Casuals or Annual Members, which could have provided valuable information for conversion strategies. Finally, as mentioned before there could be some seasonal biases.

Actions taken: **Duplicate records were removed** to ensure the uniqueness of each path in the dataset. Then, **null values were handled** in essential columns. For example, the most frequent value in each relevant category was used to fill in missing data. Finally, **inconsistencies in dates and times** were corrected, and "Ride Length" was recalculated to ensure data integrity and accuracy.

Tools from:

Data Exploration and Key Findings

In this analysis, I focused on two key metrics to understand how Casual users and Members use Cyclistic bikes differently.

1. Average duration of trips: This metric allowed me to analyze how the time spent using bicycles varies between both types of users.

2. Frequency of use according to day of the week: By analyzing this metric, I seek to discover when they prefer to use bicycles, identifying differences in usage habits between weekdays and weekends.

Tools from:

Comparison of Average Trip Duration:
Casual Users vs. Members
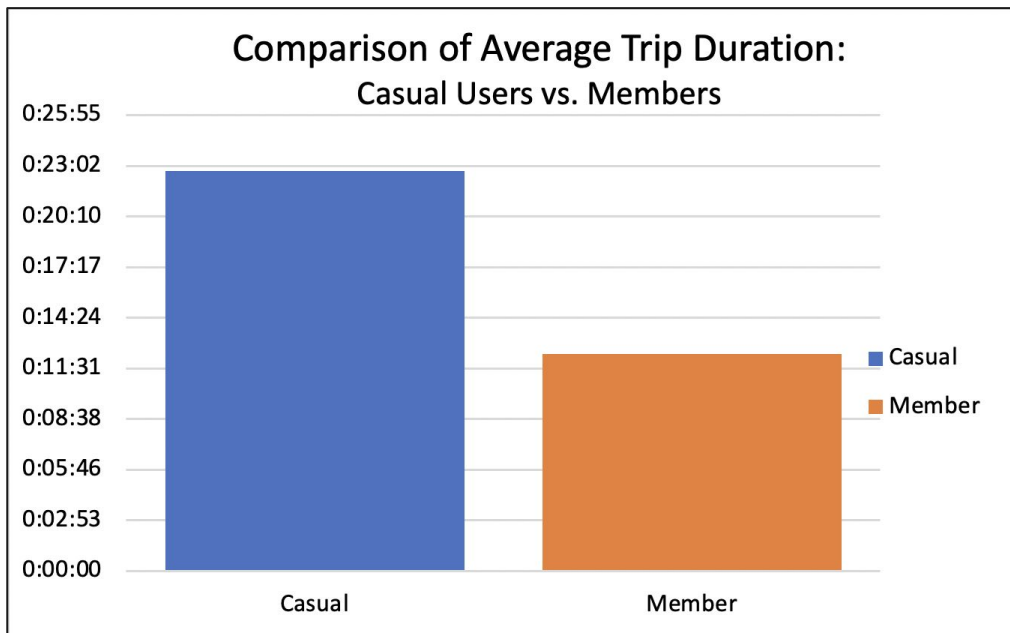
In this analysis, it was observed that **Casual users have a significantly longer average trip duration than Members.** The first ones mentioned have an average trip duration of approximately 25 minutes, while their counterpart averages 12 minutes. The longer duration of the trips for Casual riders could indicate that these users enjoy more occasional and less planned trips, probably in recreational or tourist contexts. Members, with shorter journeys, suggest more efficient use of bicycles, probably for daily travel or routine activities.

