Unlocking Success: Analyzing Bike Usage Patterns to Drive Annual Memberships at Cyclistic

Data-Driven Insights and Recommendations for an Effective Marketing Strategy

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BUSINESS TASK

Converting casual riders into annual members

Forming marketing campaign to solve the business task

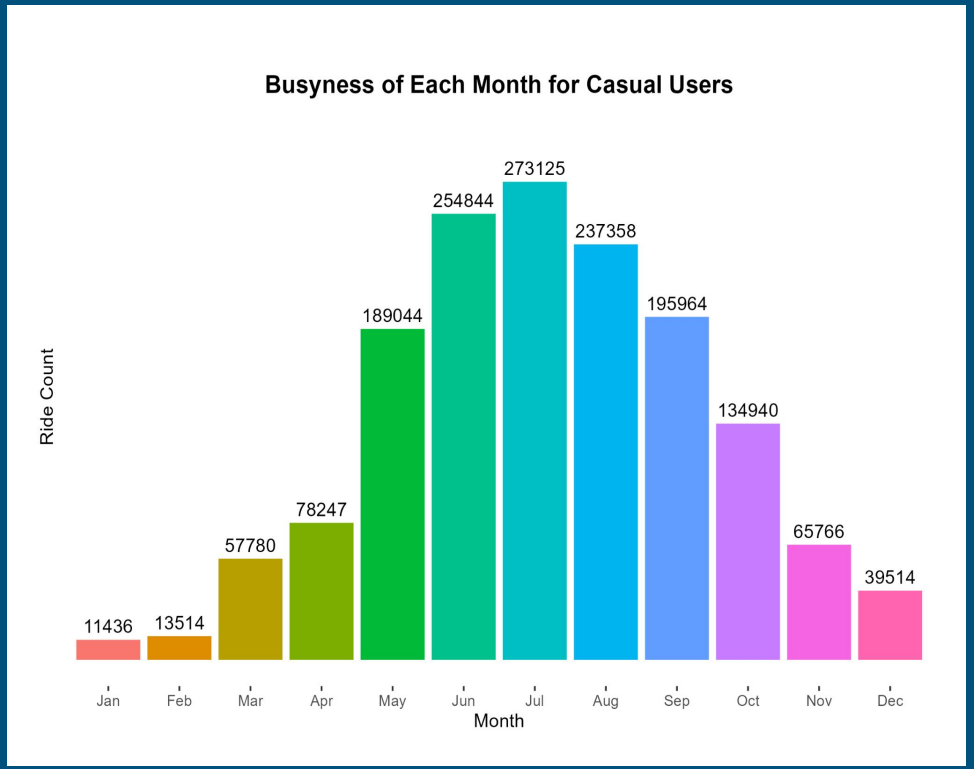
Data Collection and Preparation

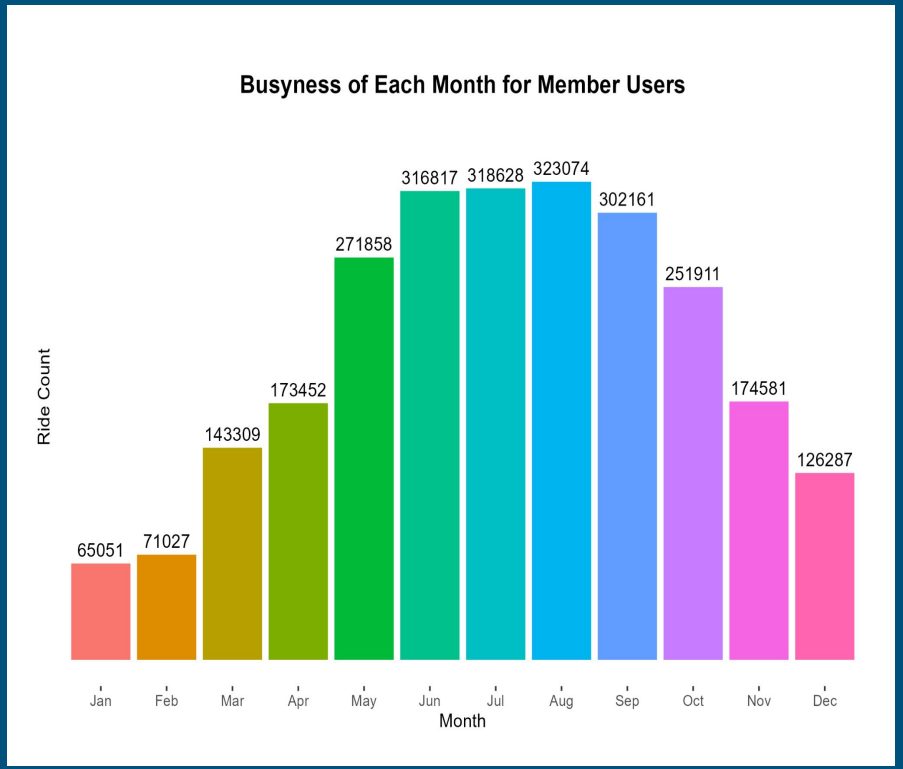
- We used internal data provided by Cyclistic.
- We used data from December 1st 2021 to December 1st 2022
- Performed data cleaning, and extracted relevant data with focus on:
    - bike type
    - start and end times
    - user type
    - bike type preferences
    - ride duration
    - month
    - day of the week

CLEANING

- In the dataset, crucial columns like start and end station names contained missing values. To address this issue, we initially attempted to fill the gaps using available information. However, when it was not possible to do so with certainty, we opted to remove the corresponding rows from the dataset. This process resulted in the removal of 1,323,123 rows, which constituted approximately 23% of the total data. Our attempts to infer station names relied on information from the "station ID" column, as well as latitude and longitude values. Unfortunately, due to some stations being located in lake Michigan or nearby rivers, it was challenging to ensure the reliability of the updated station names.
- Outliers were also identified and filtered out to prevent distortions in the analysis, such as:
  - extremely short ride durations (less than 2 min) - 225033 rows or 3.9%
  - "docked_bike" rides (since it was noted that some bikes were taken for repair) - 180477 rows, or 3.1%
- derivation of additional variables, such as:
  - ride duration
  - month
  - day of the week

