

Case Study: Cyclistic Bike Share

How do annual members and casual riders differ?

MS

August 4, 2022

A partial fulfillment for the Google Data Analytics Course at Coursera.org

Outline

- Task statement
- Data
- Casual riders vs. annual members
 - When?
 - How long?
 - Where?
 - What bikes?
- Conclusions
- Recommendations
- Next Steps

Task Statement

A new marketing strategy for Cyclistic is needed:

- Main idea: convert **casual riders** into **annual members**
- Answer questions:
 1. How do annual members and casual riders differ?
 2. Why would casual riders buy a membership?
 3. How could digital media affect their marketing tactics?
- This study goal is to address the first question

Definitions

- **Casuals** – casual riders
 - Customers who purchase single or full-day passes
- **Members** – annual members
 - Customers who purchase annual membership

Data Source

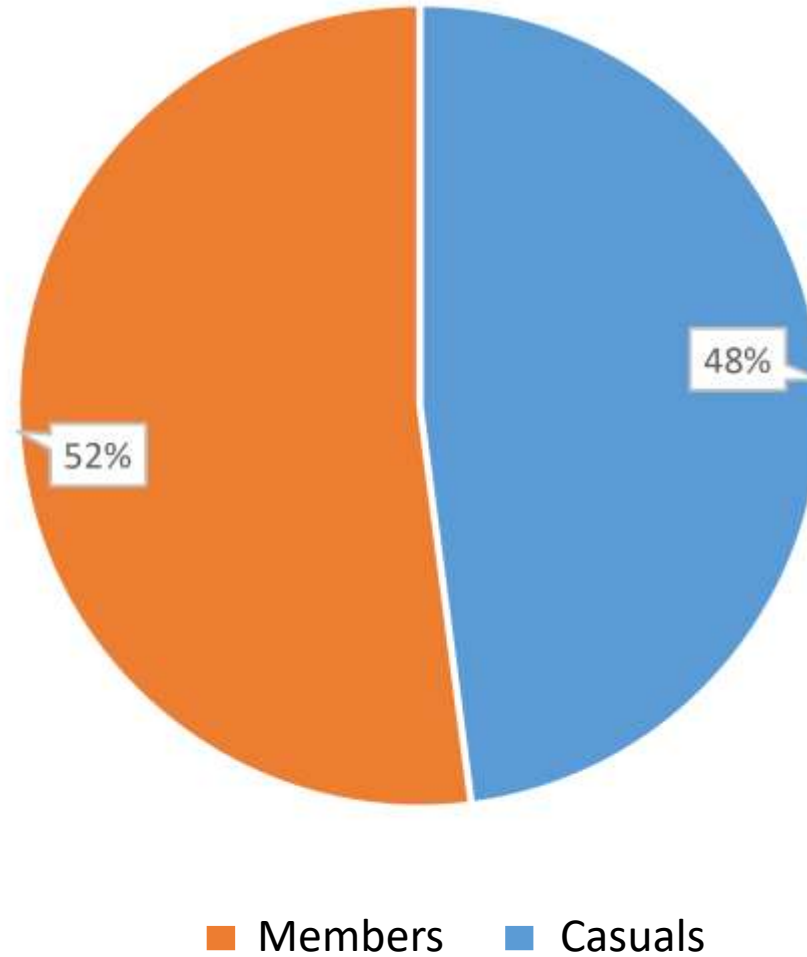
- <https://divvy-tripdata.s3.amazonaws.com/index.html>
- Organized as .zip files and each archive contains one .csv file.
 - Data from 2013 till July 2022 (as of July 31, 2022). Early .zip files contain quarterly data, newer archives contain monthly data.
- Data chosen
 - June 2021 - May 2022 (one archive per month).
 - There are a dozen .zip files, each containing a .csv file.
- Data credibility
 - Data offered by the Chicago Department of Transportation (CDOT)

Data

- 4,667,275 trips
- June 2021 – May 2022

Record

Time (start, end)
Station (start, end)
Rider (casual, member)
Bike (classic, electric, docked)



