

Cyclistic Bike-Share Analysis: The Habits of Casual vs. Member Riders

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Tools Used: R (RStudio), tidyverse, lubridate, ggplot2, dplyr

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Executive Summary

This analysis explores how Cyclistic's two rider groups—**casual riders** and **annual members**—use the bike-share program differently. Using 12 months of trip data, I cleaned, prepared, and analyzed key ride behaviors entirely in R using RStudio.

The results show clear differences in ride length, ride timing, weekday versus weekend behavior, and likely trip purpose. These insights inform targeted marketing strategies.

Business Task

Cyclistic's leadership wants to understand how casual riders differ from annual members so the marketing team can design strategies to encourage casual riders to convert to annual memberships.

Primary Question:

How do annual members and casual riders use Cyclistic differently?

Data Sources

12 months of public Cyclistic (Divvy) trip data, including:

- ride start and end timestamps
- ride length

- rider type (casual vs. member)
- bike type
- start and end stations

Data was cleaned and analyzed in **R** using **RStudio**.

Data Cleaning & Preparation

The dataset required several steps to prepare it for analysis:

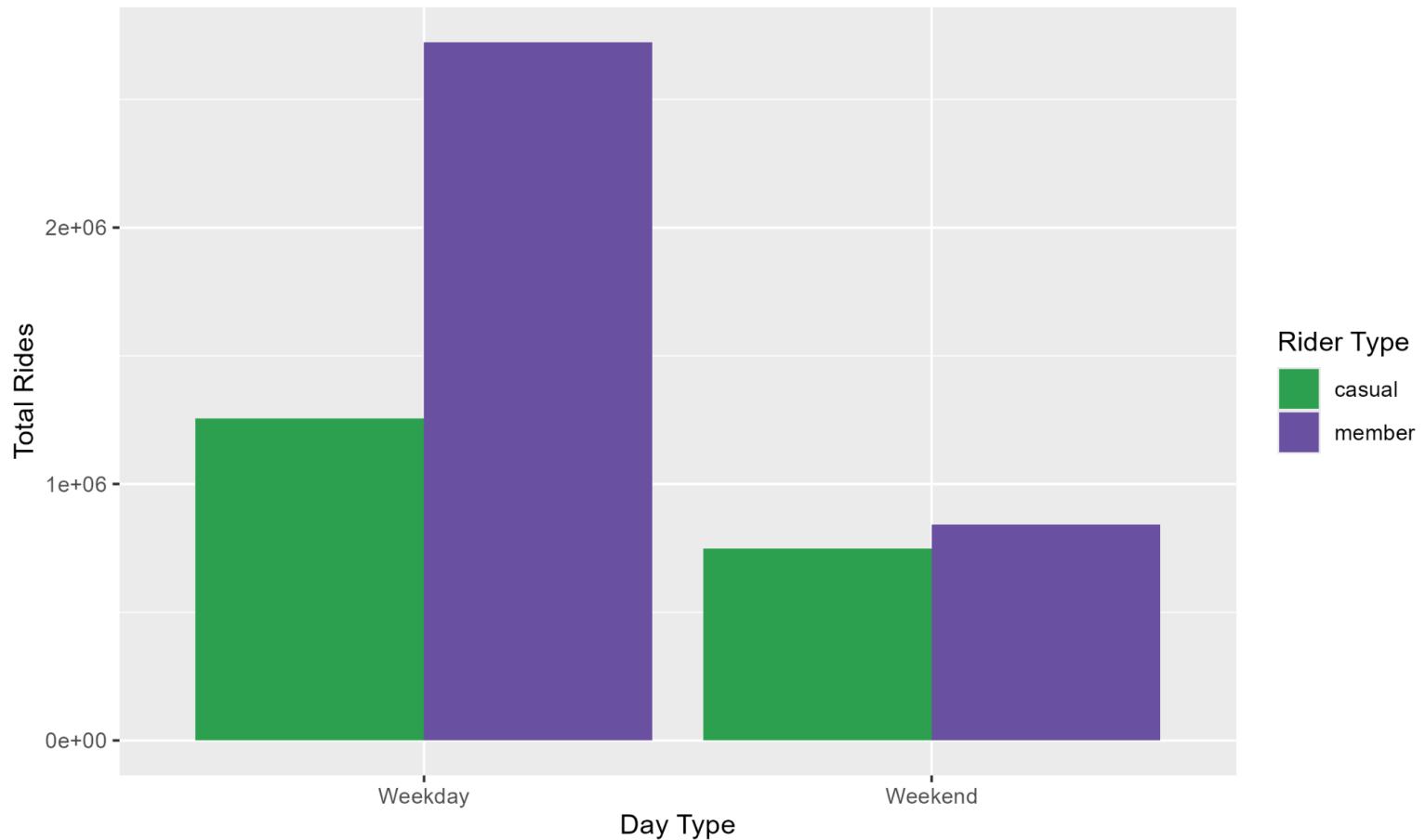
- Converted timestamps to proper datetime format
- Calculated ride length in minutes
- Removed missing values
- Filtered out unrealistic ride durations
- Checked for duplicates
- Created derived variables:
 - hour of day
 - day_of_week (Mon–Sun)
 - weekend vs weekday