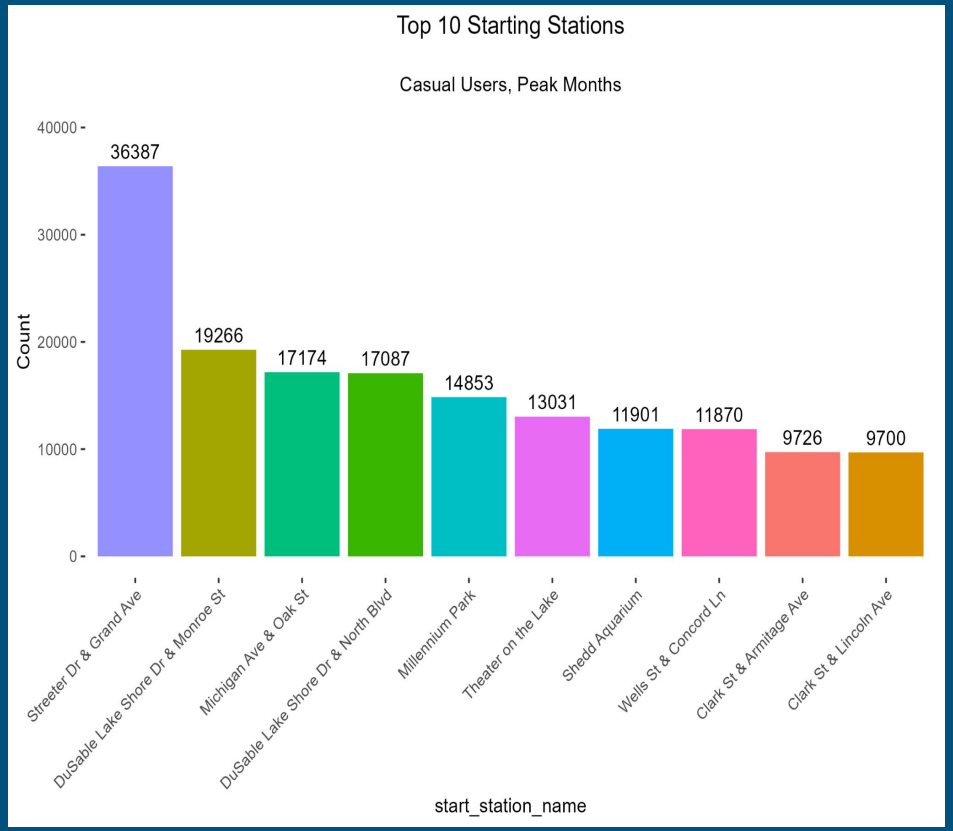
Busyness of Each Month

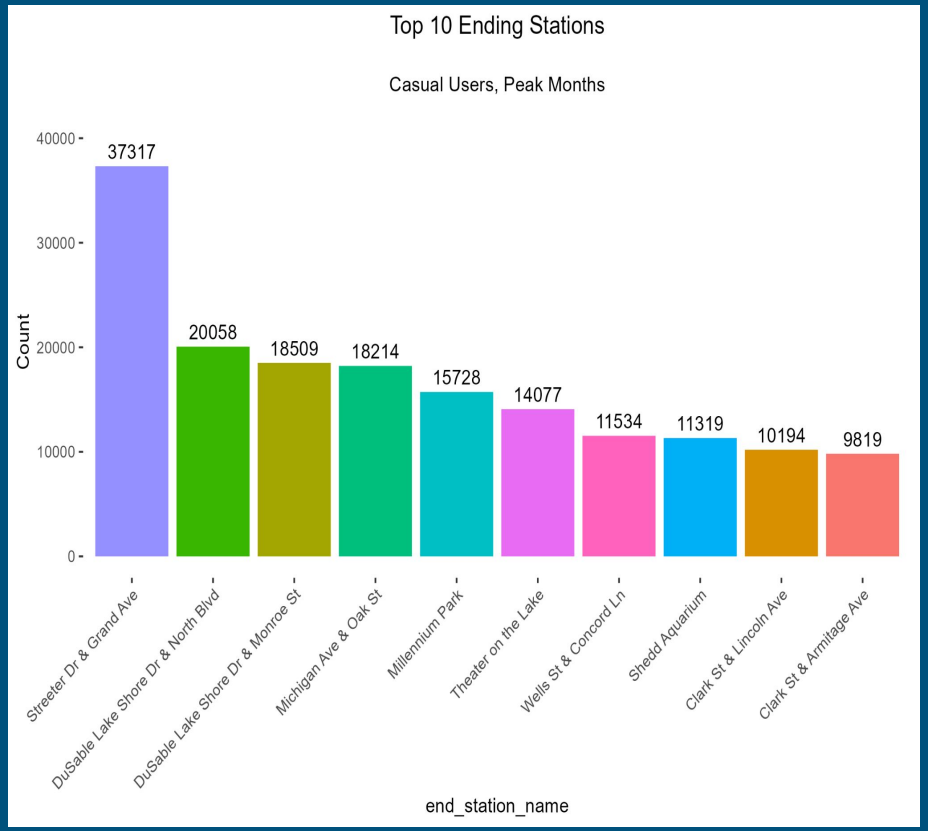




Top Starting and Ending Stations

Peak months - Casual users

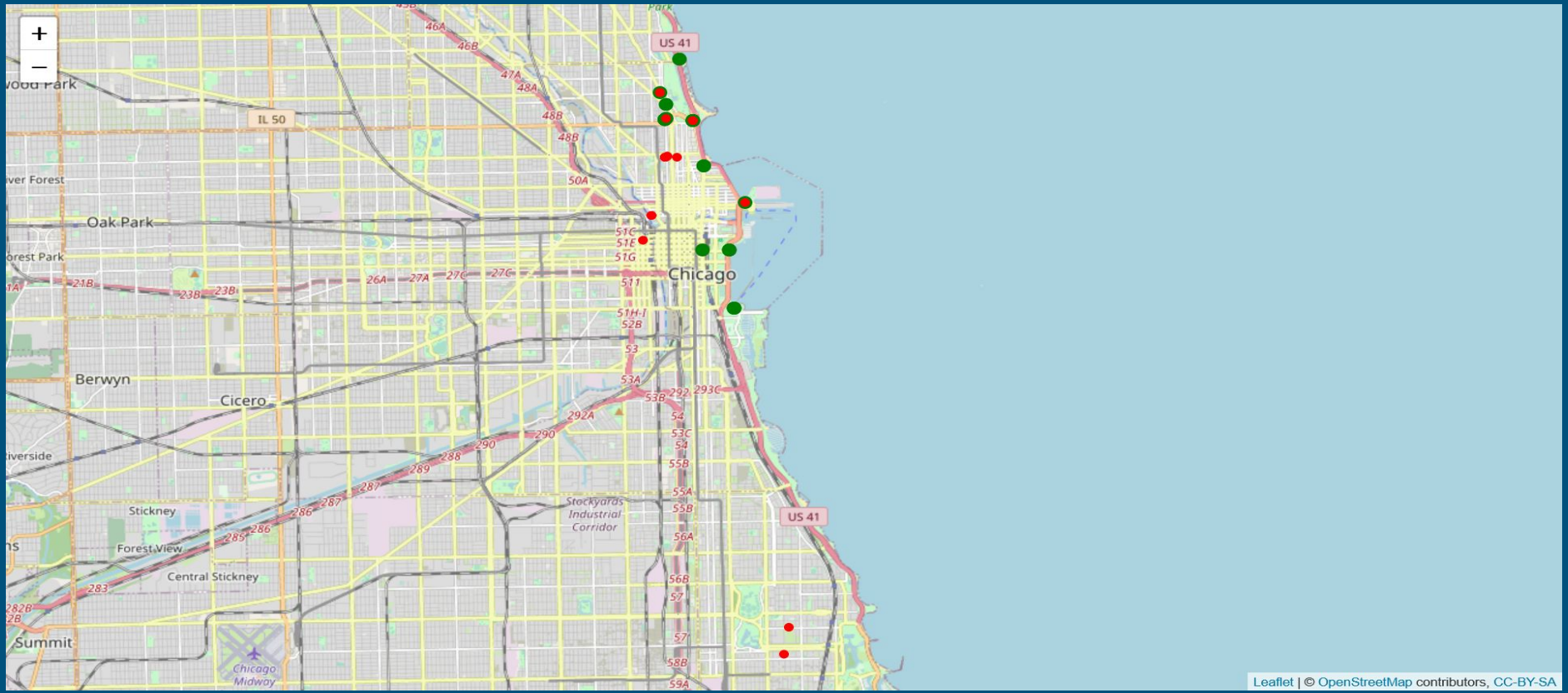




