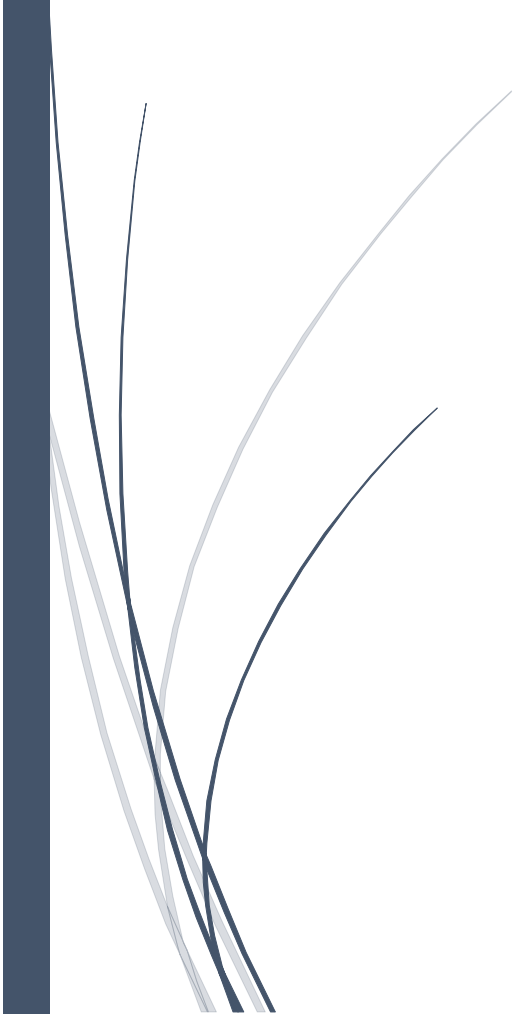
1/16/2026

Cyclistic Bike-Share Case Study

Google Data Analytics Professional Certificate



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1. Introduction

This case study analyses historical bike-sharing data from Cyclistic to understand behavioural differences between casual riders and annual members.

The objective of the analysis is to identify usage patterns that can support data-driven marketing strategies aimed at converting casual riders into annual members.

By analysing trip duration, usage frequency, and time-based patterns, this study provides insights to help Cyclistic improve customer segmentation and membership growth.

Primary business question:
How do casual riders and annual members use Cyclistic bikes differently, and how can these insights support membership conversion strategies?

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2. Data Source

This analysis uses **twelve months of historical trip data** from Cyclistic.
Each record represents one bike trip and includes information such as:

- user type (member or casual),
- trip duration,
- day of the week,
- type of bike used.

All monthly datasets were combined into a single dataset to allow consistent analysis across the full year.

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3. Data Cleaning and Preparation

Before starting the analysis, the data was cleaned and prepared to ensure accuracy and consistency.

The following steps were completed:

- trips with a ride duration equal to zero were removed,
- the member_casual field was checked for missing values,
- two new variables were created:
    - ride_length, which calculates the duration of each trip,
    - day_of_week, which identifies the day the trip started.

These steps helped ensure the data was reliable and ready for analysis.

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4. Data Analysis

4.1 Average Ride Length

The analysis shows that **casual riders have a slightly longer average ride duration** compared to annual members. In contrast, **members tend to take shorter and more consistent trips**. This suggests that casual riders usually spend more time per trip, while members use the service for shorter rides.

4.2 Number of Rides by Day of the Week

Clear differences appear when looking at ride frequency by day of the week:

- **casual riders** are more active toward the **end of the week and during weekends**,
- **annual members** show stronger and more regular usage during **weekdays**.

These patterns indicate different usage habits between the two groups.

4.3 Average Ride Length by Day of the Week

When ride duration is analyzed by day of the week:

- **casual riders take longer trips on Saturdays and Sundays**,
- **members maintain fairly stable ride durations throughout the week**.

This shows that casual riders' trip duration changes more depending on the day, while members use the service in a more consistent way.

4.4 Bicycle Type Usage

The analysis of bike types shows that:

- both groups prefer **electric bikes**,
- **casual riders rely more on electric bikes** than members,
- **members show a more balanced use** between classic and electric bikes.

