Cyclistic Bike-Share Case Study — Technical Report

Goal: analyze Cyclistic ride data to understand differences between casual riders and annual members, and propose actions to convert casual riders into members.

Phase 1: Ask

Business task: how do annual members and casual riders use Cyclistic bikes differently?
Stakeholders: Director of Marketing (Lily Moreno), Marketing Analytics Team, Executive Team.

Phase 2: Prepare

Data sources: Divvy 2019 Q1 and Divvy 2020 Q1 public datasets (Motivate International Inc.). Data stored in organized folders. No personal data included.

Phase 3: Process

Key steps:

- Combine datasets
- Convert date/time columns
- Create ride_length and day_of_week
- Remove invalid durations and missing user type

R code — combine datasets

```
all_trips <- bind_rows(df_2019, df_2020)
rm(df_2019, df_2020)
```

R code — convert date columns

```
all_trips$started_at <- ymd_hms(all_trips$started_at)
all_trips$ended_at <- ymd_hms(all_trips$ended_at)
```

R code — create new columns

```
all_trips <- all_trips %>%
 mutate(ride_length = difftime(ended_at, started_at)) %>%
 mutate(day_of_week = wday(started_at, label = TRUE))
```

R code — clean data

```
all_trips_v2 <- all_trips %>%
 filter(ride_length > 0, !is.na(member_casual)
```

Phase 4: Analyze

I summarized ride length metrics by rider type and compared usage patterns by weekday/weekend.

R code — summary statistics

```
all_trips_summary <- all_trips_v2 %>%
 group_by(member_casual) %>%
 summarise(
 mean_ride_length = mean(ride_length),
 median_ride_length = median(ride_length),
 max_ride_length = max(ride_length),
 min_ride_length = min(ride_length)
 )
```

