

# **Cyclistic Bike-Share Data Analysis: Navigating Speedy Success**

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Feb 21, 2021

# 1. Summary

This report presents an in-depth analysis of Cyclistic, a bike-share company, to understand the differences in usage between casual riders and annual members. The analysis leverages historical trip data from February 2022 to January 2023, using SQL, spreadsheets, and R programming. The findings highlight key trends, including the seasonal peak in bike usage, preferences for bike types, and differences in ride length between casual riders and annual members. These insights provide a foundation for targeted marketing strategies aimed at converting casual riders into annual members, enhancing the company's revenue and market position.

## 2. Introduction

Cyclistic, a fictional bike-share company, aims to maximize its number of annual memberships to secure future success. This case study focuses on identifying how casual riders and annual members use Cyclistic bikes differently, utilizing the Ask, Prepare, Process, Analyze, Share, and Act steps of the data analysis process. By examining 12 months of historical trip data, the study provides actionable insights and visualizations that can inform marketing strategies to convert casual riders into long-term members.

## 3. Statement of the Problem

Cyclistic's business strategy centers on increasing annual memberships by understanding the usage patterns of its casual riders and annual members. Key business questions addressed include:

How many bike rentals were made over the previous 12 months, and what percentages were accounted for by casual riders and annual members?

What is the trend in ride length between the two rider groups over the last 12 months?

Which bike types are preferred by casual riders and annual members?

During which months and days of the week is bike usage highest, and does this differ between casual riders and annual members?

The goal is to identify key insights that will inform a new marketing strategy designed to convert casual riders into annual members.

## 4. About the Dataset

The analysis utilized Cyclistic’s historical trip data from February 2022 to January 2023, provided by Motivate International Inc. The dataset includes 13 attributes, such as ride IDs, bike types, start and end times, and rider types (casual or annual members), totaling 5,754,254 observations. Key attributes include:

ride\_id: Unique identifier for each ride

rideable\_type: Type of bike (electric, classic, docked)

started\_at and ended\_at: Timestamps for ride start and end

member\_casual: Indicates rider type (casual or annual)

## 5. Methodology

The data analysis involved several key steps:

**Data Importation and Cleaning:** Data was imported from CSV files into Google BigQuery, where missing values were handled, and data was cleaned for analysis.

**Data Manipulation:** SQL queries were used to extract attributes such as year, month, day, and time from ride timestamps. The data was merged and transformed to ensure consistency.

**Visualization:** Data was visualized using Google Sheets and R programming. Various charts, including line graphs and pivot tables, were used to represent trends in ride length, bike type preferences, and usage patterns.

## 6. Assumptions

The analysis assumes that the historical data accurately represents the usage behavior of casual riders and annual members. It also assumes that trends observed in the data are indicative of broader patterns and that data cleaning and transformations did not introduce biases.

## 7. Ethical Considerations

Data used in the analysis was publicly available, and no sensitive personal information was included. The analysis was conducted objectively, with transparency in the methodologies and acknowledgment of limitations to ensure unbiased results.

## **8. Results**

The findings from the data suggest that annual members account for 59.3% of bike rentals, indicating their importance as a revenue source. Casual riders tend to use bikes for longer ride lengths, while annual members show higher overall rental frequency. Electric bikes are the most popular among casual riders, whereas annual members prefer classic bikes.

## **9. Discussion**

Key insights include:

**Ride Frequency and Length:** Annual members rent bikes more frequently but ride for shorter durations compared to casual riders, who exhibit higher ride lengths.

**Seasonal Patterns:** Bike rentals peak between May and September, aligning with warmer weather, which likely encourages outdoor activities. Both casual and annual riders follow similar trends, but annual members consistently rent more.

**Bike Type Preferences:** Electric bikes are favored by casual riders due to their ease of use, while annual members prefer classic bikes, possibly for their cost-effectiveness.

**Weekly Usage:** Bike rentals are highest on Mondays, with a notable dip on Wednesdays, suggesting potential opportunities for targeted promotions on less busy days.

These insights suggest opportunities for targeted marketing campaigns during peak months and the promotion of electric bikes to attract more casual riders.

## **10. Conclusions**

The analysis reveals that annual members are the primary revenue drivers for Cyclistic, accounting for the majority of rentals. Casual riders, though less frequent, ride for longer durations, indicating a different usage pattern that could be leveraged in marketing strategies. The popularity of electric bikes among casual riders suggests a potential area for investment to attract new members. Seasonal peaks in usage also present opportunities for targeted promotional activities during the high-demand months.

## **11. The Way Forward**

To further enhance Cyclistic's market position, the following actions are recommended:

**Marketing Campaigns:** Focus on peak periods (May to September) with targeted promotions to convert casual riders into annual members.

Invest in Electric Bikes: Given their popularity among casual riders, increasing the availability of electric bikes could attract more users and drive membership conversions.

In-depth Financial Analysis: Future studies should incorporate financial data to assess the revenue impact of converting casual riders to annual memberships.

This analysis underscores the importance of understanding rider behavior to inform data-driven marketing decisions, ultimately contributing to Cyclistic's growth and success.

## **12. Recommendations**

The insights from this study highlight the potential for Cyclistic to refine its marketing strategy by focusing on key user behaviors and preferences. Implementing targeted promotions during high-demand months and investing in bike types that appeal to casual riders can help increase annual memberships. Further research incorporating financial metrics would provide a more comprehensive view of potential revenue gains from membership conversions, supporting Cyclistic's long-term business objectives.

## 13. References

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