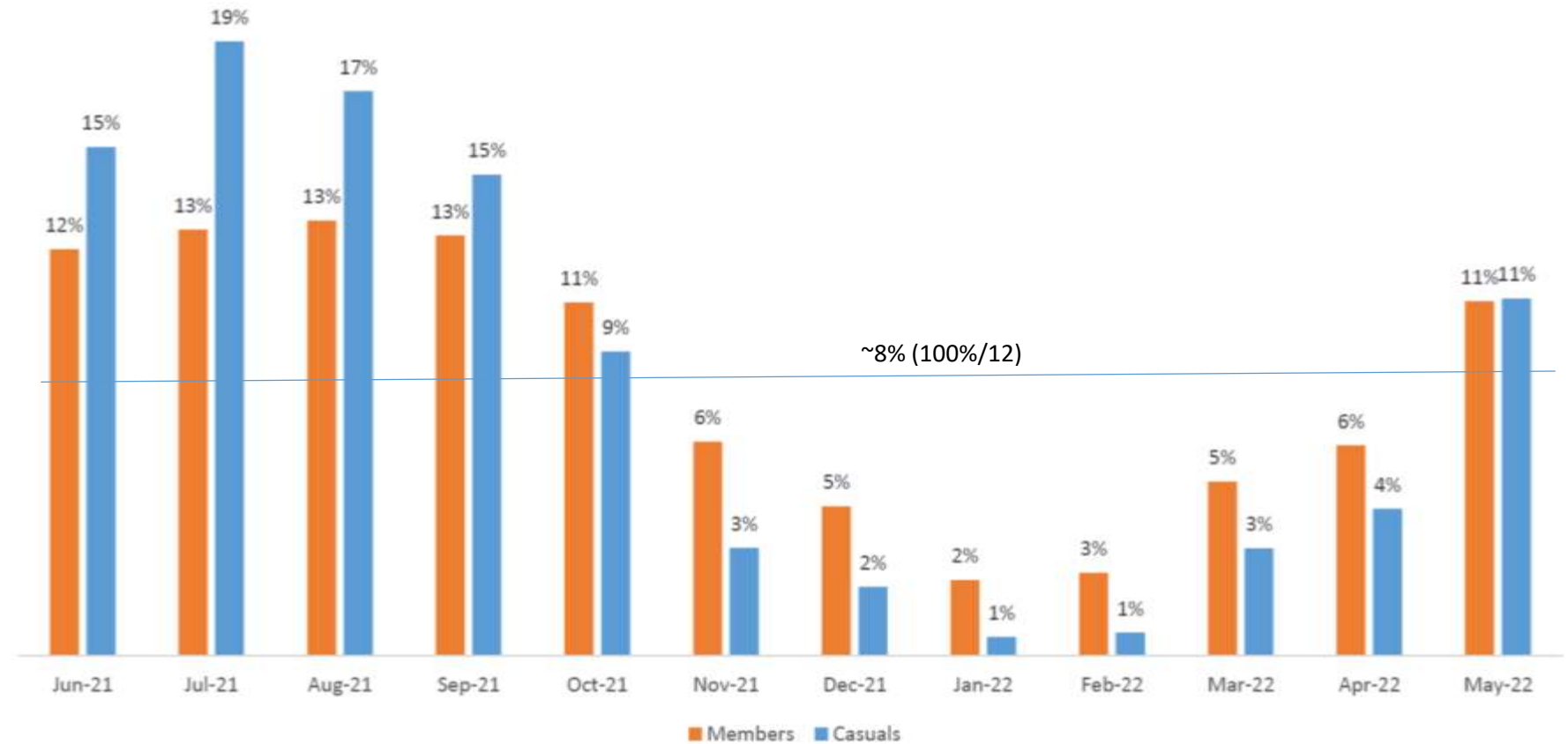
How do Casuals and Members differ?

1. What is monthly bike usage by each of groups?
2. When do cyclists ride? Seasons, Days of the week, time of the day?
3. What is the typical duration of the ride?
4. Where do cyclists ride? What are 10 top start/end popular stations?
5. Which bikes do cyclists ride?