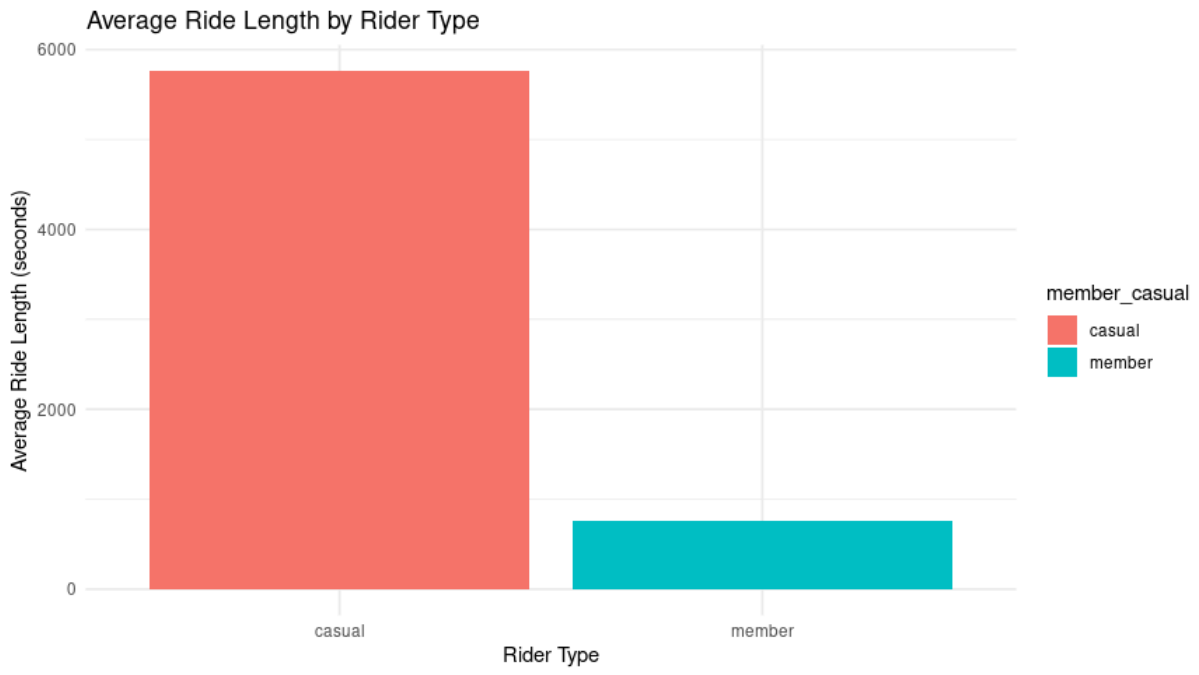
Findings

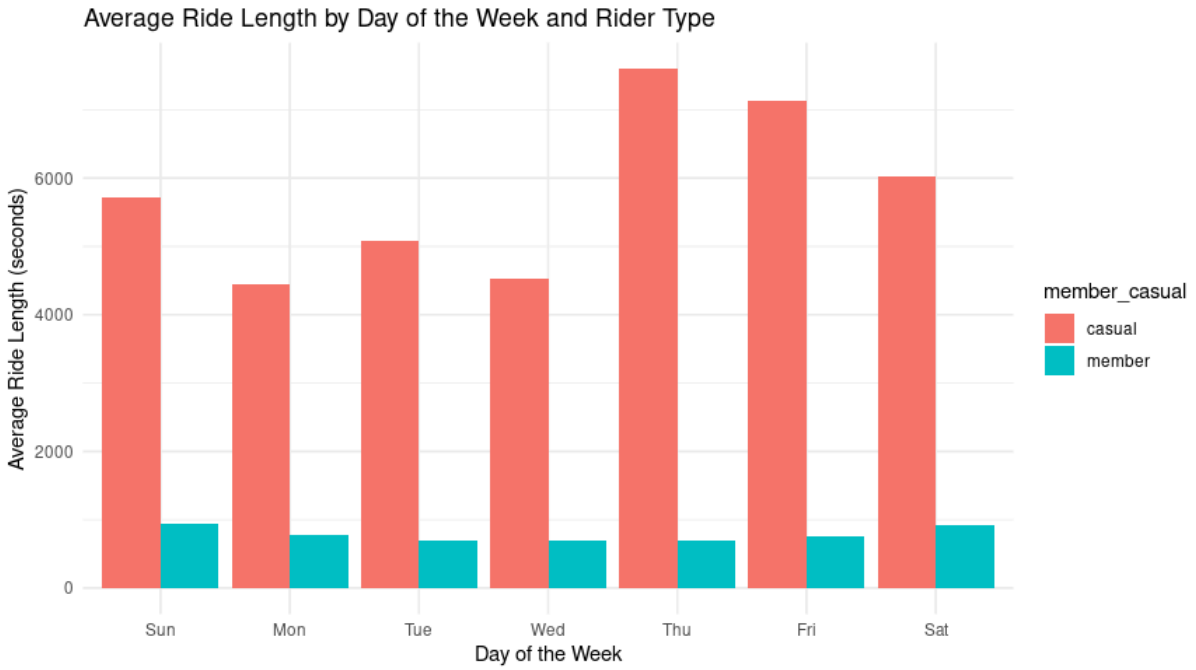
• Casual riders average ≈ 57 minutes; members ≈ 10 minutes.

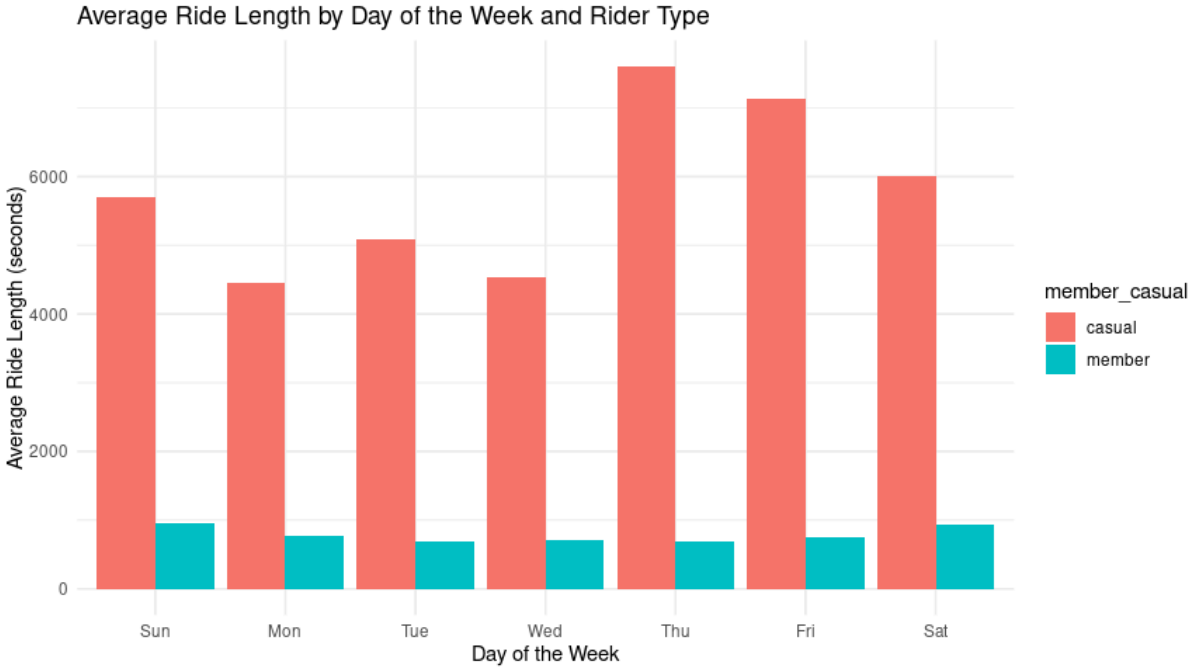
• Members ride more on weekdays (commute).

• Casual riders ride more on weekends (leisure).

Phase 5: Share — Charts




Average Ride Length by Day of the Week and Rider Type
Average Ride Length (seconds)
0
2000
4000
6000
Sun
Mon
Tue
Wed
Thu
Fri
Sat
Day of the Week
member_casual
casual
member


Average Ride Length by Day of the Week and Rider Type
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0
2000
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Sun
Mon
Tue
Wed
Thu
Fri
Sat
Day of the Week
member_casual
casual
member

R code — example visualization

```
ggplot(data = all_trips_summary, aes(x = member_casual, y = mean_ride_length, fill = member_casual)) +
 geom_bar(stat = "identity") +
 labs(title = "Average Ride Length by Rider Type",
 x = "Rider Type",
 y = "Average Ride Length (seconds)") +
 theme_minimal()
```

Phase 6: Act

Recommendations: Weekend Pass for casual riders; Loyalty & Rewards; Targeted digital campaigns on savings and convenience.

Conclusion

The data shows clear patterns that support actions to convert casual riders into annual members.