Analysis & Visualizations

Below are the key findings supported by data and charts.

Chart 1:

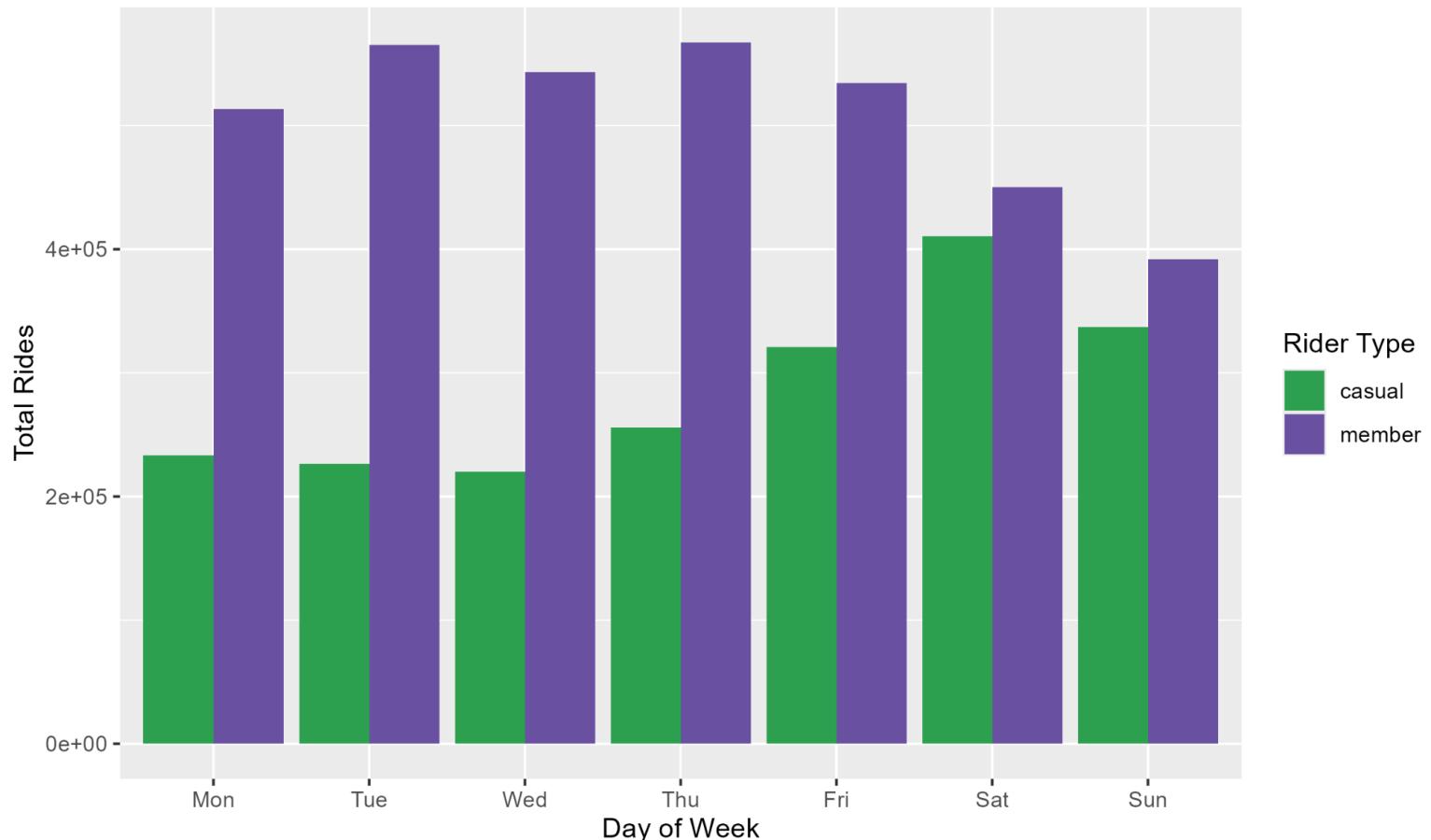
Ride Volume: Members vs Casual