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5. Visualizations and Key Findings

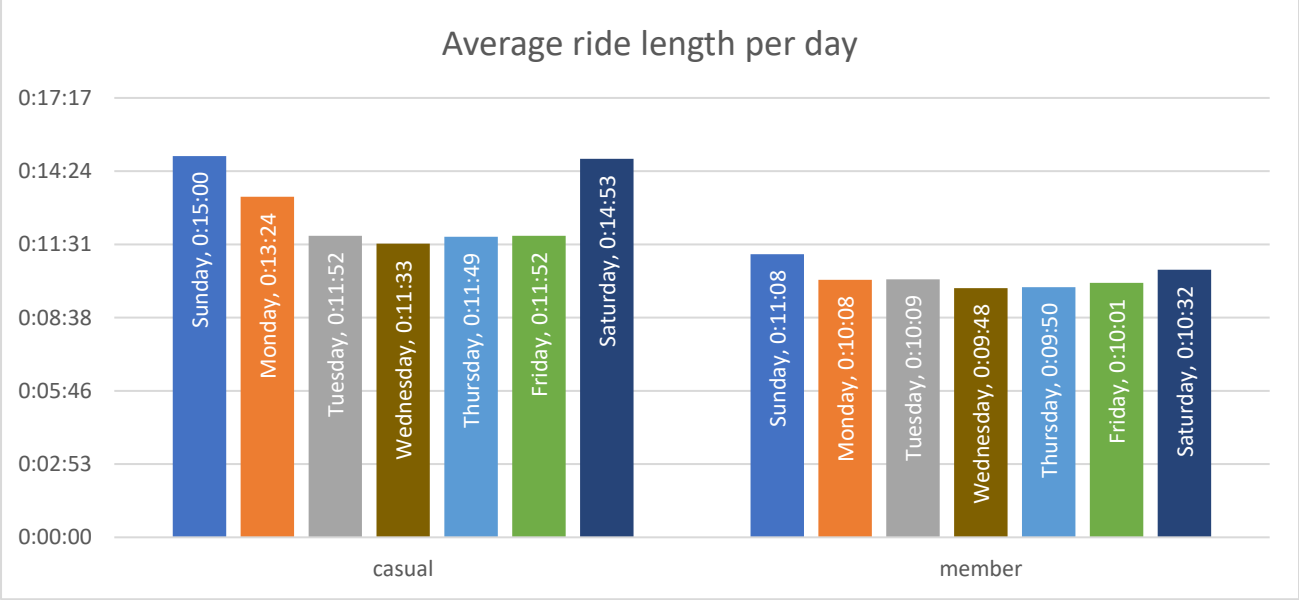

Figure 1. Average ride length by day of the week shows that casual riders take longer trips on weekends, while annual members maintain more stable ride durations throughout the week.

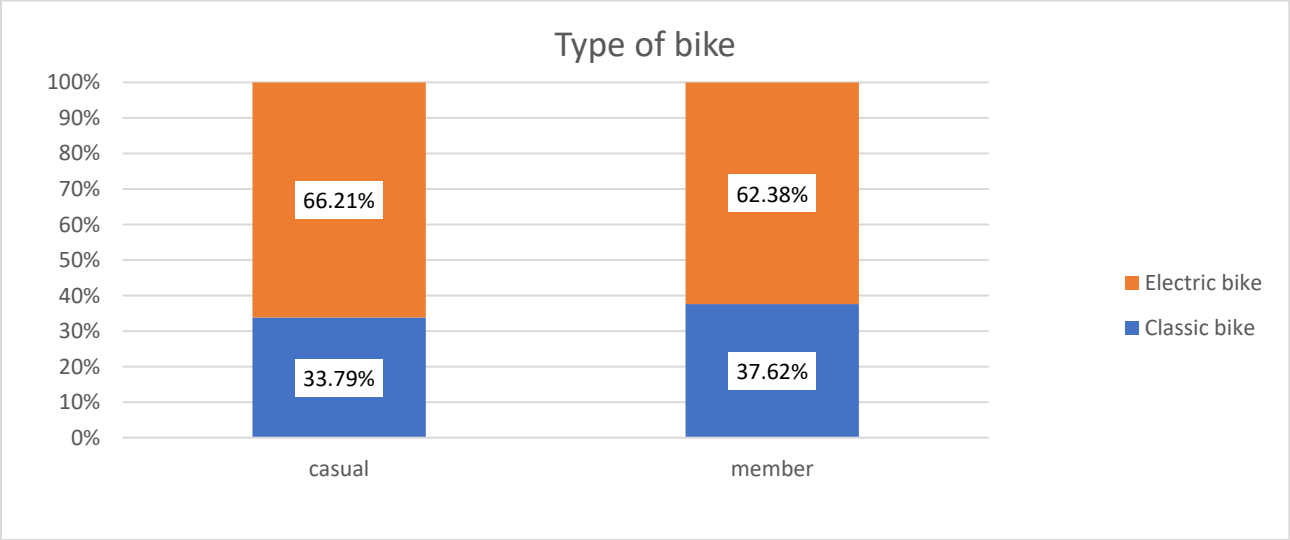

Figure 2. Electric bikes are the most commonly used bike type among both user groups, with casual riders showing a higher reliance on electric bikes compared to annual members.