Bike Usage Patterns Throughout the Week
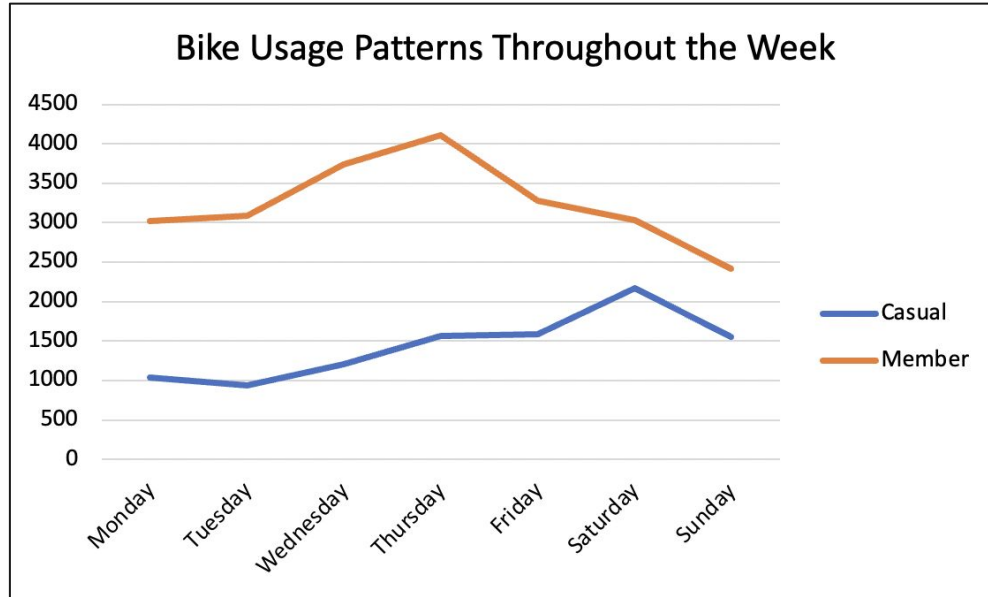
On one hand, **Members use the bikes primarily from Monday to Friday**, with a peak on Thursdays, reflecting a regular pattern of use, aligned with work or studies. On the other hand, **Casual users show greater activity during weekends**, especially Saturdays, which reinforces the idea of recreational use. **Members seem to use bicycles as** a functional and efficient tool for **their daily routines**, while **Casual users prefer** weekends, highlighting their inclination towards **leisure and recreation.**

Data Exploration and Key Findings: Conclusions

The analysis of Cyclistic's bike usage data highlights significant differences in how Casual riders and Members engage with the service. **Casuals primarily have longer rides on weekends**, indicating their preference for recreational use. However, **Members tend to take shorter and more frequent showing a more consistent usage pattern throughout the week**, likely for commuting and regular transportation, reinforcing the idea that they use the service for practical purposes. This contrast suggests **distinct user motivations** that can inform Cyclistic's future marketing and engagement strategies.

By taking this data into account, **Cyclistic will be able to develop a targeted campaign to convert Casual riders into Members** by emphasizing the convenience and cost-effectiveness of membership. Additionally, understanding the peak times and preferences of Casual users presents an opportunity to **tailor services or promotions** for weekends, **enhancing their experience** and potentially **increasing ridership.** Finally, this analysis highlights the value of data-driven decision making in meeting the needs of diverse user groups, helping with **customer satisfaction**, and **long-term growth** for the company.

Top 3 Suggested Actions

a) Given the higher use of bikes by Casuals during weekends, Cyclistic could introduce **promotions targeting weekend riders**. Offer discounts on memberships that are valid for weekend use, or provide a special weekend rider membership that encourages repeat use.

b) Introducing **short-term or flexible membership option**s, such as monthly or quarterly plans, to cater to casual riders who are hesitant about committing to a full annual plan, for example tourists. This will reduce the commitment barrier.

c) Finally, **by emphasizing cost savings** for frequent riders, Cyclistic could show non-Members how much they could save by becoming members, particularly for those with longer ride durations or frequent weekend rides. This strategy can effectively convert high-usage casual riders into members.

Next Steps

Based on the analysis and the suggested actions, the first step is to develop marketing campaigns and strategies aimed at converting casual riders into members. After, it will be crucial to monitor their effectiveness. The best KPIs to track for this project would include:

- **Conversion Rates** will measure how effective the promotions and flexible membership options are at converting casual riders into members.

- Comparing **Ride Frequency** before and after membership will help assess whether those who convert actually increase their riding frequency, especially on weekends.

This stage will determine the uptake of new membership plans and whether the converted users maintain or increase their ride frequency.

Thanks For Your Attention