Top Starting and Ending Stations

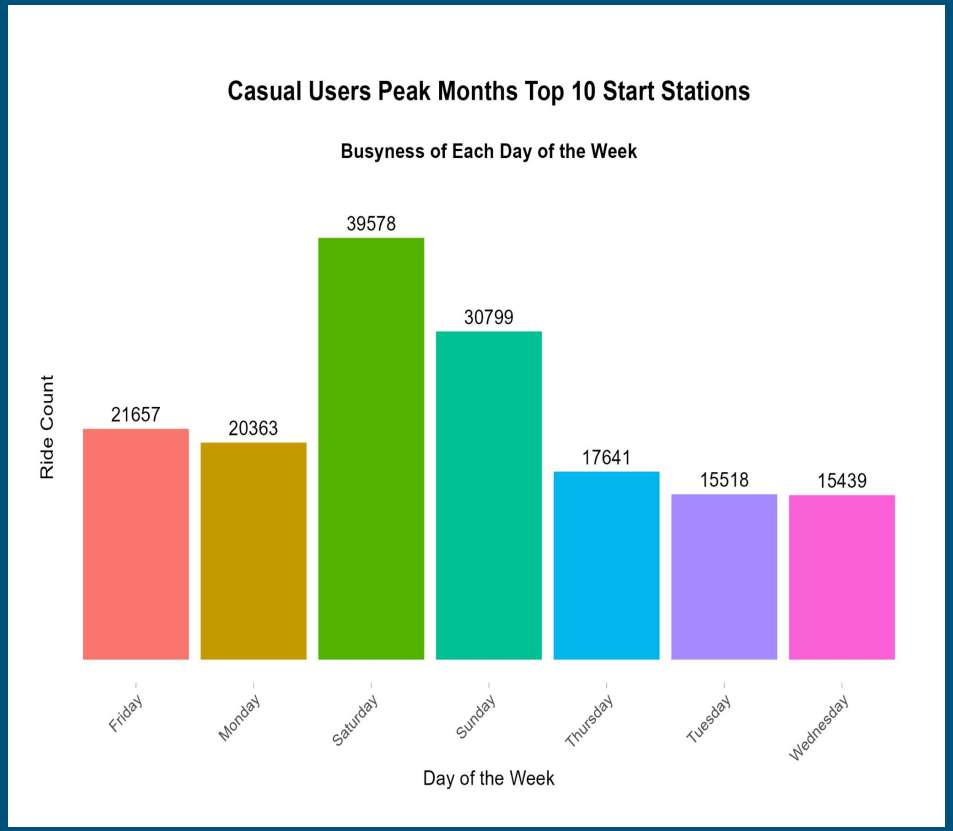
Peak months - Casual users

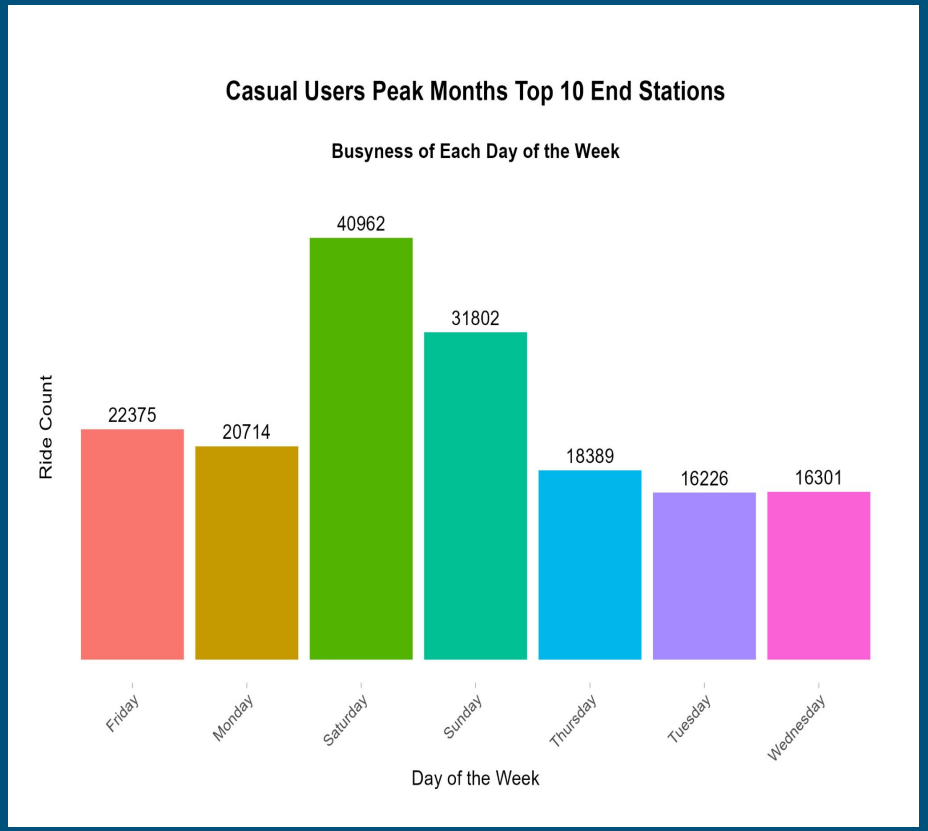
Green dots - starting stations, red dots - end stations