Insight: Members consistently take more rides overall, while casual riders spike on weekends.

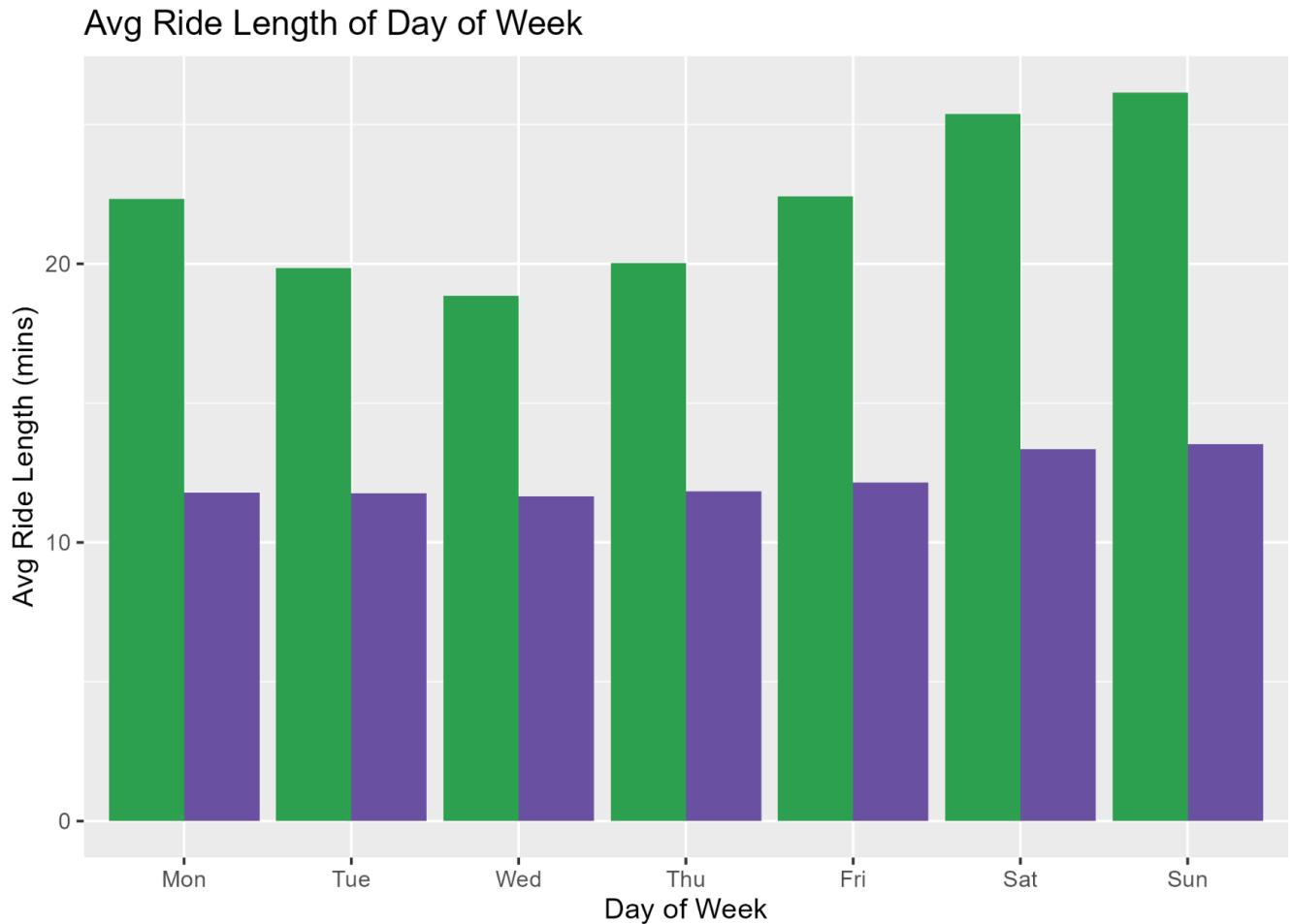
Chart 2:

Rides by Day of Week



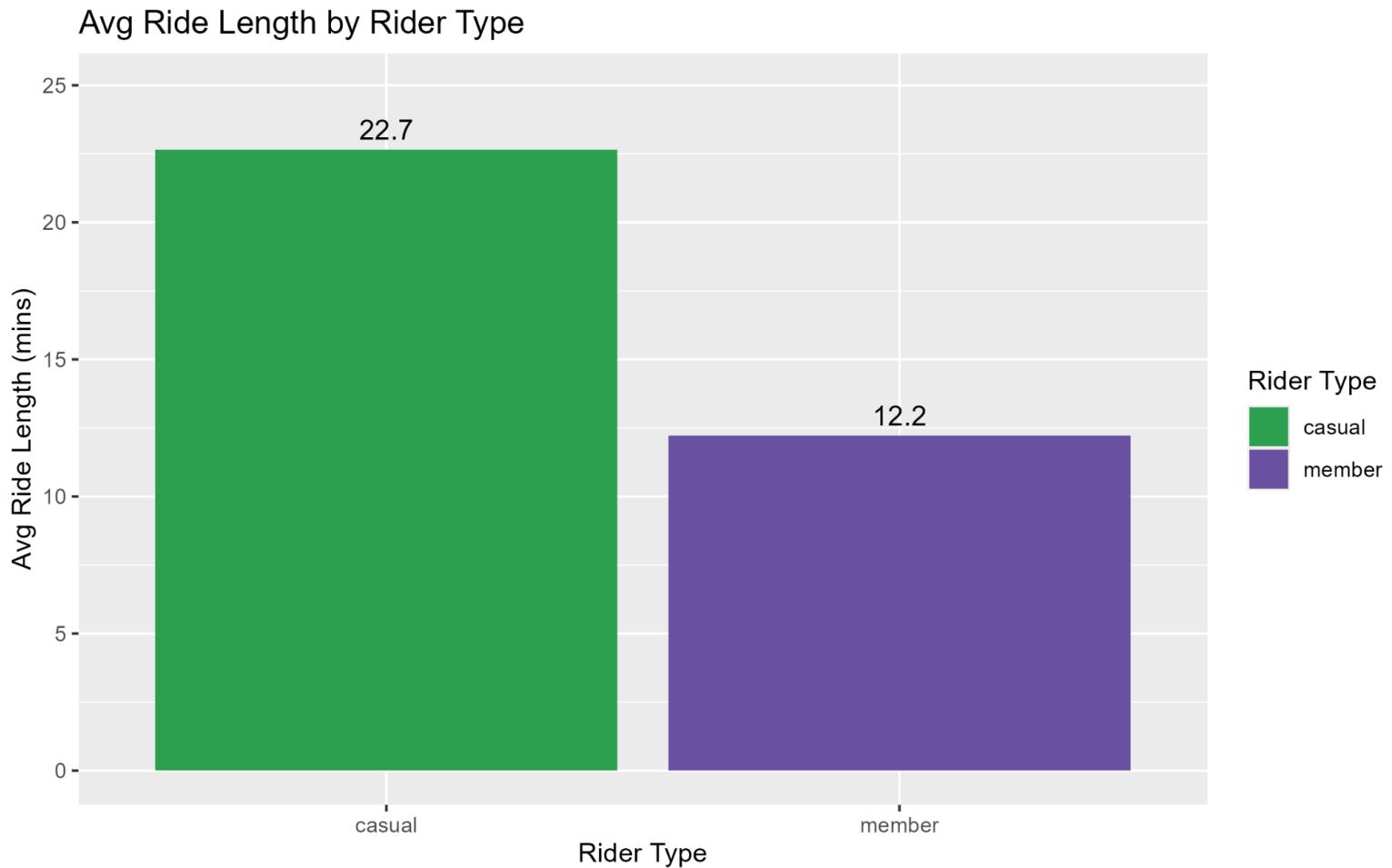
Insight: Casual riders use the service most on weekends, while members ride heavily on weekdays (likely commuting).