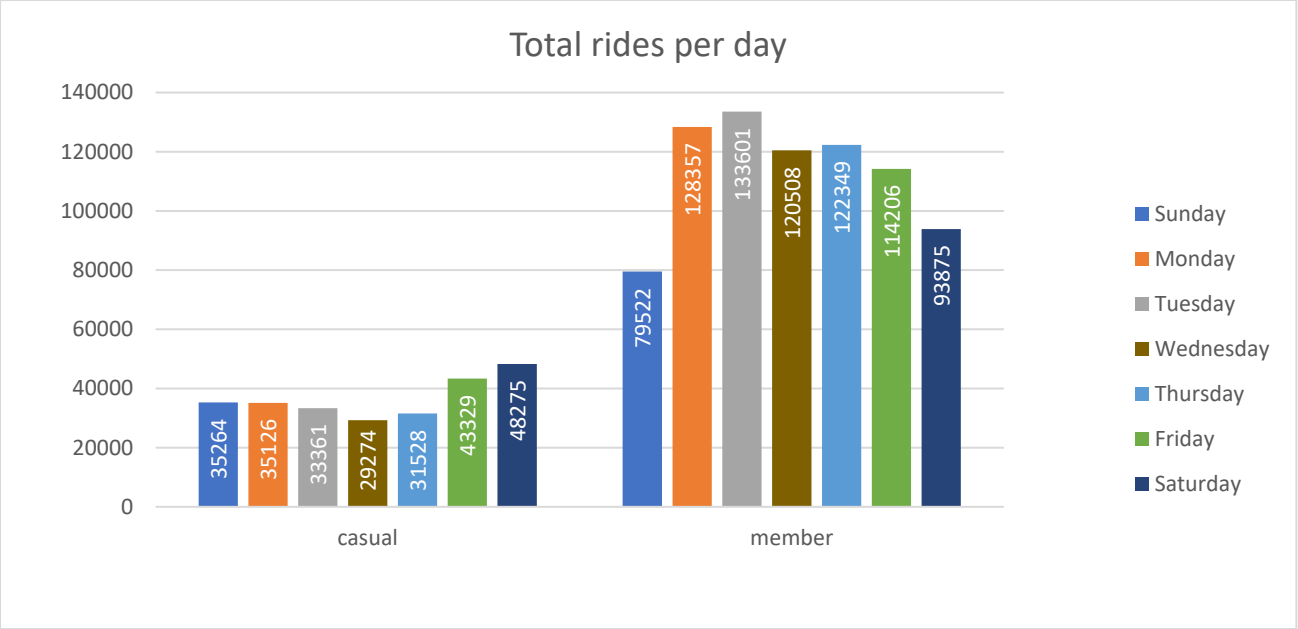

Figure 3. Annual members account for a higher total number of rides, with stronger weekday usage, while casual riders increase their activity toward the weekend.

Based on the analysis, the main differences between casual riders and annual members are:

- annual members complete a higher total number of trips,
- members use the service more regularly during weekdays,
- casual riders concentrate their usage on weekends,
- casual riders take longer trips and use electric bikes more often.

These findings highlight clear differences in how each group uses the service.

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6. Recommendations

Based on these insights, the following recommendations are proposed to help convert casual riders into annual members.

Recommendation 1: Weekend-focused promotions

Casual riders are most active during weekends and take longer trips on those days. Cyclistic could run targeted promotions on weekends, such as short membership trials or limited-time discounts, to reach casual riders when engagement is highest.

Recommendation 2: Flexible or intermediate membership options

Many casual riders use the service regularly but may not be ready for an annual commitment. Offering monthly plans or ride bundles could reduce the barrier to entry and encourage these users to gradually transition to annual memberships.

Recommendation 3: Highlight membership value for electric bike users

Since casual riders rely more heavily on electric bikes, Cyclistic could emphasize the cost savings of membership for frequent electric bike users. Clear communication around pricing benefits may make membership more attractive.

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7. Conclusion

This analysis was conducted to support Cyclistic's goal of increasing the number of annual members, which are significantly more profitable than casual riders. Rather than targeting entirely new customers, the focus was placed on understanding how existing casual riders use the service and whether their behavior suggests opportunities for conversion.

The results show that casual riders are most active toward the end of the week, with a high number of rides on Fridays and Saturdays. In addition, casual riders tend to take longer trips during weekends, particularly on Saturdays and Sundays, and rely more heavily on electric bikes. In contrast, annual members use the service more frequently during weekdays and display shorter, more consistent ride durations. These differences indicate that casual riders are not random or one-time users, but a distinct group with identifiable usage patterns.

Because casual riders are already familiar with Cyclistic and regularly choose the service for their mobility needs, they represent a strong opportunity for membership conversion. The observed patterns highlight specific moments—such as weekends—and specific product preferences—such as electric bikes—where targeted marketing strategies could be most effective.

Overall, the analysis supports **Cyclistic's strategy** of focusing marketing efforts on casual riders. By using data-driven insights to understand when and how casual riders use the service, Cyclistic can design more effective campaigns that encourage the transition from casual usage to annual membership, supporting long-term growth and profitability.