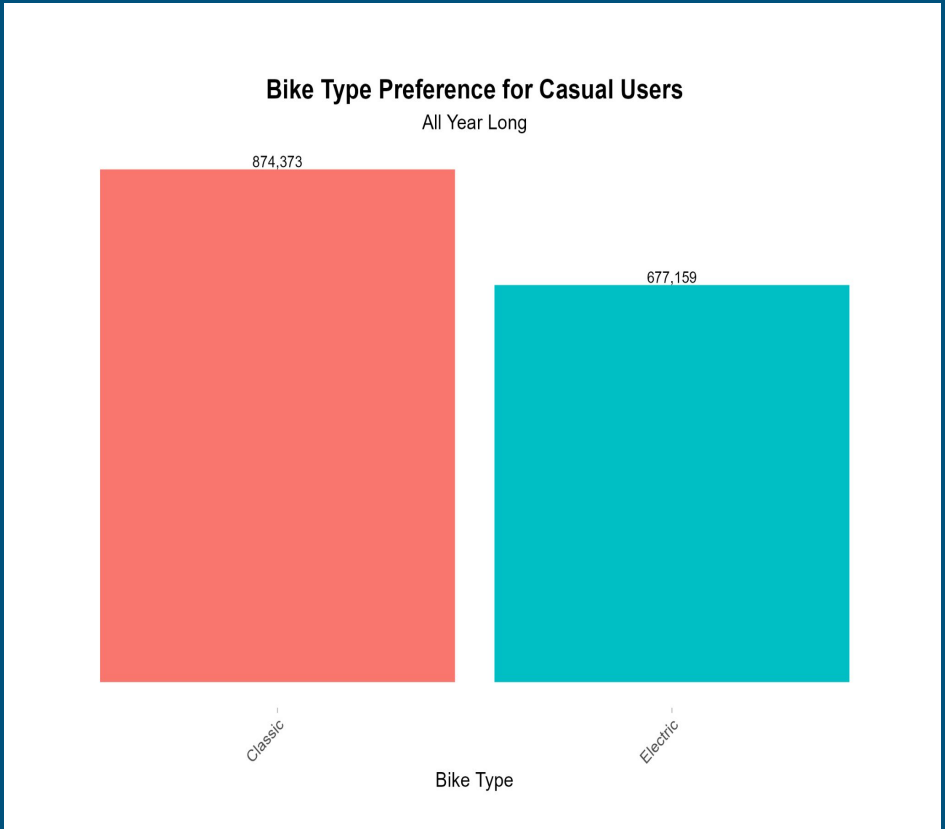
Busyness of Each Day of the Week

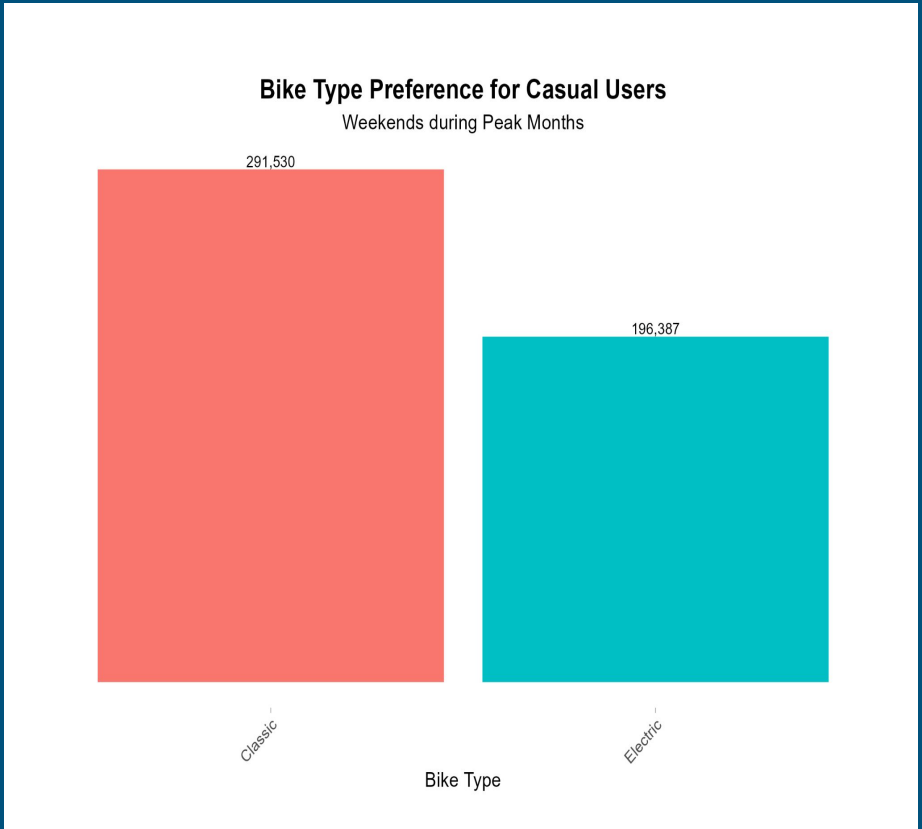
Peak months - Casual users