Usage and When

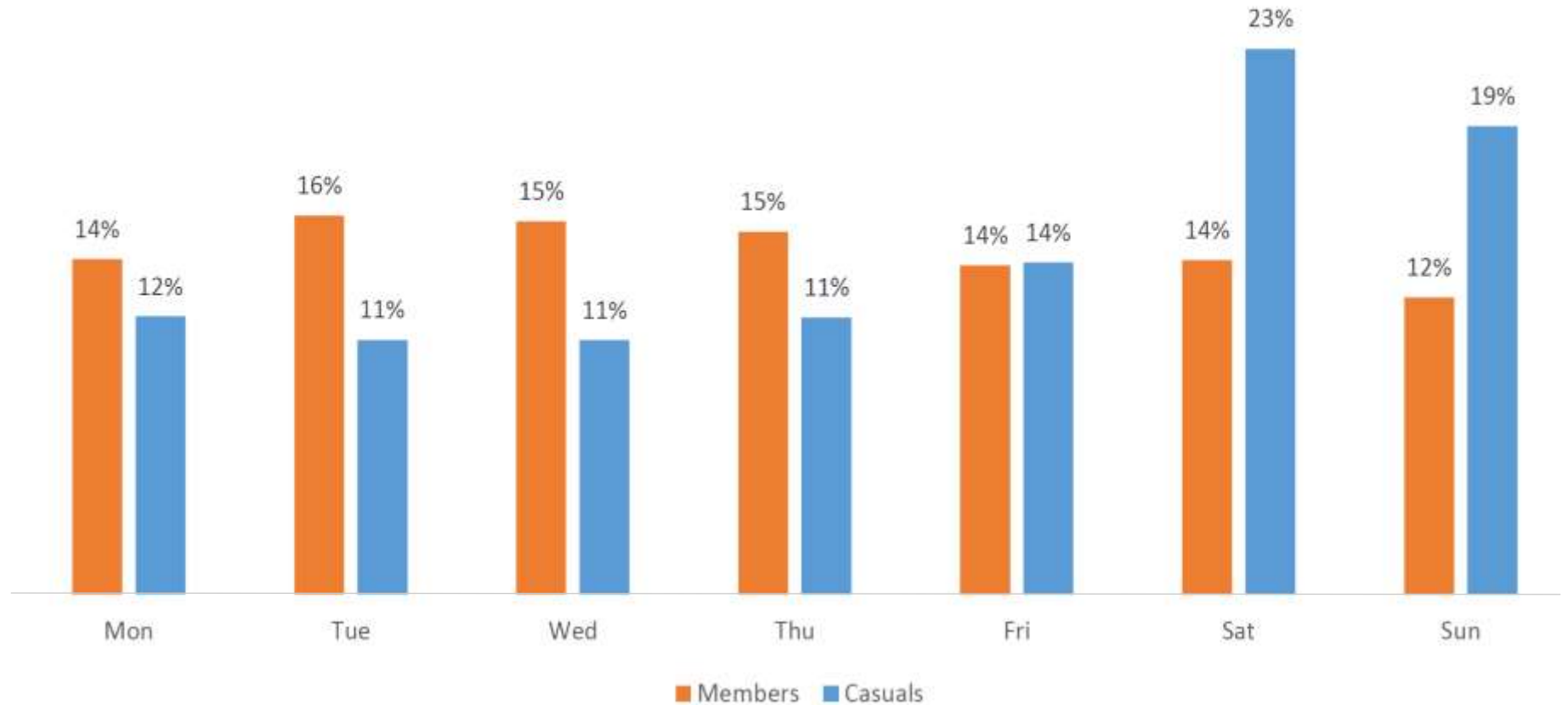
Trips by Casuals and Members in a bike sharing program in Chicago, IL, by month from June, 2021 to May, 2022.

- Monthly usage
 - Casuals 1% - 19%
 - Members 2% - 13%
- Two seasons
 - Warm – May-Oct
 - Cold – Nov-Apr
- All cyclists ride more during the warm season
- Casuals much more willingly ride during the warm season than the cold season compared to Members

