**Case Study: How Does a Bike-Share Navigate Speedy Success?**



**Background**

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 manager 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 manager believes there is a very good chance to convert casual riders into members. He notes that casual riders are already aware of the Cyclistic program and have chosen Cyclistic for their mobility needs. Manager has set a clear goal: Design marketing strategies aimed at converting casual riders into annual members. In order to do that, however, the marketing analyst team needs to better understand how annual members and casual riders differ, and why casual riders would buy a membership. Upper management team is interested in analyzing the Cyclistic historical bike trip data to identify trends.

**Business Task**

It’s to analyze characteristics of annual members and casual riders and the behaviors on how they use Cyclistic bikes differently.

## **Prepare Data for Exploration**

* From January 2022 to December 2022, twelve-month datasets were downloaded and used in total. These datasets are available at <https://divvy-tripdata.s3.amazonaws.com/index.html>
* The datasets were in CSV file format.

**Process Data from Dirty to Clean**

Programs used:

* Excel for initial data inspection
* Microsoft SQL Server Management Studio (SSMS)

Data cleaning walkthrough:

* Combined all 12-month bike-share datasets and creating a new table named "bikeshare\_2022"
* Found outliers in started\_at and ended\_at columns. Remove all outliers where ended\_at is smaller than started\_at
* Removed all duplicates
* Removed all null values
* Created a new and clean table “bikeshare\_2022”

**Analyze**

1. Added and calculated a new column “ride\_length”
2. Added and calculated a new column “day\_of\_week”
3. Calculated the average ride\_length for casual and member riders
4. Calculated the max ride\_length
5. Calculated the number of trips by type of riders
6. Calculated the number of trips by type of riders by day\_of\_week
7. Calculated number of different rideable\_type for riders
8. Calculated the average ride duration for both member and casual riders
9. Found out where member and casual riders starting and ending their trips
10. Found out the popular months by member and casual riders

**Summary of Analysis**

1. There are three types of bikes available for riders: classic, electric, and docked. The analysis indicates that both types of riders tend to prefer the classic bike, followed by the electric bike. The majority of member riders only use classic and electric bikes, with only 0.52% of them using docked bikes. In contrast, about 9% of casual riders use docked bikes. These findings suggest that classic and electric bikes are the most popular among riders, particularly for members, while docked bikes are less popular and are preferred more by casual riders.
2. The analysis indicates that the average ride length for casual riders is 23.4 minutes, while it is 13.1 minutes for member riders. These findings suggest that casual riders tend to take longer rides on average than member riders.
3. Based on the analysis, it appears that Saturday is the most popular day of the week for casual riders, generating a total of 353,496 trips, while Tuesday is the least popular, with only 200,069 trips. For members, Thursday is the most favorable day, with 408,919 rides, while Sunday is the least favorable, with only 299,075 rides. These findings suggest that there are variations in rider preferences for different days of the week, and bike-sharing services could potentially use this information to optimize their operations and resources.
4. Although the data shows that the average ride length for member riders is significantly lower at 13.15 minutes compared to casual riders' average of 23.42 minutes, the number of trips taken by member riders is much higher at 2,581,436, compared to 1,740,019 for casual riders. This suggests that member riders utilize the service more frequently, which could be attributed to the fact that they have already paid the membership fee and do not have to pay an initial fee to rent the bikes.
5. Based on the analysis, the top five start stations for casual riders are:
   1. Streeter Dr & Grand Ave
   2. DuSable Lake Shore Dr & Monroe St
   3. Michigan Ave & Oak St
   4. Millennium Park
   5. Montrose Harbor

And the top five start stations for member riders are:

1. Ellis Ave & 60th St
2. University Ave & 57th St
3. Ellis Ave & 55th St
4. State St & 33rd St
5. Calumet Ave & 33rd St
6. The results indicate possible seasonal and weather-related pattern that summer is the most popular season for both member and casual riders, with the highest total number of rides. However, there are some differences in the most popular months between the two groups. For member riders, the top three most popular months are August, July, and June, respectively. In contrast, for casual riders, the top three most popular months are July, June, and August. Both group show a lower demand during the winter months, specifically December, February, and January, likely due to the cold winter weather.
7. Why would casual riders buy Cyclistic annual memberships?

It is possible that some casual riders may choose to purchase annual memberships for reasons such as:

1. Cost savings: Depending on the frequency of their rides, casual riders may find that purchasing an annual membership is more cost-effective than paying per ride.

2. Convenience: Having an annual membership allows riders to easily access bikes without having to worry about the hassle of paying each time they want to ride.

3. Sustainability: Cyclistic promotes sustainability and environmentally friendly transportation options. Some casual riders may choose to purchase an annual membership as a way to support this mission.

4. Incentives: Cyclistic may offer incentives or rewards for purchasing annual memberships, such as discounted rates or bonus ride credits.

Of course, these are just a few potential reasons why casual riders may choose to purchase annual memberships. The specific motivations may vary depending on the individual rider.

1. Define the business problem and goals: What are the objectives of the analysis? Is the goal to optimize bike station locations, predict demand, or improve the user experience? Clearly defining the business problem will help focus the analysis and ensure that it is aligned with the stakeholders' needs.

5. Supporting visualizations and key findings

6. Your top three recommendations based on your analysi

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Heperform the data cleaning, ensure integrity, and that it is complete, correct, and relevant.