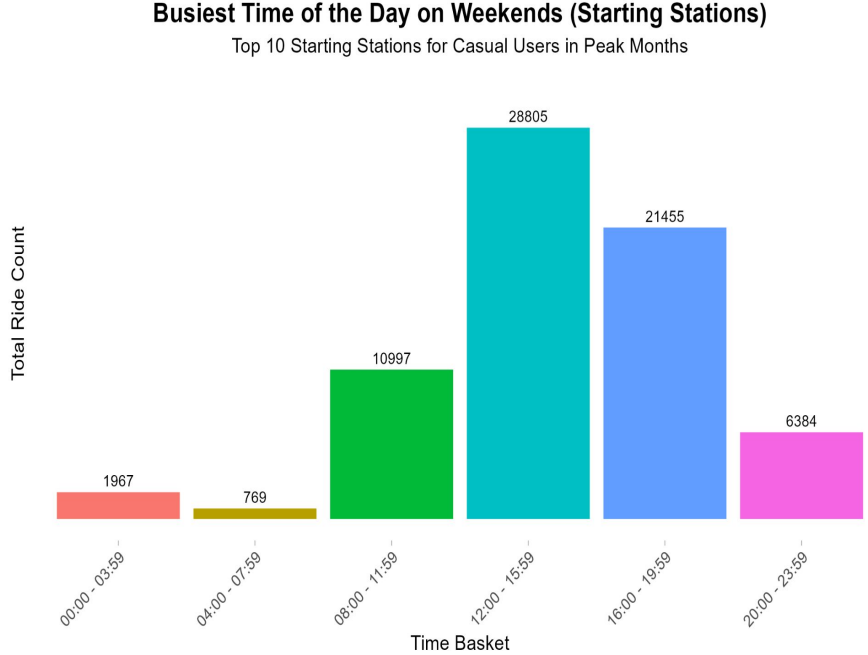
BIKE PREFERENCES

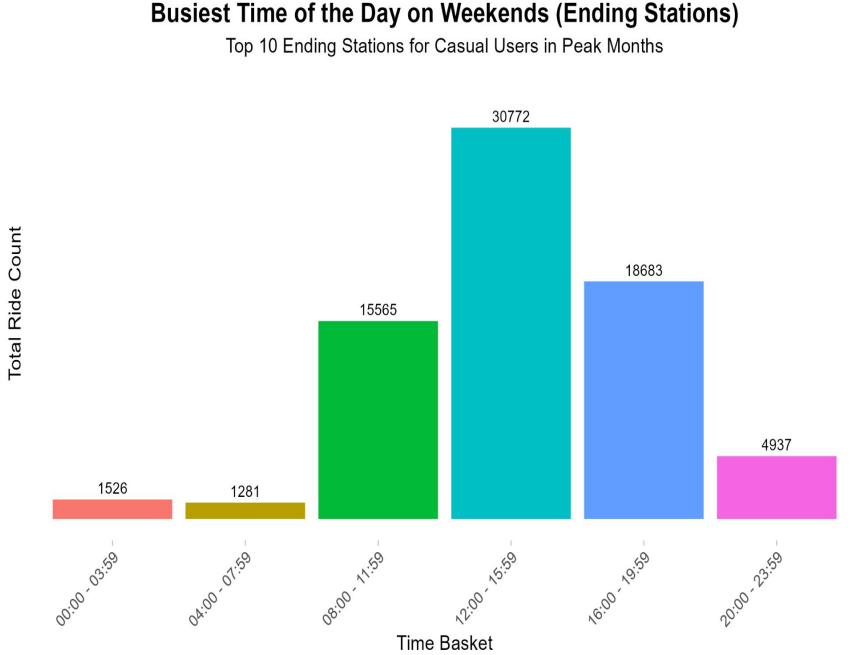




Busiest time of the day

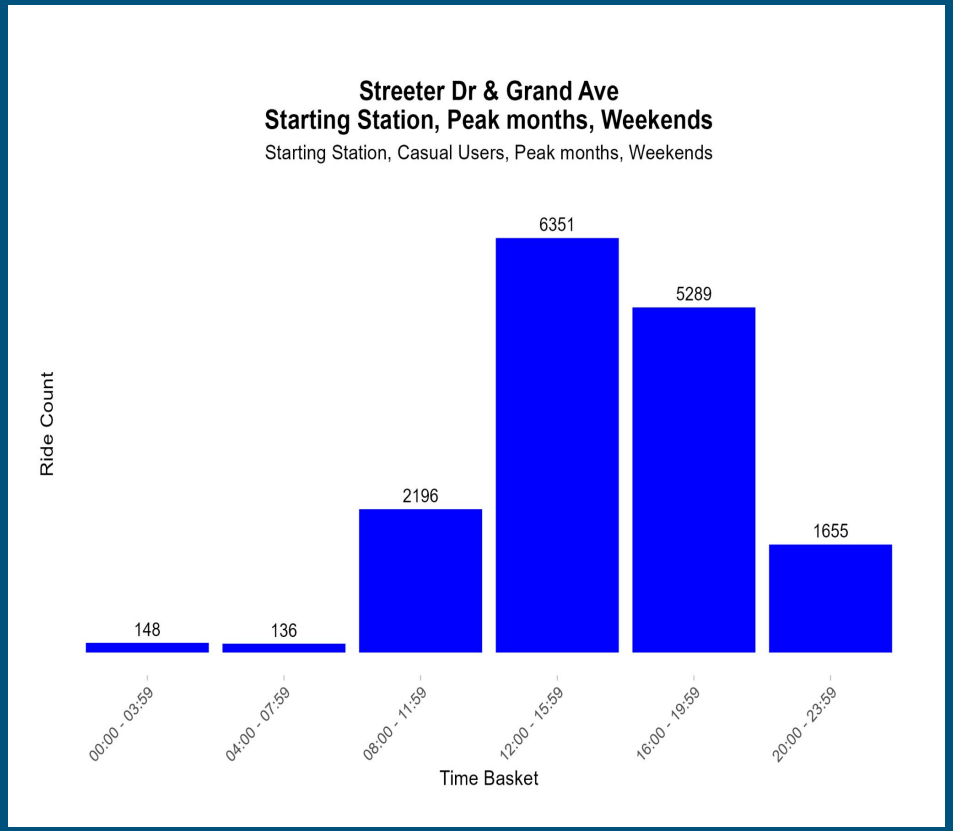
