Decoding Cyclistic Bike-Share

Insights from a Case Study

By David D. Peralta

Agenda

- How do annual members and casual riders use Cyclistic bikes differently?
- Why would casual riders buy Cyclistic annual memberships?
- How can Cyclistic use digital media to influence casual riders to become members?

CURRENT CONTEXT

Cyclistic: A bike-share company in Chicago. Features a program with more than 5,800 bicycles and 600 docking stations.

I utilized Cyclistic's historical trip data to analyze and identify trends. You can access the data here: Download Cyclistic trip data. The dataset is made available by Motivate International Inc. Under this license.

Analyzing data for the period of April 1 to April 30, 2020, revealed a total of 84,777 rider data.

CLEANING PROCESS OVERVIEW

1. Data Import:

Imported raw data from Cyclistic's historical trip records using Excel.

2. Duplicate Check:

Ensured data quality by confirming the absence of duplicate entries.

3. Handling Missing and Incomplete Values:

Addressed missing values in key columns (ride_id, end_station_name) using Excel's data cleaning functions to fill missing values, incomplete values, or drop rows as appropriate.

4. Standardizing Data Format:

Formatted dates (start_at and ended_at) consistently for accurate analysis. Formatted dates to a custom m/d/yyy h:mm for better understanding.

5. Data Transformation and Features:

Created new columns: "Day_of_week" and "ride_length." to categorize duration of each ride and rental days (Monday-Sunday).

6. Adding New Columns:

Introduced columns for better insights into ride patterns and weekly trends.

7. Converting To Different Data Types:

Converted ride_length from seconds to minutes for better readability.

DATA ANALYSIS INSIGHTS

In this phase of the project, I personally dived into the cleaned dataset using features of Excel's pivot tables. Here's a breakdown of the journey:

1. Excel Pivot Table Usage:

- Employed Excel's pivot table for in-depth analysis on the cleaned dataset.
- Aggregated data, segmented based on factors, and responsively explored.

2. Visualizing with Charts:

- Utilized Excel's charting capabilities for effective communication of insights.
- Created Key charts:
  - Average Ride Length by Membership Status
  - Average Ride Length by Day of the Week
  - Ride Counts by Day of the Week
  - Busiest Time of Day
  - Top 10 most popular stations

