Cyclistic Bike Share

Users Behaviour Analysis

Analysis performed by: Manuel Gil

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Cyclistic Introduction

Company Overview

- Launched **bike-share program in 2016**
- Operates **5,824 geotracked bicycles** across **692 stations** in Chicago
- Users can unlock bikes from one station and return them to another

Current Marketing Strategy

- Focused on **general awareness & broad consumer segments**
- Offers **flexible pricing plans**
  - Single Ride, Full Day (Casual Users)
  - Annual Membership (Member)

Profitability & Growth Strategy

- **Annual members are more profitable** than casual riders
- Goal: **Convert casual riders into annual members**
- Casual riders are already familiar with Cyclistic → **opportunity for conversion**

Marketing Focus & Data Analysis

Business Task

- **Current Analysis:**
  - Analyze historical bike trip data to uncover trends
  - Understand differences between casual riders & members
  - Identify motivations for membership
- **Marketing Team:**
  - Explore how digital media can enhance marketing tactics

Key Stakeholders

- Lily Moreno (Marketing Director): leads marketing initiatives and will use the insights to craft targeted campaigns (email, SM, other channels).
- Cyclistic Marketing Analytics Team: responsible for data analysis and reporting to improve marketing strategies.
- Cyclistic Executive Team: final decision-makers who will approve or reject marketing strategies based on the data insights

Data Description

- Source: Divvy Trip Data (licensed for public use)
- Time Period Covered: 12 months of recent trip data (March 2024 - Feb 2025)
- Format: .csv files containing bike trip records
- Data Volume: Over 5 million rows distributed on 12 files
- Data Structure: Each row represents an individual bike trip with fields such as:
    - Ride ID – Unique identifier for each ride
    - Rideable Type – Type of bike used (classic, docked, electric)
    - Start & End Time – Timestamp of when the ride started and ended
    - Start & End Station – Latitude and longitude of trip origin and destination
    - User Type – Classification as casual rider or annual member
    - Ride Duration & Day of the Week – Derived fields to analyze trip patterns

Data Cleaning Process

Data Import & Consolidation

- Combined 12 months of CSV files into a single dataset (~5M rows).

Data Cleaning in R

- Removed duplicate & null values.
- Standardized datetime format (converted start/end times).
- Calculated ride length (ended_at - started_at).
- Filtered out negative/zero-duration rides (erroneous entries).

Feature Engineering

- Extracted day of the week & hour of the day for trend analysis.
- Categorized user type: “casual” vs. “member”.

Analysis Process & Key Insights

Data Aggregation for Insights

- Grouped rides by station, user type, day, and hour to identify trends.
- Cleaned & structured dataset allowed for accurate visualizations and deeper insights into Cyclistic's ridership behavior.

General Overview

Total Rides

- Casual: 2,060,794 (36.5%)
- Members: 3,586,153 (63.5%)

Bike Types Used:

- Classic: (46.1%)
- Electric Bikes: (51.5%)
- Electric Scooters: (2.4%)

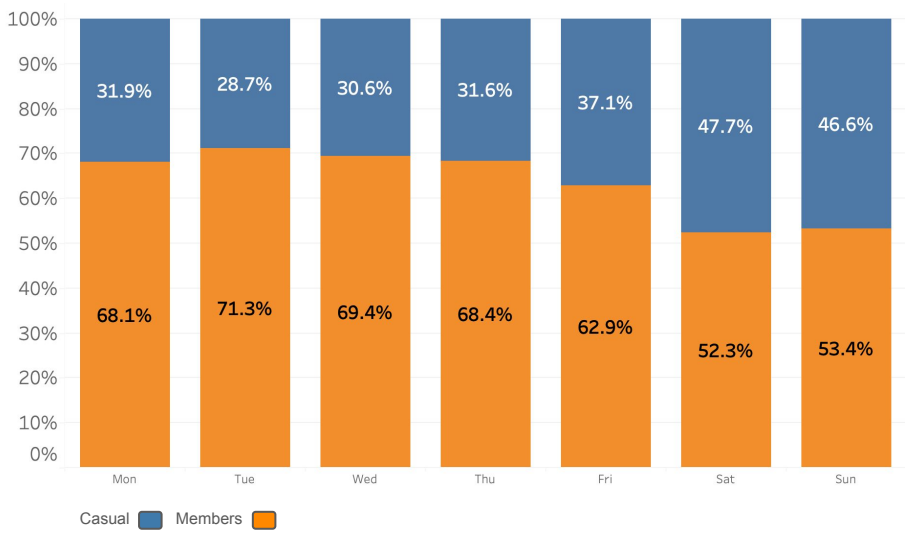
Ride Duration (Minutes)