Chart 3:



Insight: Casual riders take significantly longer rides every day of the week.

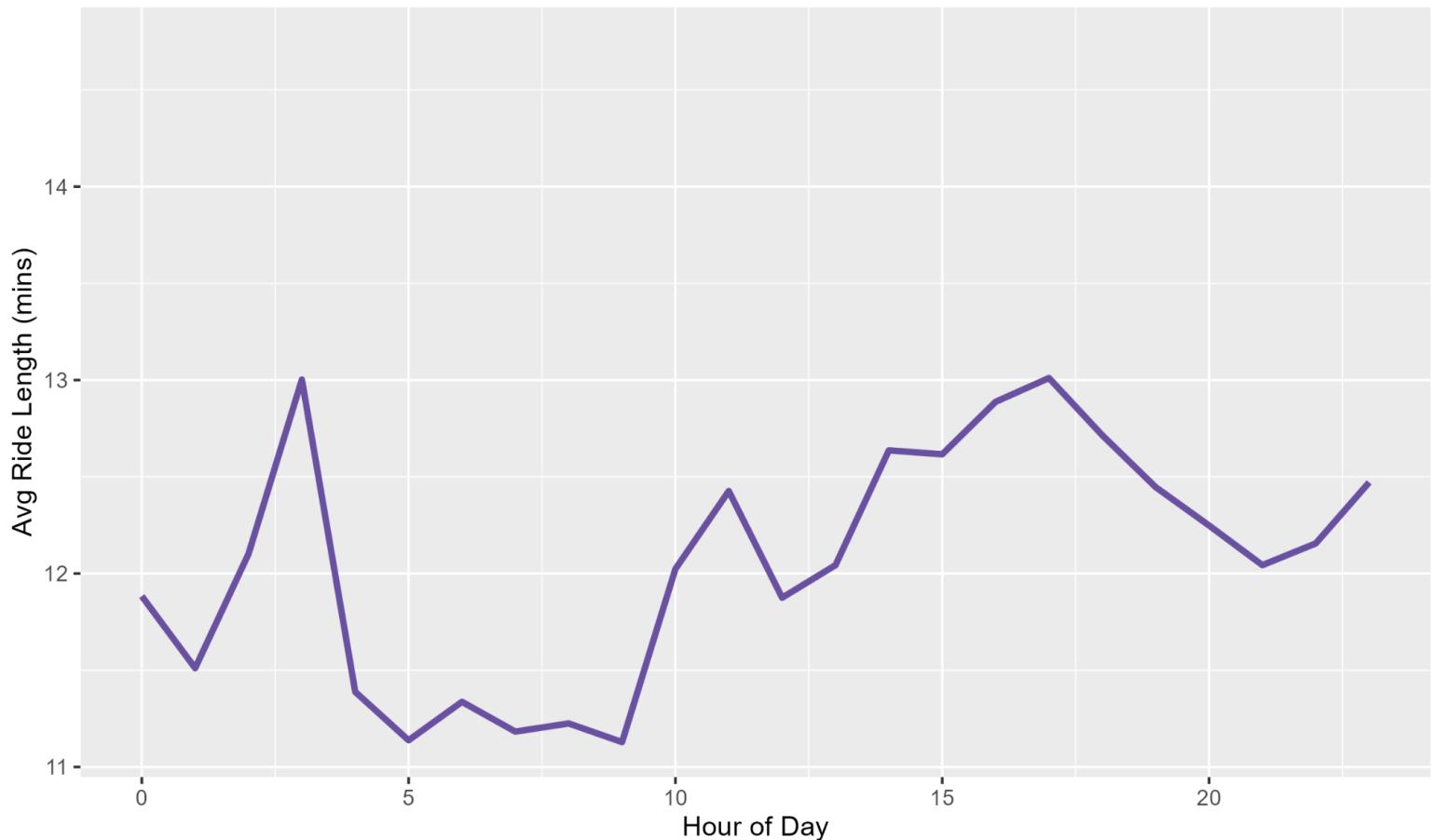
Chart 4:



Insight: Casual riders take longer trips overall — supporting the idea they use bikes for leisure.

Chart 5:

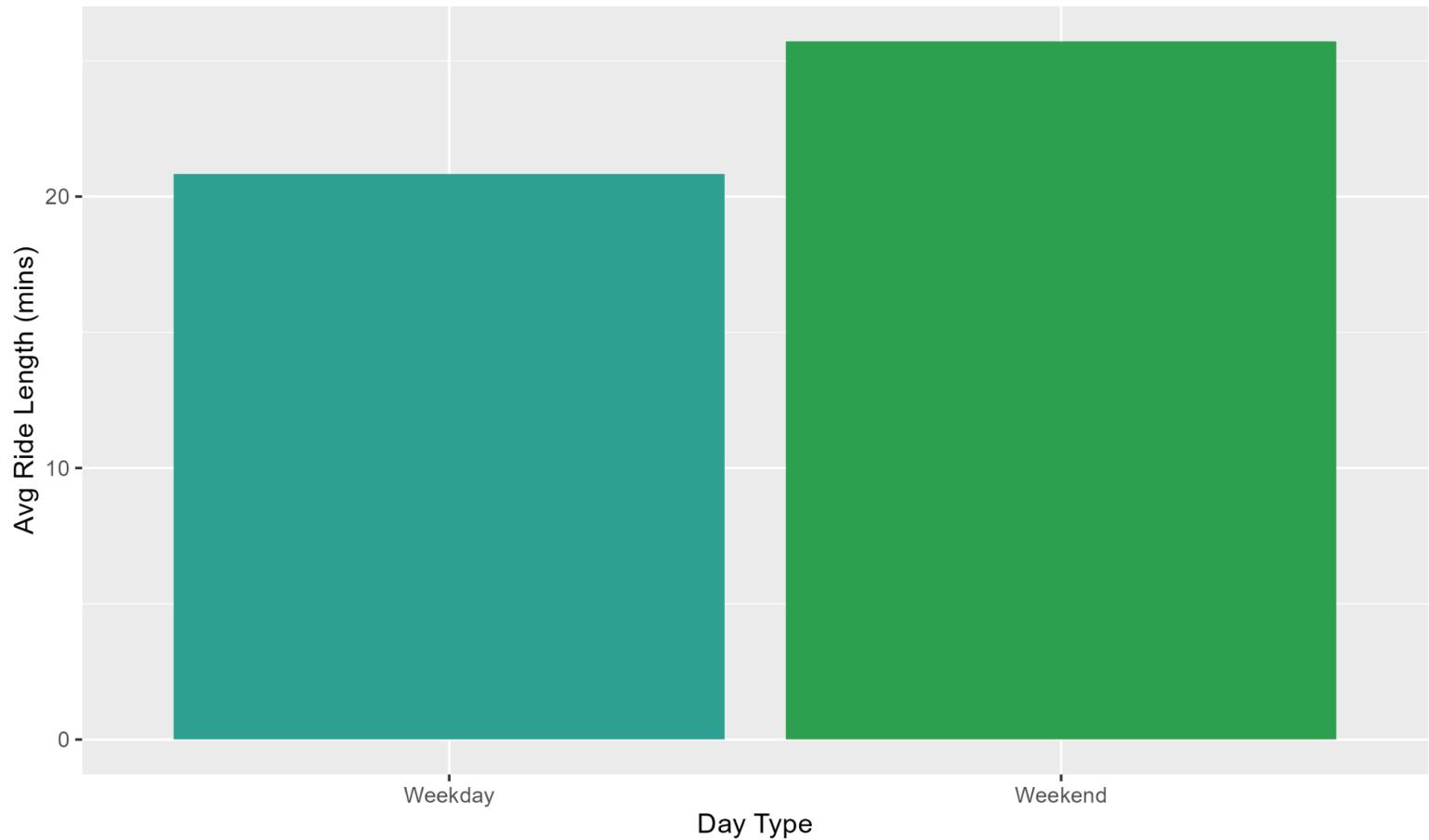
Avg Ride Length by Hour (Members)