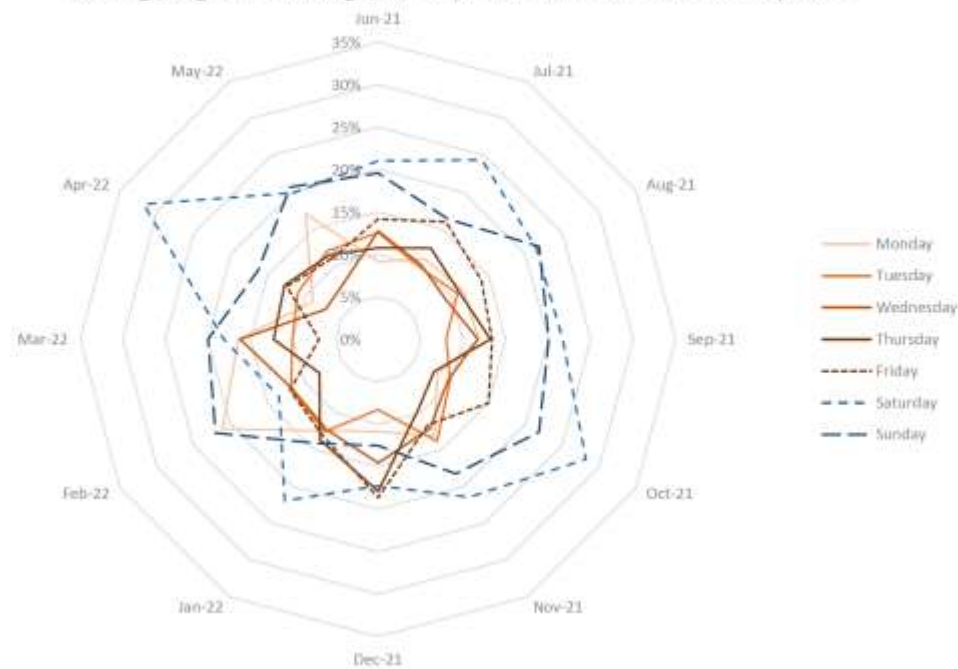


Member and Casual bike trips broken down by weekdays in bike sharing in Chicago, IL, for period from June 2021 to May 2022

