

Professor: Elizabeth Cudney Ph.D.

Student: Seif Kungulio

Course: DATA 630

Project: Final Project

Divvy Trip Dataset:

Dataset Source:

Divvy Tripdata, "divvy-tripdata" [<https://divvy-tripdata.s3.amazonaws.com/index.html>]

This project aims to synthesize disparate Divvy data into a cohesive framework and conduct straightforward analyses to address the fundamental query: "In what ways do members and casual riders utilize Divvy bikes differently?"

Utilizing the 2023 Divvy trip data for analysis through R and Tableau offers a rich source of insights into bike-sharing dynamics, usage patterns, and user behaviors.

Combining the analytical prowess of R with the visualization capabilities of Tableau maximizes the utility of the data. R's robust statistical tools enable comprehensive exploration and modeling, while Tableau's intuitive interface facilitates the creation of interactive dashboards for seamless communication of insights to stakeholders.

In summary, leveraging the 2023 Divvy trip data for analysis using R and Tableau promises invaluable insights into bike-sharing ecosystems, fostering advancements in efficiency and efficacy.

In what ways do members and casual riders utilize Divvy bikes differently?

To address this inquiry, I initiated by gathering individual files comprising the 2023 Divvy trip data dataset and amalgamating them into a singular data frame using the R programming language. To maintain focus on the central question and uphold participant privacy, I undertook data cleansing procedures. Initially, I discarded extraneous columns and then removed rows where the starting time exceeded the ending time.

Subsequently, I conducted an examination of the data frame's dimensions and structure. This was followed by the generation of frequency tables for the variables "ridable_types" and "member_casual."

To enhance the dataset's granularity, I augmented it with additional columns denoting the date, month, and day for each ride. This facilitated the aggregation of data on a daily and monthly basis. Furthermore, I introduced a new column, "ride_length," which computed the duration of each ride trip in seconds.

A preliminary descriptive analysis was then undertaken, comparing ride lengths between members and casual riders. This involved computing key statistical measures such as the mean, median, maximum, and minimum values for each category.

Finally, I exported the processed data to a CSV file using the "write.csv" function, subsequently transitioning to Tableau for visualization purposes. This ensured a seamless continuation of the analysis, allowing for the creation of insightful visual representations of the dataset.