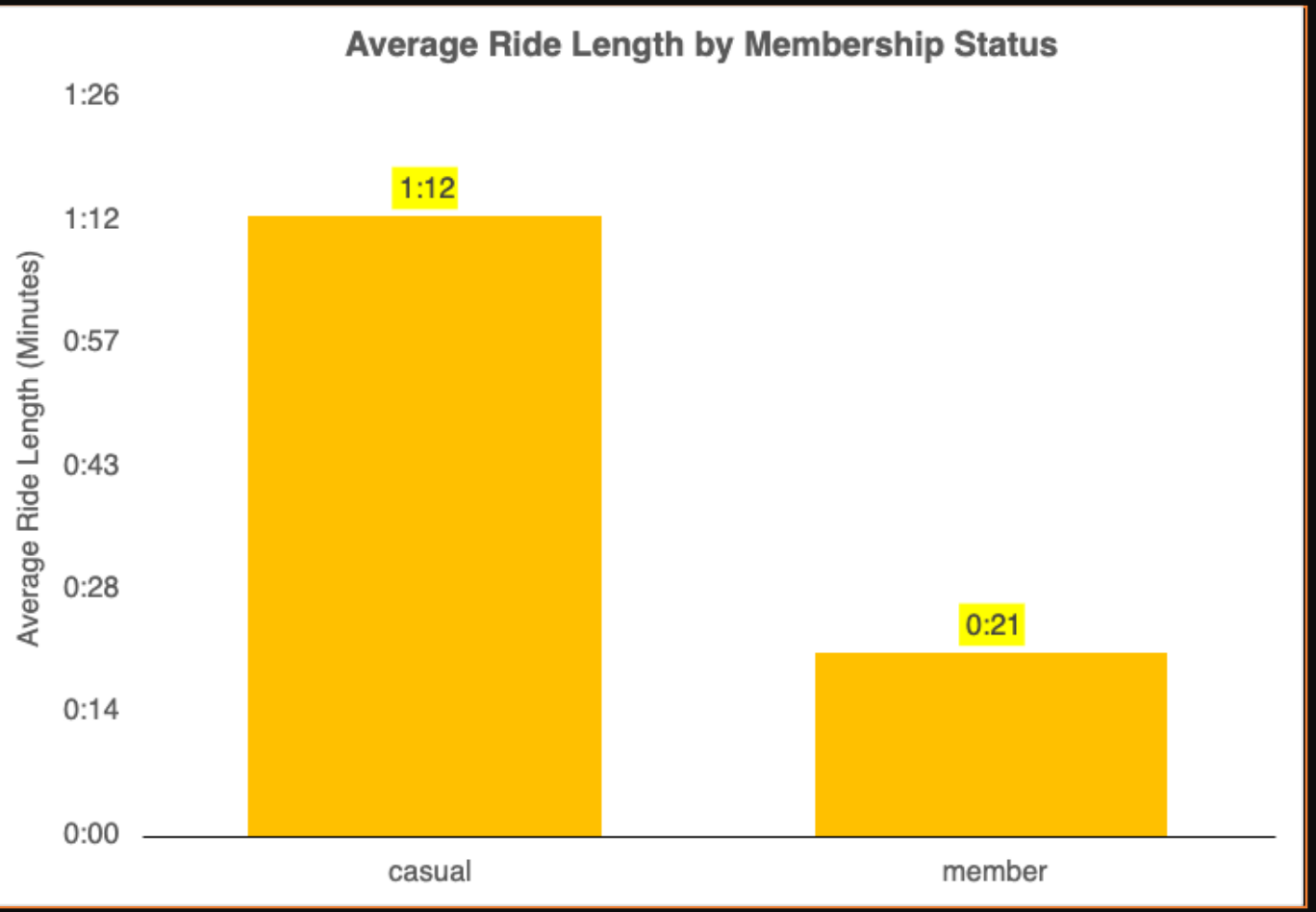
3. Insights and Decision-Making:

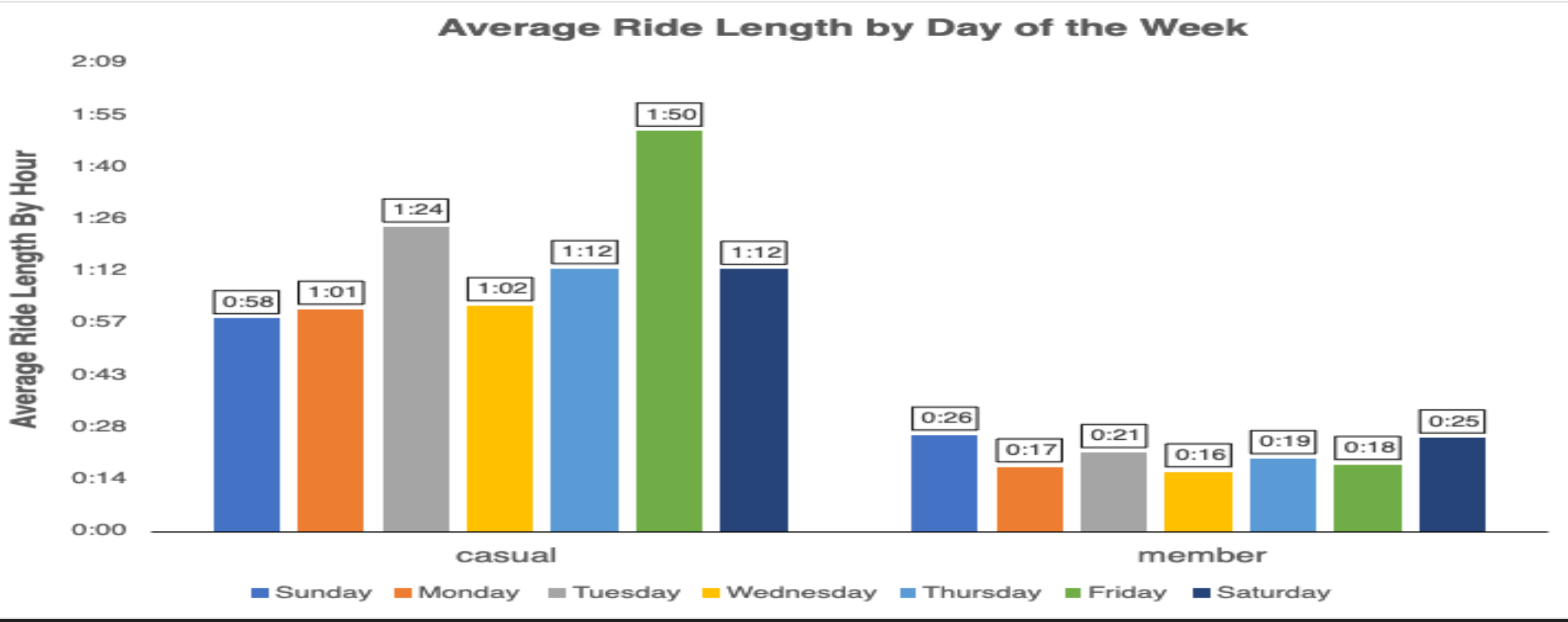
- **Made insights accessible through visualizations.**
- **Enabled a comprehensive examination of the dataset for informed decision-making.**