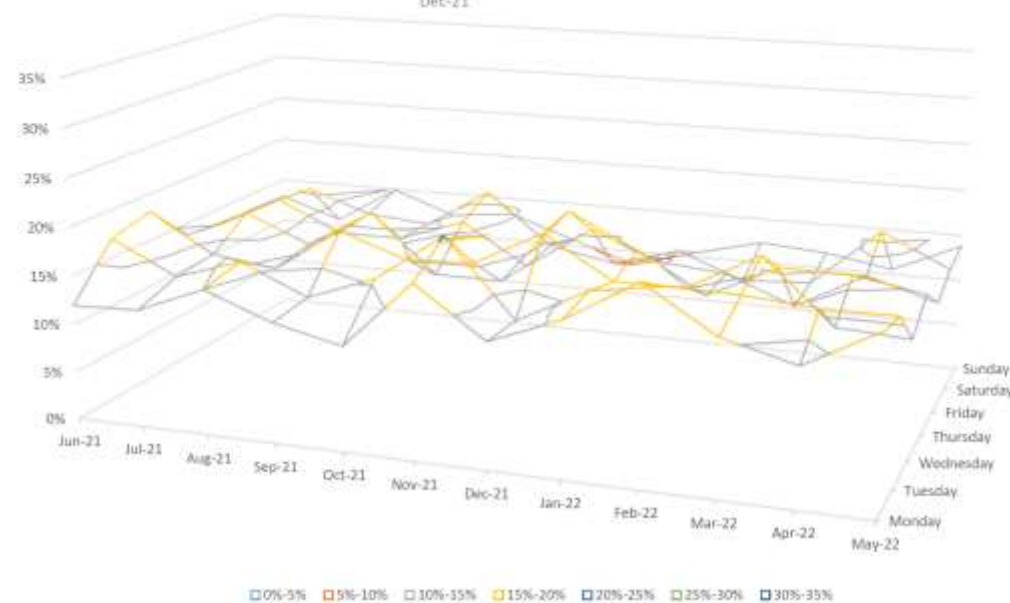
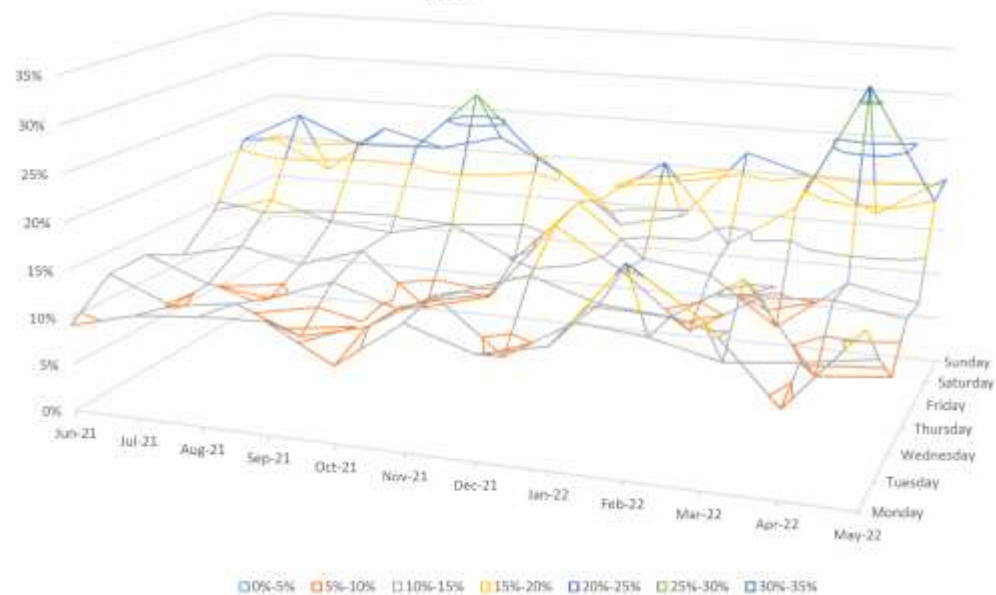
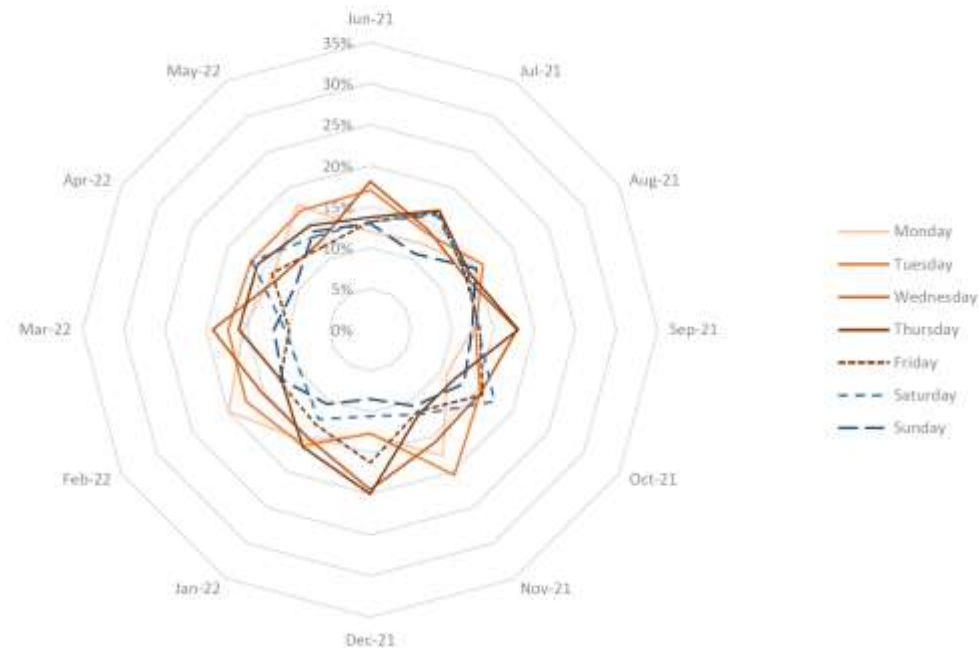
- Casuals ride more on weekends than workdays
- Members ride more on workdays than weekends



Casual riders monthly bike trips broken down by weekdays in the bike sharing program in Chicago, IL, for period from June 2021 to May 2022