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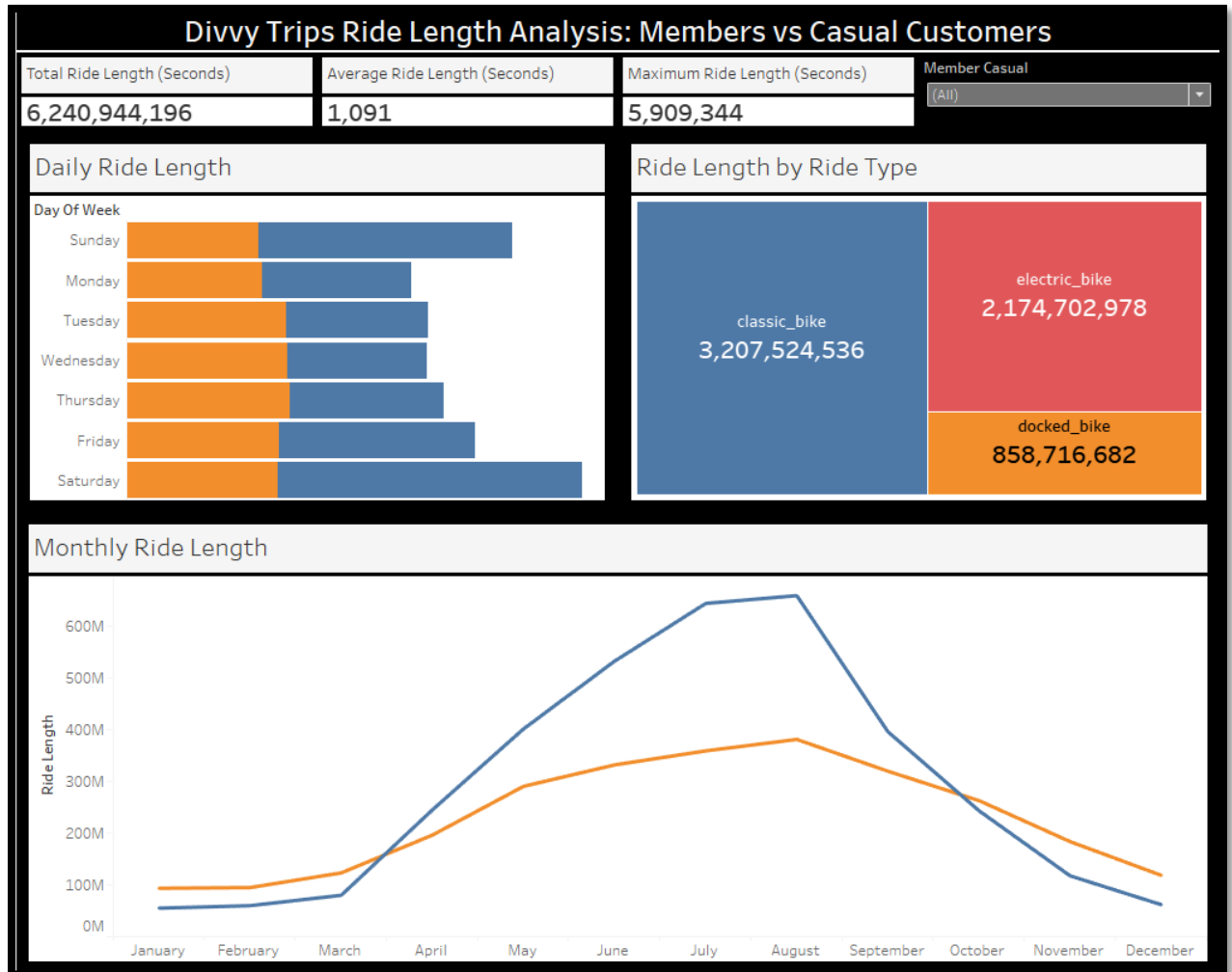
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Visualizations with Tableau:

1. Overall (Both Casual and Member Riders)



- The total ride duration for both casual and member riders combined amounted to 6,240,944,196 seconds.
- The average ride duration across all riders was 1,091 seconds.
- Among the total ride duration, 3,207,524,536 seconds were attributed to classic bikes.
- Electric bikes accounted for a total ride duration of 2,174,702,978 seconds.
- Docked bikes accumulated a total ride duration of 858,716,682 seconds.