AVERAGE RIDE LENGTH

Casual riders average 1 hour and 12 minutes per ride.

This is significantly longer than members, who average 21 minutes per ride.

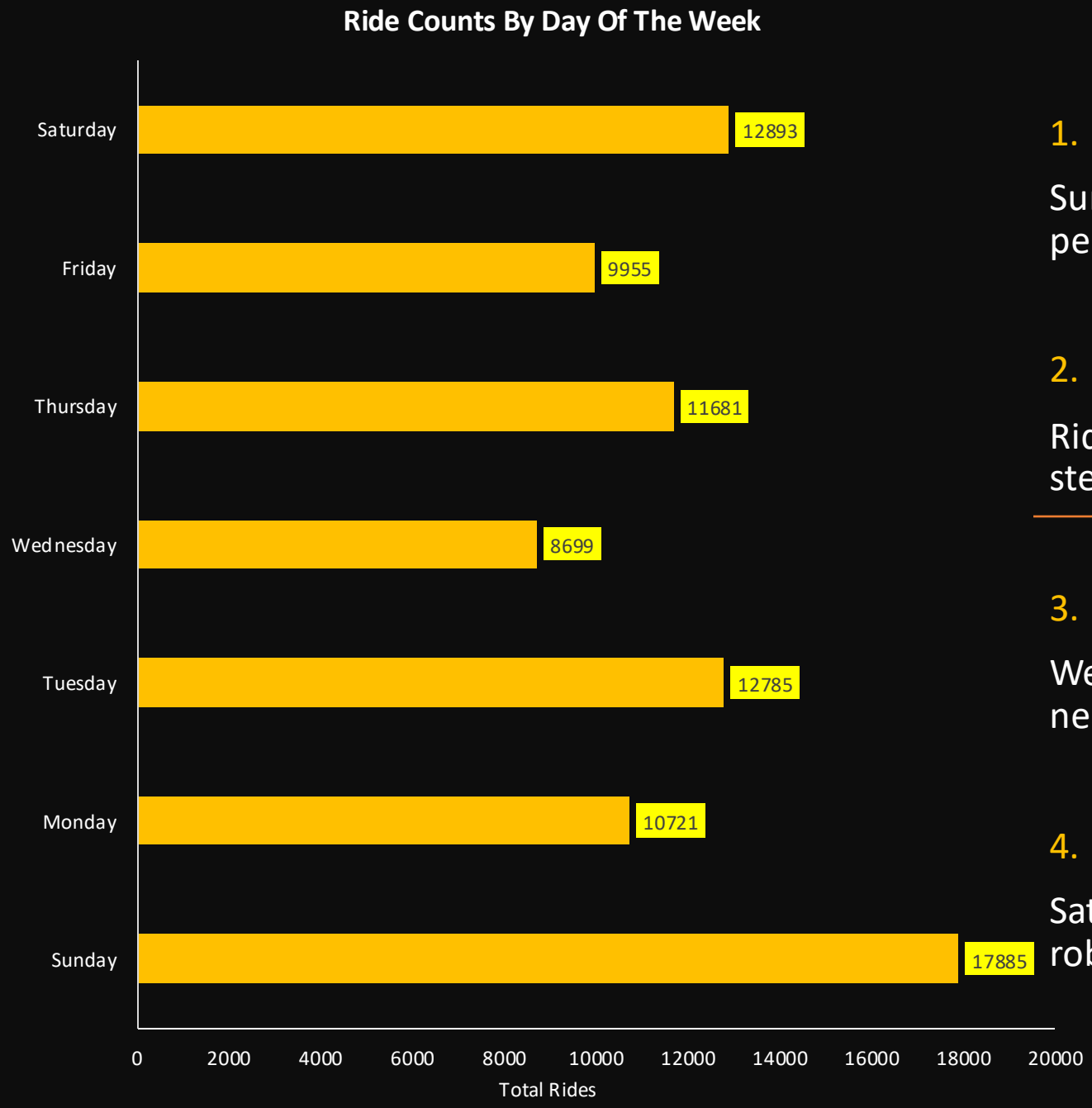




CASUAL & MEMBER RIDE COUNT BY DAY OF THE WEEK

Casual riders show diverse average ride length each day.

While member riders consistently opt for shorter rides.