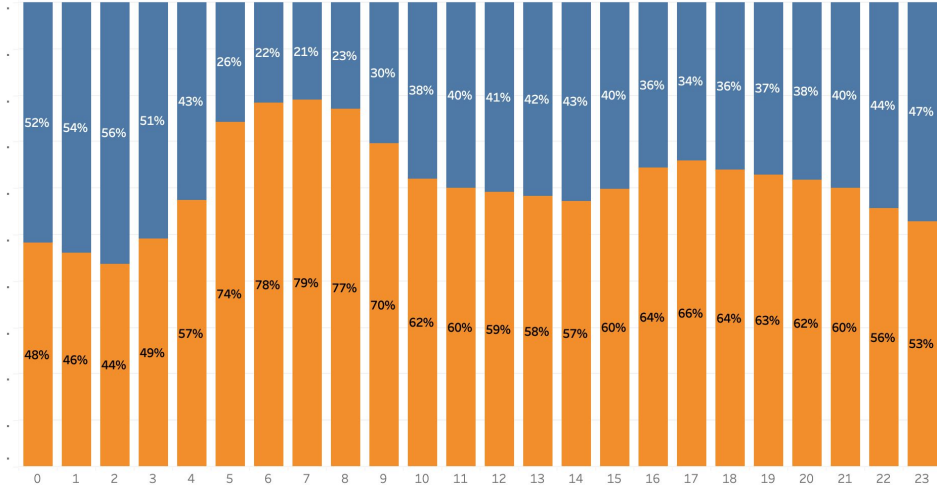
- Minimum: 1 min
- 1st Quartile: 5.75 mins
- Median: 9.89 mins
- Mean: 15.66 mins
- 3rd Quartile: 17.42 mins
- Maximum: 1,439.9 mins

Ride Distribution by Hour of Day

- Most common riding hours: 11 AM - 6 PM
- Peak Hours: 3 PM - 6 PM
- Mean ride start time: 2 PM

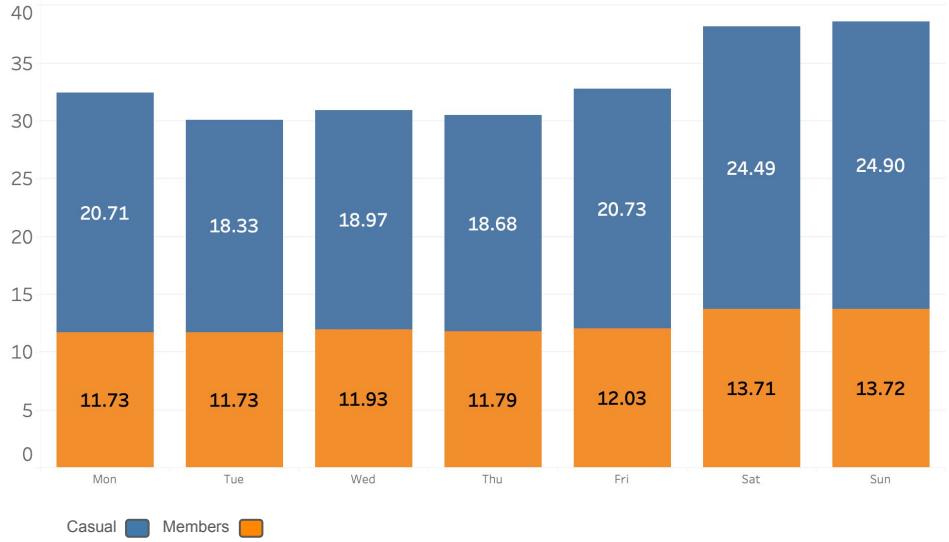
Total Trip Distribution per Type of User (Day & Time)