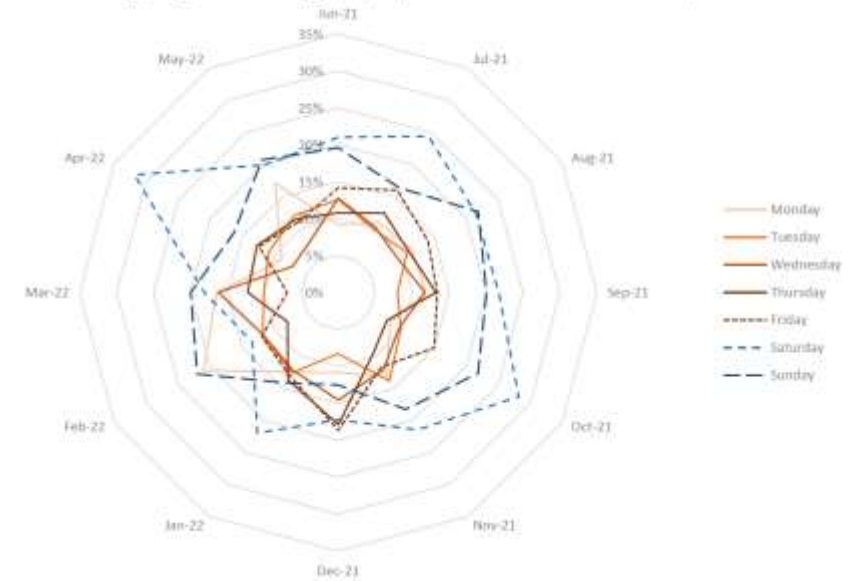
Member riders monthly bike trips broken down by weekdays in the bike sharing program in Chicago, IL, for period from June 2021 to May 2022



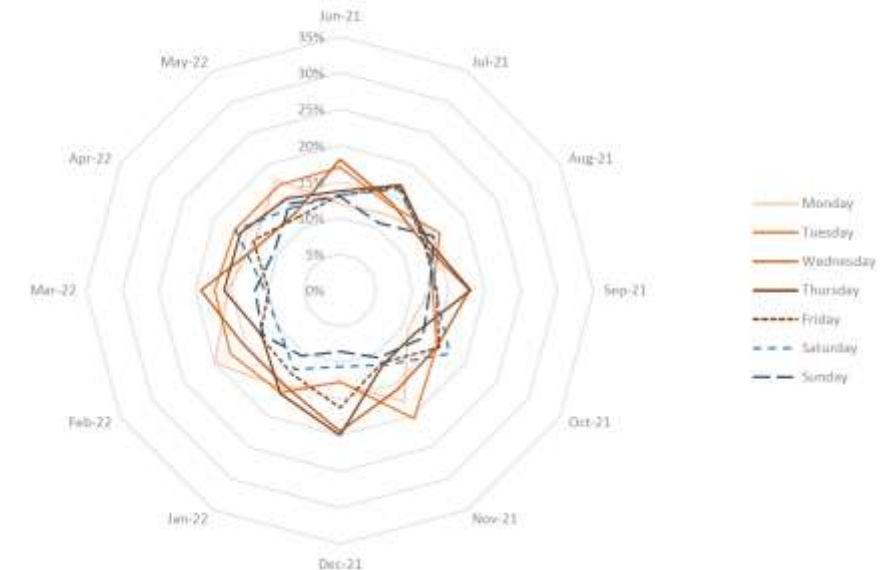
Monthly bike trips by weekdays over the year

- Casuals
 - Ride more on weekends than workdays monthly
 - Use bikes the most on Saturdays on all months but February-March when they prefer Sunday
 - Friday is the third most popular day from June to October for Casuals
 - In April and October, Saturday had around 30% trips of the month
- Members
 - Ride more on workdays than weekends apart from July, October, April when they used bikes the most on Saturday.
 - None of the days is had more than 20% trips over the entire year.

Casual riders monthly bike trips broken down by weekdays in the bike sharing program in Chicago, IL, for period from June 2021 to May 2022