CYCLISTIC'S DAILY RIDE TRENDS

1. Busiest Day:

Sunday leads with the highest ride count of 17,885, signifying peak popularity and increased bike usage.

2. Weekday Patterns:

Ride counts remain consistently high on weekends, reflecting steady bike usage throughout the workweek.

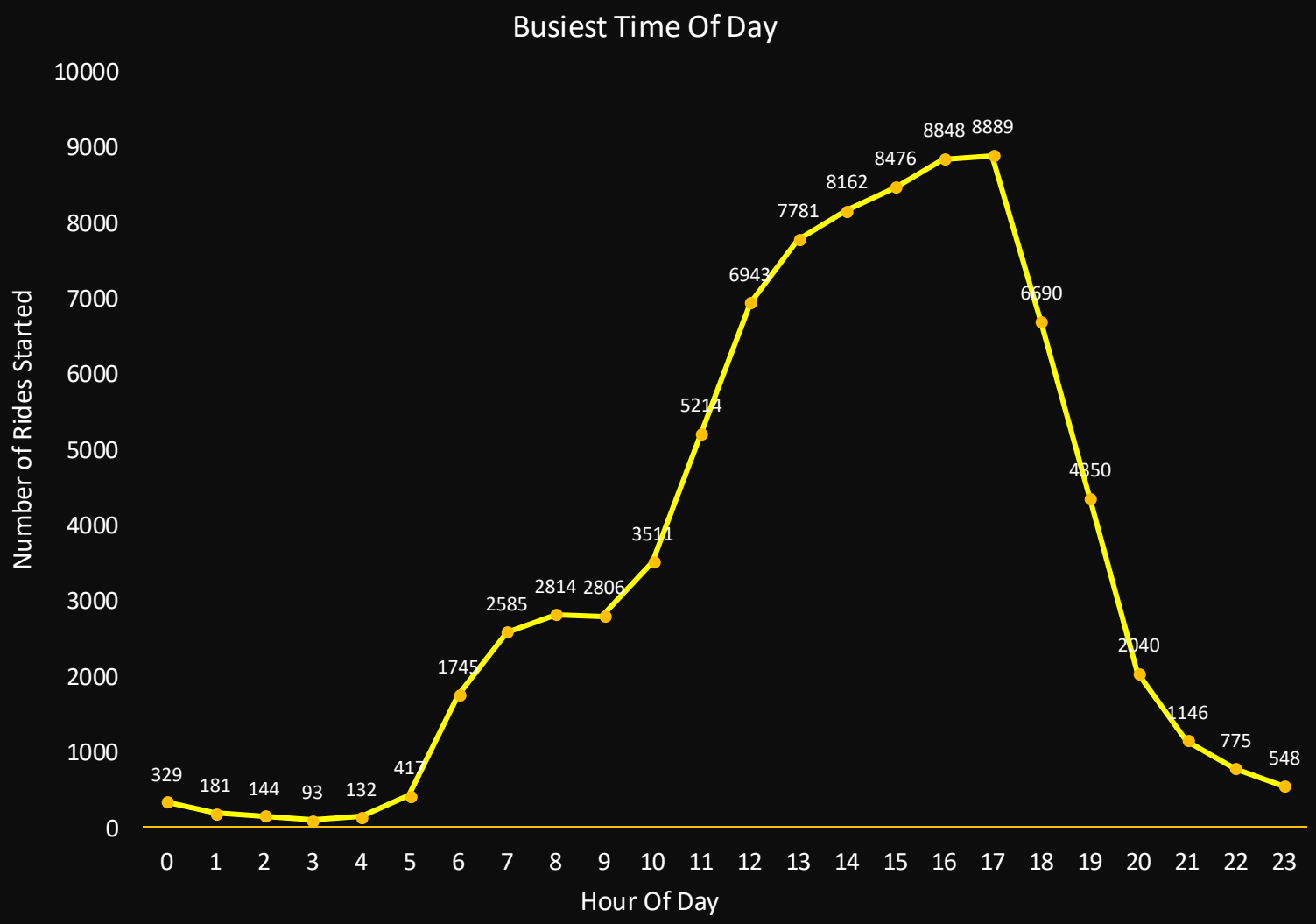
3. Midweek Variation:

Wednesday sees a slight decrease in ride counts compared to nearby days, possibly influenced by midweek trends.

4. Weekend Activity:

Saturday and Friday boast significant ride counts, pointing to robust bike usage over the weekend.

PEAK & OFF-PEAK HOURS



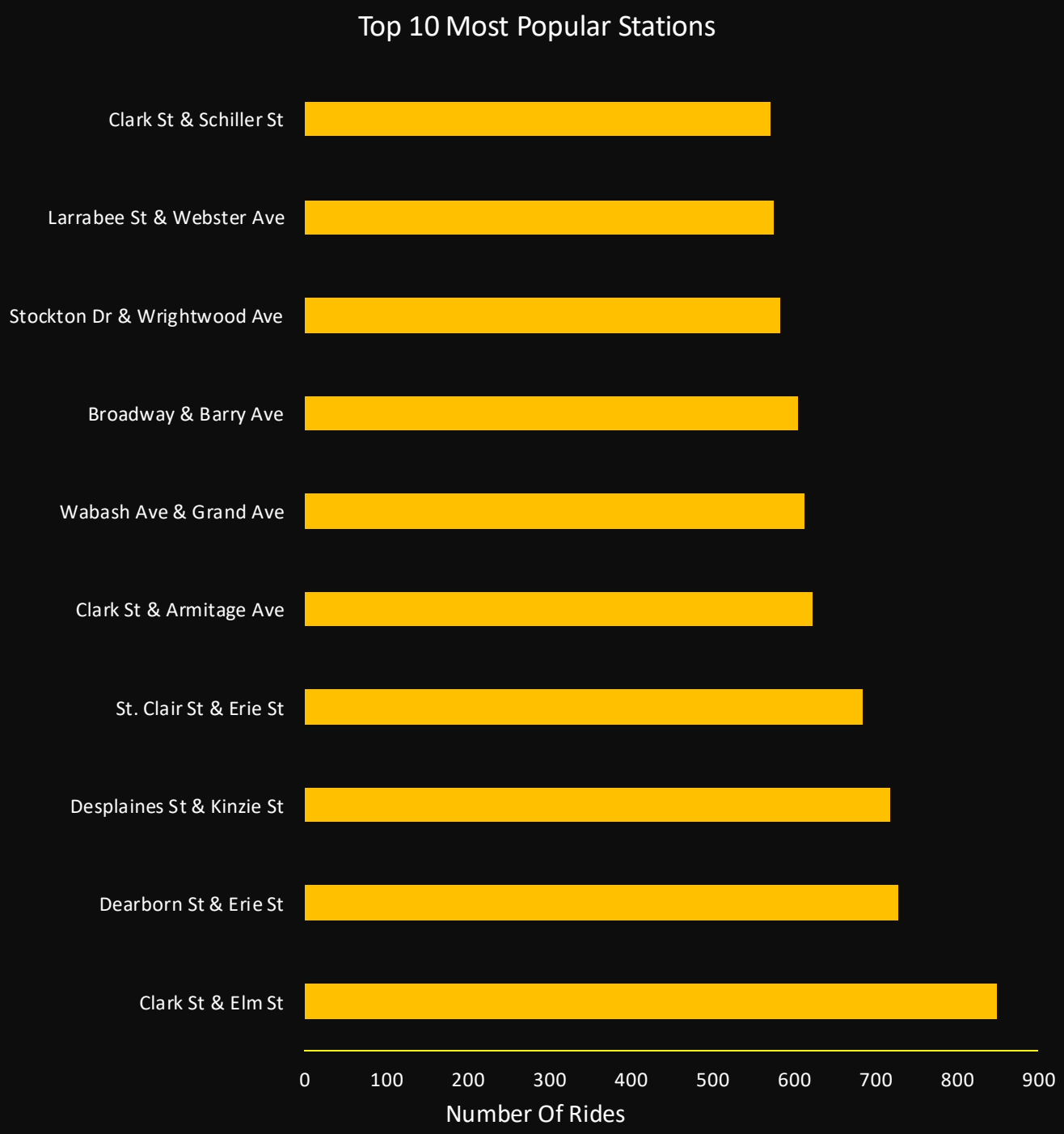
Peak Hours:
Identify 5pm as the busiest time, showcasing the highest ride count.