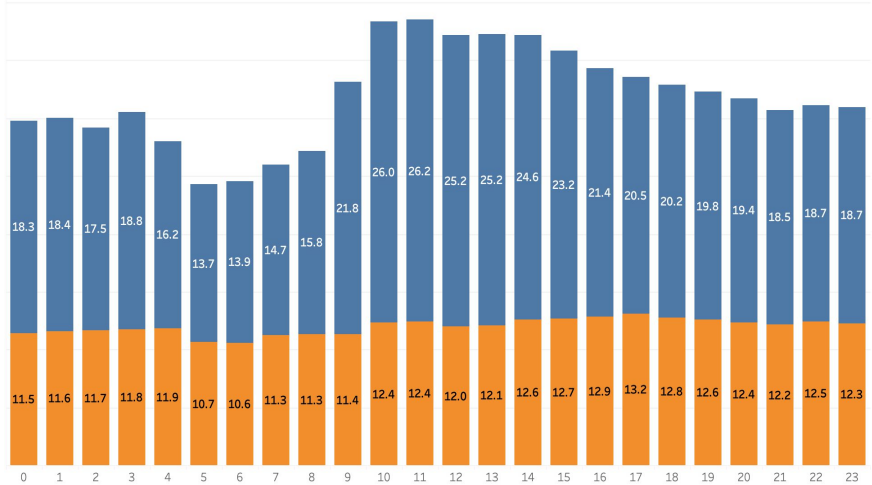




- Casual Users riding tends to increase during the weekend
  - Monday - Thursday average: 30.7%
  - Weekend average: 43.9%
- Casual Users riding tends to increase in the evening, peaking at 2 am
  - Casual usage average from 9PM to 4AM is 45.5% vs 35.4% on rest of day
  - Considering Weekend use, ride distribution per time of day was analyzed grouping by weekdays vs weekend but there was no significant change in trend. Consistent use shown

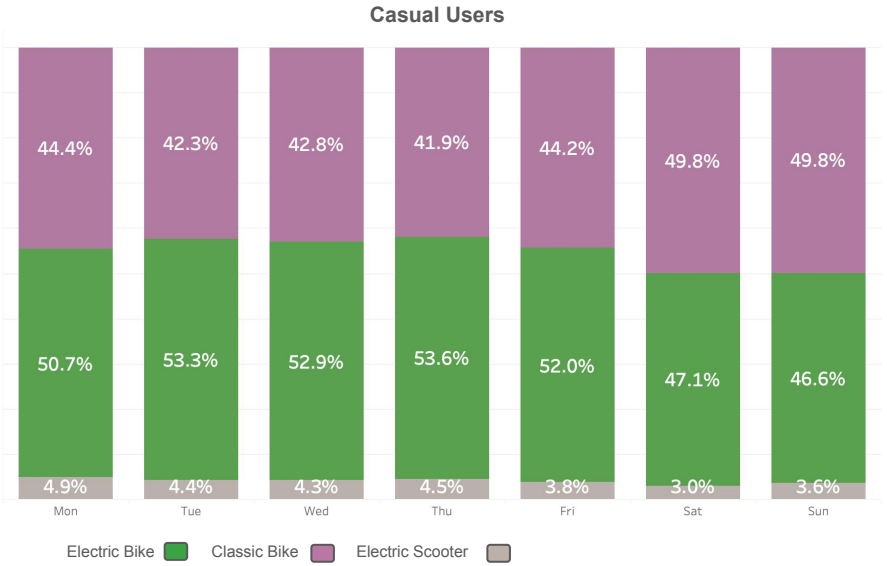
Trip Duration (Avg Minutes) per Type of User (Day & Time)