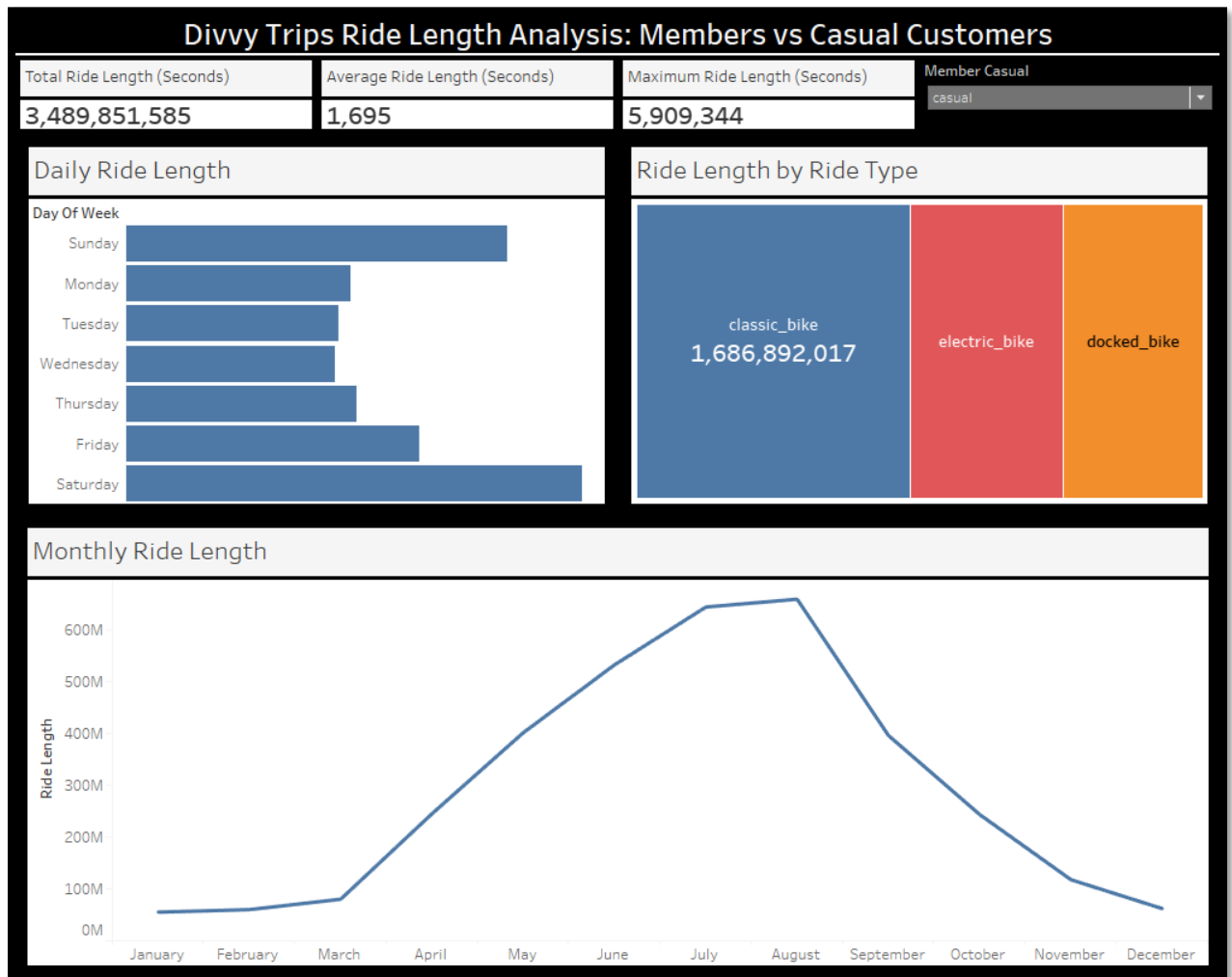
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2. Casual Riders



- Casual riders collectively rode for a total duration of 3,489,851,585 seconds.
- On average, casual riders' trips lasted approximately 1,695 seconds.
- The longest ride undertaken by a casual rider lasted 5,909,344 seconds.
- Classic bikes contributed 1,686,892,017 seconds to the total ride duration.
- Electric bikes were ridden for a total of 944,242,886 seconds.
- Docked bikes accumulated a total ride duration of 858,716,682 seconds.