Peak months - Casual users

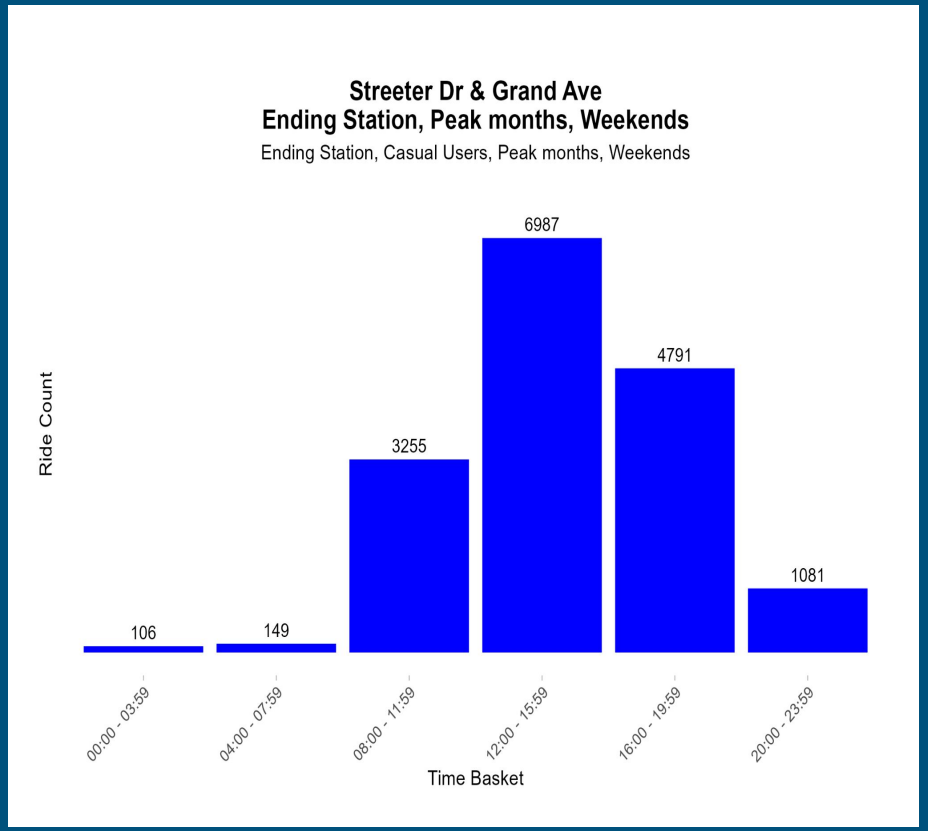




Streeter Dr & Grand Ave

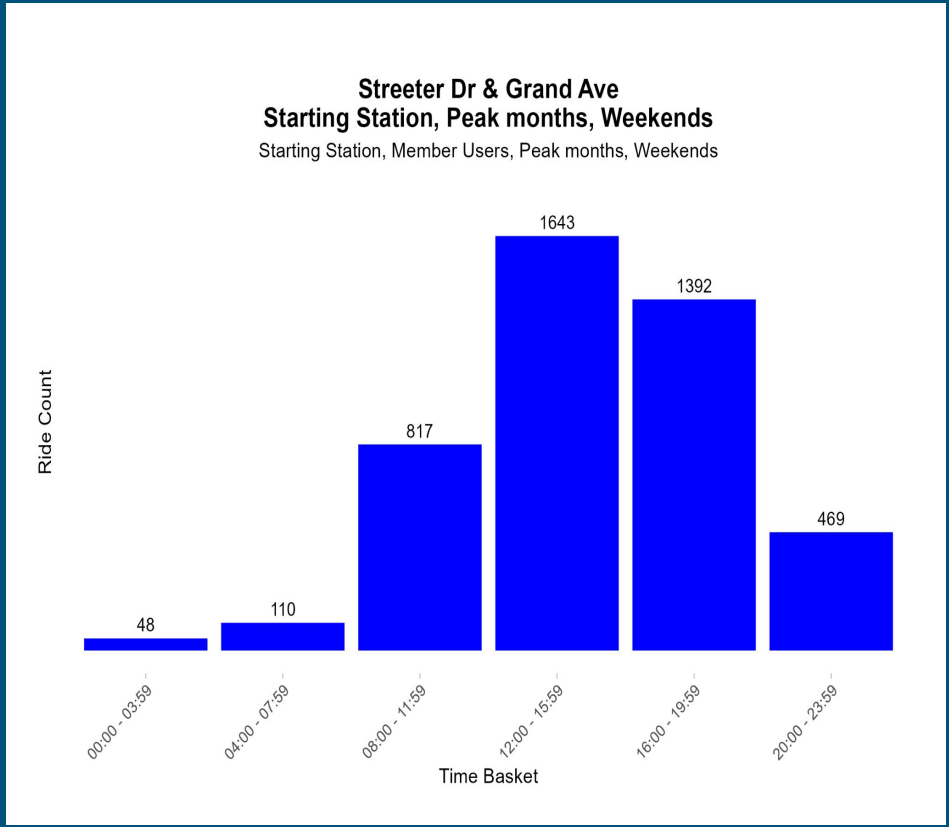
Peak months, weekends - Casual users