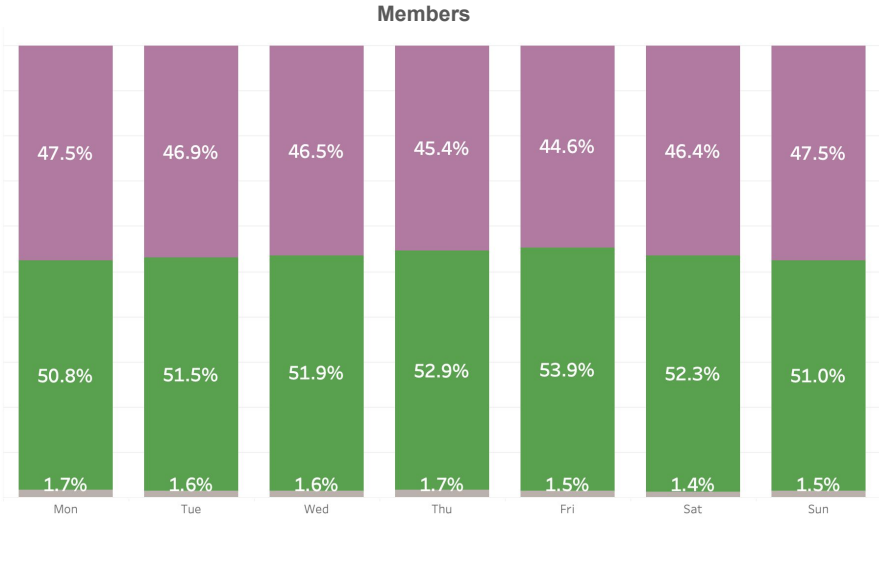




- Casual Users trip duration also increases during the weekend
  - Monday - Thursday average: 19.2 minutes
  - Weekend average: 23.6 minutes
  - Members trips never average over 14 minutes
- Regardless of day of week, Casual users tend to have longer leisure trips between 9AM - 6 PM peaking at 11AM

Bike Type Use Distribution by Day

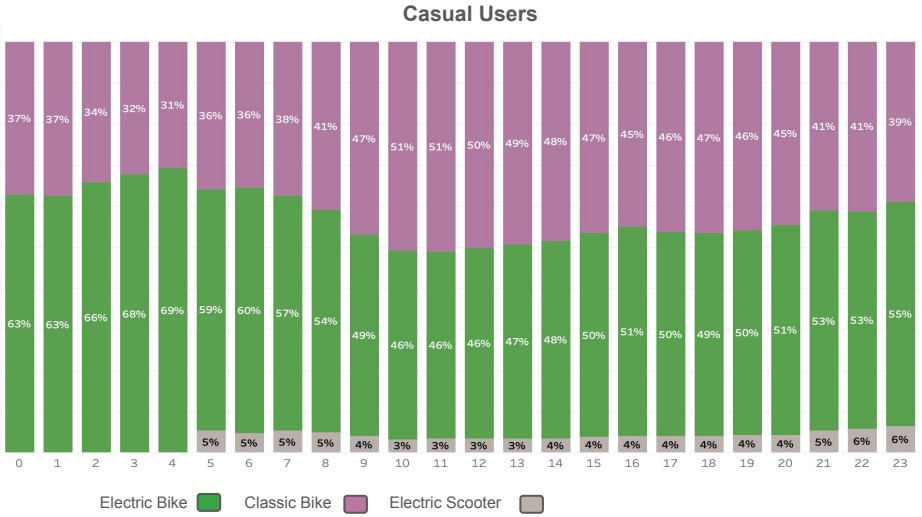




Electric Bike | Classic Bike | Electric Scooter

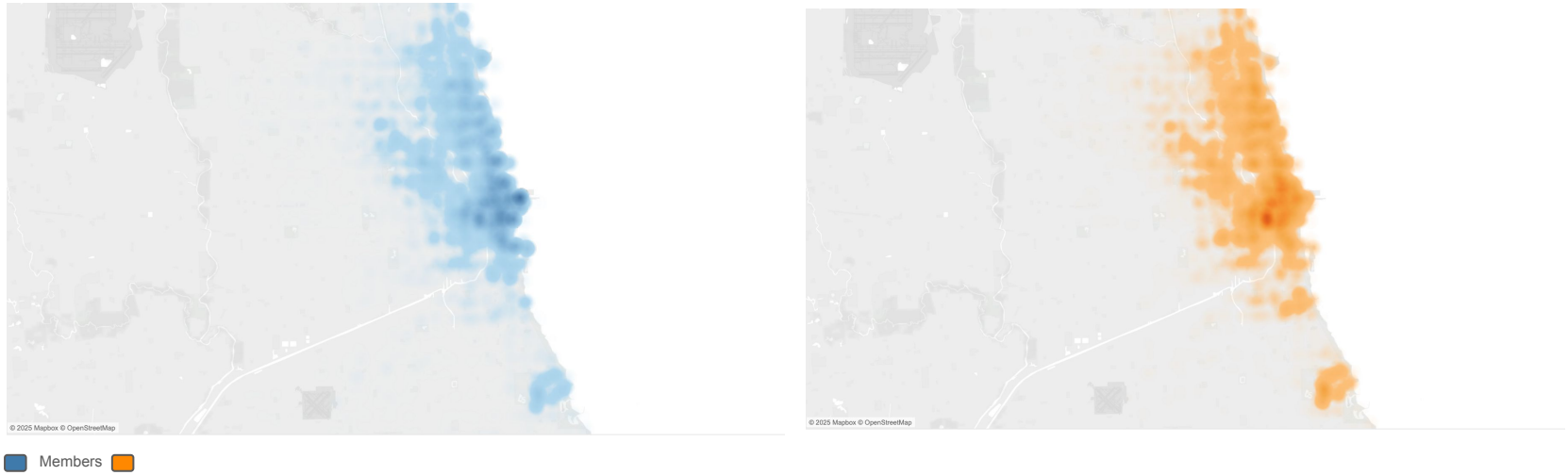
- Casual users Classic Bike usage tends to rise on weekends
  - Monday - Thursday average: 42.8%
  - Weekend average: 48.2%
- Electric Scooter even though still under 5%, they are mainly preferred by casual users over members
- Members Bike Type usage distribution is steady throughout the week