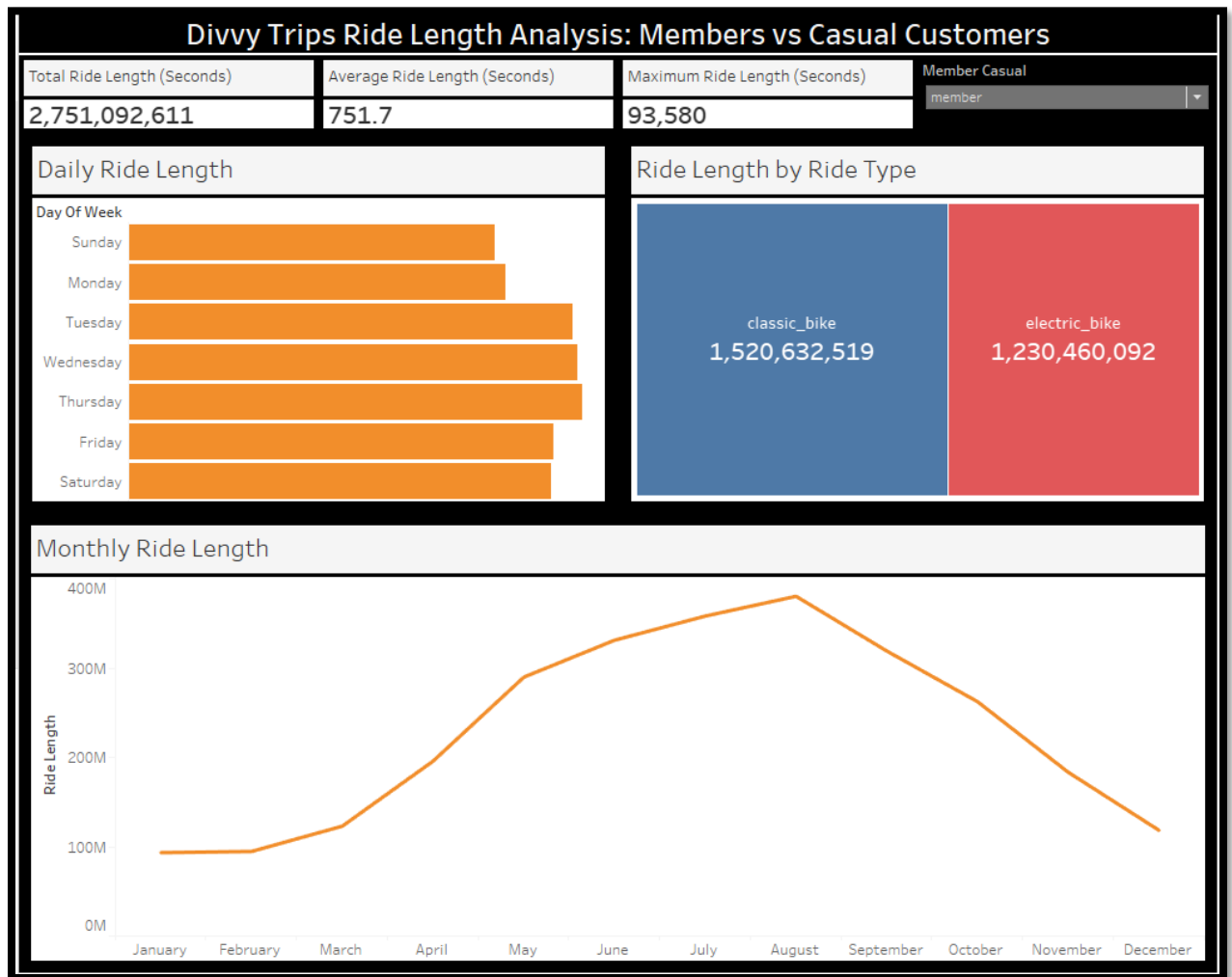
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3. Member Riders



- Member riders rode collectively for a total duration of 2,751,092,611 seconds.
- On average, member riders' trips lasted approximately 751.7 seconds.
- The longest ride taken by a member rider lasted 93,580 seconds.
- Classic bikes accounted for 1,520,632,519 seconds of the total ride duration.
- Electric bikes were used for a total of 1,230,460,092 seconds.
- Member riders did not utilize docked bikes during the observed period.

Findings:

- Member riders tend to prefer shorter, more frequent trips, while casual riders opt for longer excursions.

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- Throughout the week, member riders demonstrate significantly higher usage rates compared to weekends.
- Casual riders typically embark on longer rides for leisure, whereas most member riders utilize the service primarily for commuting purposes.
- The significant weekend usage by both rider types suggests that member riders also engage in recreational rides.
- Casual riders utilize all types of bikes available (classic, electric, and docked), whereas member riders predominantly choose classic and electric bikes.

Conclusion and Suggestions:

- To cater to the differing preferences of member and casual riders, consider offering tailored services or promotions. For example, promoting short-distance memberships for member riders and leisure packages for casual riders.
- Organize weekend events or tours to attract both members and casual riders, focusing on recreational activities or scenic routes to capitalize on their leisure time usage.
- Ensure adequate availability of classic and electric bikes, especially during peak commuting hours for member riders. However, also maintain a diverse fleet to accommodate the varied preferences of casual riders.
- Develop marketing strategies that highlight the convenience and efficiency of the service for member riders' daily commutes, while also emphasizing the recreational benefits and flexibility for casual riders.