Afternoon Treads:
Discuss the sequential decline in ride counts during the afternoon hours.

Least Busy Times:
Highlight the least busy times, focusing on the early morning hours for maintenance and repair.

Usage Patterns:
Analyze the data to understand user preference and behavior during different parts of the day.

Implications for Operations:
Consider operational adjustments or promotions during peak and off-peak hours to optimize service.



CYCLISTIC'S PRIME STATION HUBS

1. Clark St & Elm St:

Secures the top position with an impressive 849 rides.

2. Dearborn St & Erie St:

Takes the second spot with a notable count of 729 rides.

3. Desplaines St & Kinzie St:

Captures the third position, recording a total of 719 rides.

Summary

- **How do annual members and casual riders use Cyclistic bikes differently?**

Casual riders tend to have significantly longer rides, they average 1 hour and 12 minutes, while members have shorter rides, averaging 21 minutes.

- **Why would casual riders buy Cyclistic annual memberships?**

Casual riders show diverse average ride lengths each day, indicating potential interest in consistent and frequent bike usage, making annual memberships more cost-effective.

- **How can Cyclistic use digital media to influence casual riders to become members?**

Highlight peak days with the highest ride counts in digital media campaigns to showcase the popularity of Cyclistic during certain days, potentially influencing casual riders to consider memberships.

Recommendations

- **Promotions:** Offer promotions highlighting the cost-effectiveness of annual memberships for riders with diverse usage patterns
- **Digital Media Strategy:** Leverage the insights from the busiest days and times to optimize digital media campaigns, targeting casual riders during peak periods.
- **Station Enhancements:** Focus on popular stations for potential station enhancements or targeted marketing.
- **Membership Customization:** Consider offering customizable membership plans to cater to the diverse ride lengths observed among casual riders. This could include different tiers or add-ons based on usage patterns.
- **Partnerships and Collaborations:** Explore partnerships with local schools, colleges, hospitals, corporations, and organizations to promote Cyclistic memberships. Using offers and promotions to attract new riders.
- **User Surveys and Feedback:** Conduct user surveys to gather feedback on the current membership structure and potential improvements. Use this data to continually refine and optimize membership offerings.