Bike Type Use Distribution by Time of Day



- Both type of users tend to favor Electric Bikes from 10PM to at least 8 AM, although switch to Classic bikes is more drastic on Members especially around early work commuting hours

Density Usage Map by Type of User



- High level analysis of usage location by type of user showed similar type of usage
- Additional insights can be discovered with additional data and cross referencing specific touristic areas and holidays periods, nevertheless than can be done at a second level analysis and strategic phase

Key Insights Summary

	Members	Casual Users
Amount of Trips	- Heavy favored usage during weekdays, especially from Monday to Thursday with a minimum of 68.1% and maximum of 71.3% - Most favored hours include 5 - 9 AM with a range from 70 - 79%, consistent with early commute hours.	- Usage increase on weekends, especially considering Friday evening to end of Sunday with a maximum of 47.6% vs a mean of 30.7% during weekdays - Steady usage from 10 AM - 11 PM with a range of 34 - 44%. Leisure usage increase in the afternoon is believed to balance out return commute from Members
Trip Duration	- Trip duration is extremely steady with a range of 11 - 14% average trip duration in minutes, with a mean of XX% and not presenting significant changes regardless Day of Week or Time of Day	- Trip duration increases by 23% going from an average of 19.2 minutes during weekdays to 23.6 minutes during the weekend - Trip duration is highest from 10 AM to 3 PM, doubling duration of Members use of an average of 12.3 minutes during that range
Bike Type Usage	- Bike Type usage distribution is steady throughout the week, slightly favoring Electric Bikes with a maximum of 54% - Electric Bike usage favored at night, probably to avoid pedaling. Prefer to switch to Classic Bike on early commute hours	- Classic Bike usage tends to rise on weekends (moving from 42.8% to 48.2%) - Tend to favor more Electric Scooter usage than Members, although still below 5%

Recommendations

1. Weekend & Leisure Membership Promotions (Targeting When They Ride)

Data Insight: Casual riders are most active on weekends & evenings, while members ride during weekdays & mornings.

Action Plan:

- Introduce Weekend Warrior Memberships at a lower rate that Regular Memberships
- Offer “First Month Free” trial memberships exclusively on weekends to capitalize on peak casual traffic

Recommendations

2. Digital Retargeting: Convert Power Casual Users Who Take 7+ Rides regardless of Day of Week

Data Insight: Many casual users are assumed to take multiple rides per month but don't convert

Action Plan:

- Implement automated digital retargeting ads that target casual riders who have ridden 7+ times in a month with "You're Basically Already a Member—Join for Less!" campaigns
- Use email & push notifications: "You rode X times last month—save X% with membership!"
- Display on-app pop-ups after their third ride: "Next X rides free if you go annual today!"
- Target ride-sharing tourists or Casual users with limited "Active Day" membership bundles (i.e. maximum of 12 active days per month)

Caveat:

- Unique Casual User Ids need to be created and monitored in order to target these repeating users. Even though current data does not include this information, change in data collection structure and strategy could favor conversion

Recommendations

3. Offer “Ride & Experience” Membership Program

Data Insight:

- Casual riders are more active on weekends and during afternoons (11 AM – 6 PM), suggesting a preference for leisure and recreational trips.
- Casual riders tend to take longer trips compared to members, implying they are exploring the city rather than commuting.

Action Plan:

- Partner with local businesses (museums, cafes, entertainment venues) to offer exclusive discounts for Cyclistic members.
- Create a “Ride & Experience” membership package where users can enjoy bundled deals (e.g., “15% off at partner cafés + free museum entry with a Cyclistic membership”).
- Launch digital marketing campaigns targeting casual riders who frequently ride near these locations.
- Promote deals at high-casual-traffic stations via QR codes, and app notifications.

Thank you!