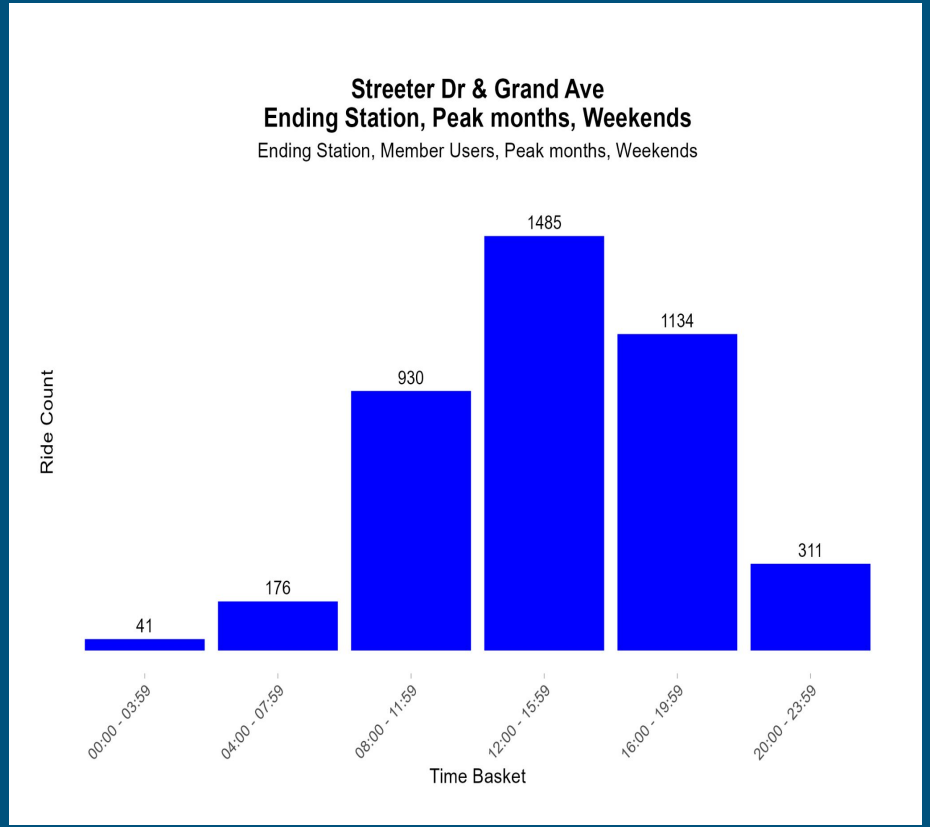




Streeter Dr & Grand Ave

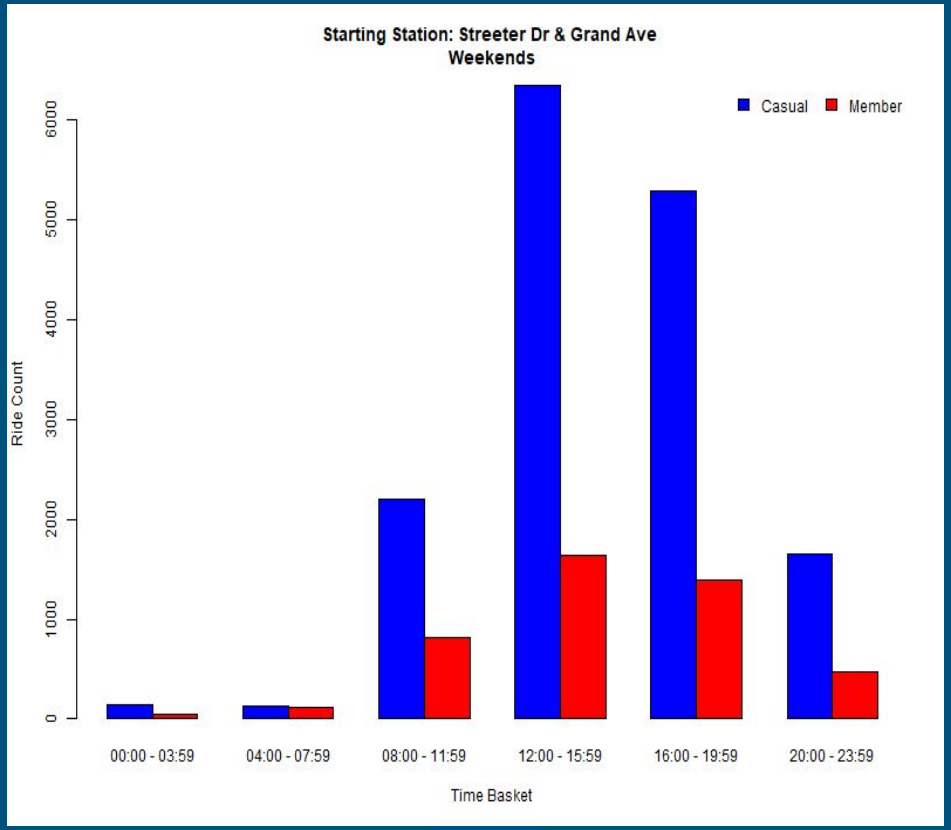
Peak months, peak days of the week - Members