Insight: Member ride lengths are shortest during commute hours (7–9 AM and 4–6 PM).

Chart 6:

Casual Riders: Avg Trip Length



Insight: Casual riders ride longer on weekends, showing strong recreational behavior.

Key Insights

- Members take more rides overall, especially on weekdays.
 - Casual riders take longer rides — often twice as long as members.
 - Casual rider usage spikes on weekends, while member usage is more stable.
 - Member ride lengths shorten during commute hours, suggesting work-related travel.
 - Weekend behavior indicates casual riders use Cyclistic primarily for leisure.
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Recommendations

Based on the observed differences in ride behavior between casual riders and annual members, Cyclistic should consider the following strategies:

1. Develop a weekend-focused membership promotion

The data shows that casual riders take their highest volume of trips on Saturdays and Sundays, while member usage remains steady throughout the week. A targeted weekend membership offer—such as discounted membership sign-ups or weekend-only plans—could directly appeal to the group that rides most during those days.

2. Introduce membership perks aligned with leisure riding

Casual riders consistently record longer average ride lengths across all days, often twice as long as members. This suggests that many casual users ride for recreational purposes. Cyclistic could create perks tailored to leisure cyclists, such as:

- Credits from day-pass spending toward membership, since casual riders already take long trips
- A “Recreational Rider” add-on that rewards longer rides or weekend use

These benefits match the behavior revealed in the ride length data.

3. Use geo-targeted marketing in high-leisure areas

Weekend spikes and long ride durations imply that casual riders frequent parks, waterfront trails, and tourist-heavy stations. While station-level data wasn't analyzed here, the temporal patterns strongly reflect leisure behavior. Cyclistic could leverage this by placing ads or membership promotions near:

- popular trails
- beach and lakefront paths
- tourist destination stations

This aligns marketing with where casual riders are most active.

Conclusion

The analysis clearly demonstrates that casual riders and annual members use Cyclistic bikes differently. By understanding these patterns, marketing efforts can be tailored to meet casual riders' needs and encourage conversion to membership. Further exploration — such as trip start locations, weather data, or bike type trends — could enhance future insights.