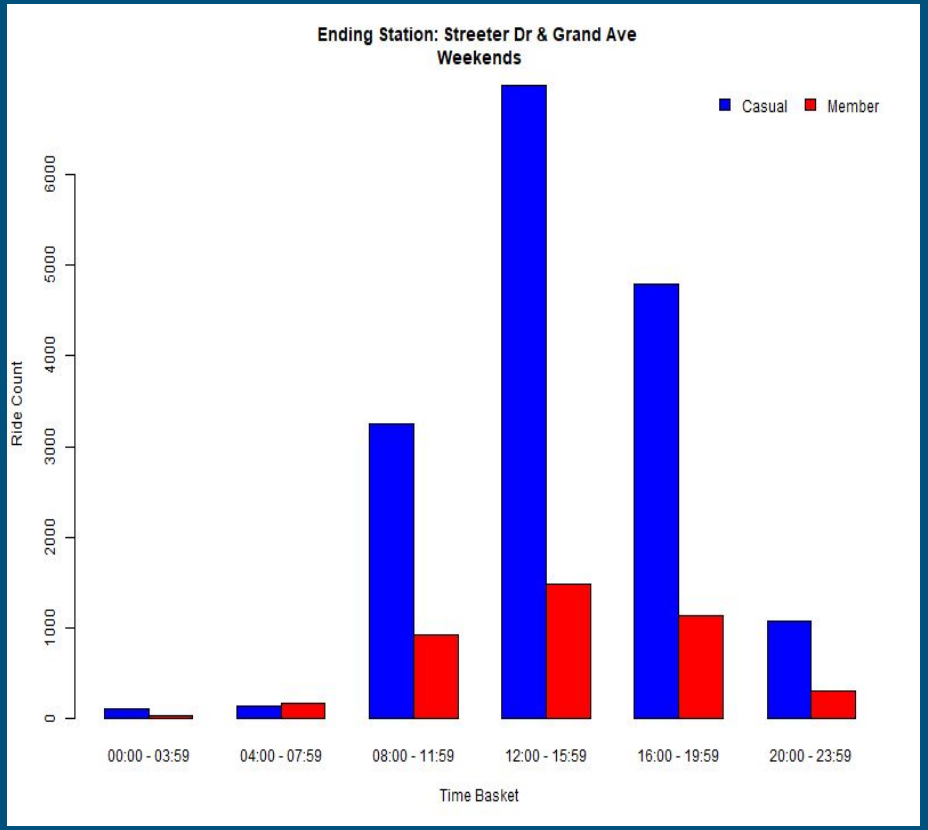




Streeter Dr & Grand Ave

Casual users - Members





CONCLUSION

Based on the performed analysis we have gained valuable insights into the differences between casual riders and annual members, especially :

- seasonality of casual ridership
- the busiest starting and ending stations
- preferred days of the week
- peak usage times.

This information forms the foundation for developing an effective marketing strategy to convert casual riders into annual members.

RECOMMENDATIONS

• Seasonal Marketing Campaigns	Leverage the seasonality of casual ridership by creating targeted marketing campaigns during the peak months to attract new annual members.
• Promote Benefits of Annual Membership and customer education	Provide educational materials or campaigns to inform casual riders about the benefits and value of annual membership such as: cost savings, unlimited rides, and access to exclusive features or events, emphasizing long-term cost savings and convenience.
• Station Optimization	Focus on improving bike availability (specially classic bikes) and infrastructure at the busiest starting and ending stations identified in the analysis to enhance the overall user experience and satisfaction.
• Time-Specific Promotions	Develop promotional offers or incentives that align with the identified peak and off-peak periods to encourage bike usage during less busy times and maximize resources.
• Incorporate Refreshment Stations for Members at Streeter Dr & Grand Ave	Setting up refreshment stations at the Streeter Dr & Grand Ave from 08:00 to 24:00 or 12:00 to 20:00 on Saturday, Sunday. This station can offer complimentary water/sodas exclusively to members or for members offer discounted beverages for sale and for casual riders at regular price. The ratio of casual riders to members is approximately 3:1 to 4.5:1.This initiative can serve as an added value for annual members and help differentiate Cyclistic from competitors, further encouraging casual riders to upgrade their membership.

BONUS RECOMMENDATIONS

Data Collection Improvement: To ensure the accuracy and reliability of the data collected, it is crucial to address the recurring problems encountered during the analysis. Cyclistic can implement measures to improve the data collection process and mitigate issues such as missing starting or ending station names, negative ride time values, and unusually short ride durations.

- Mandatory Field Completion: Implement a data validation system that enforces mandatory completion of all relevant fields during the ride registration process. This would prevent incomplete ride data from being imported into the system, ensuring that each ride has both starting and ending station names, as well as valid and logical time values.
- Time Validation: Set up time validation checks to prevent negative or improbable time values from being recorded. Rides with negative durations or durations less than a certain threshold (e.g., a few seconds) can be flagged or excluded from the dataset to avoid skewing the analysis.
- Data Cleaning and Error Handling: Implement automated data cleaning processes that identify and handle erroneous or inconsistent data entries. This can involve checking for outliers, flagging suspicious entries for manual review, and applying algorithms or logic to correct or remove erroneous data points.

By improving the data collection process and implementing measures to address these recurring issues, Cyclistic can enhance the overall quality and reliability of the dataset. This, in turn, will lead to more accurate analyses and better-informed decision-making for the company.

Thank you for your attention

If you have any questions or need further clarification, please feel free to ask.

Additionally, if you would like to continue the discussion or reach out to me directly, you can contact me via email at petarkravcev@gmail.com.

Thank you for your attention

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