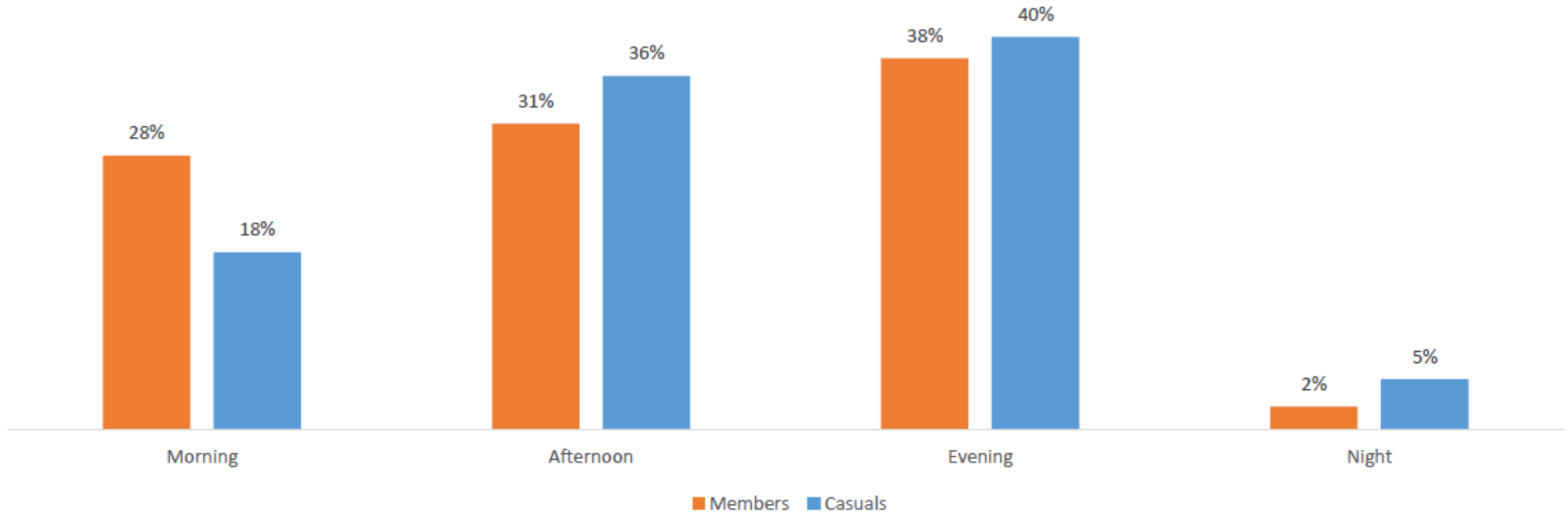


Member riders monthly bike trips broken down by weekdays in the bike sharing program in Chicago, IL, for period from June 2021 to May 2022



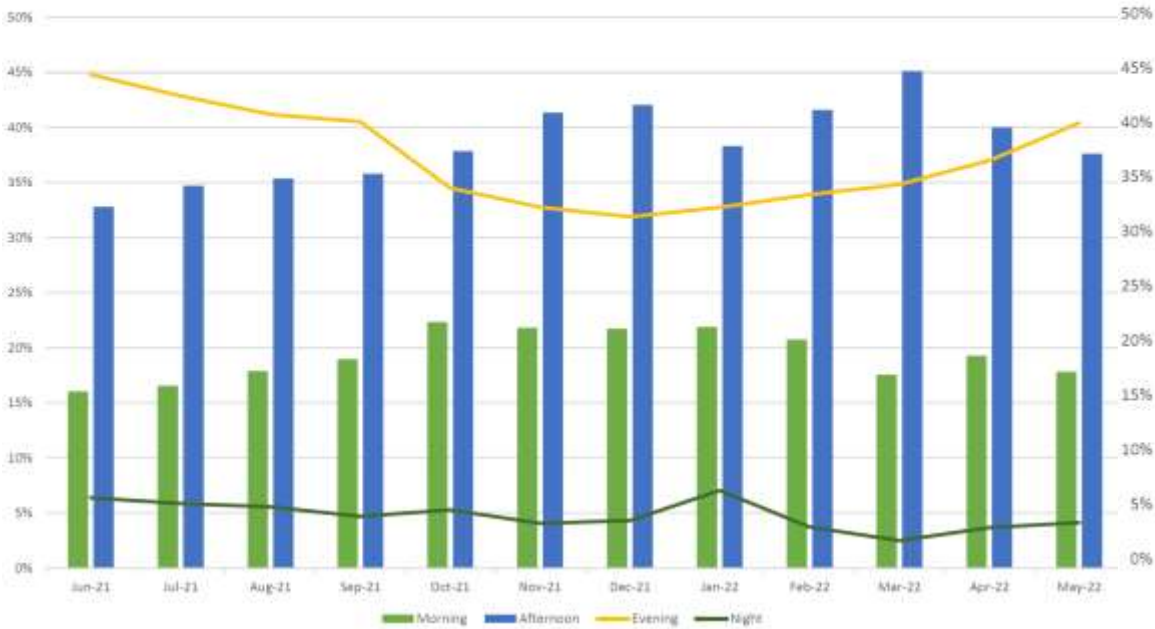
Casual and Member rider trips start time in a bike sharing program in Chicago, IL, for the period from June, 2021 to May, 2022

Morning [5am; 12pm), afternoon [12pm; 5pm), evening [5pm; 00am), night [00:00am; 5am)

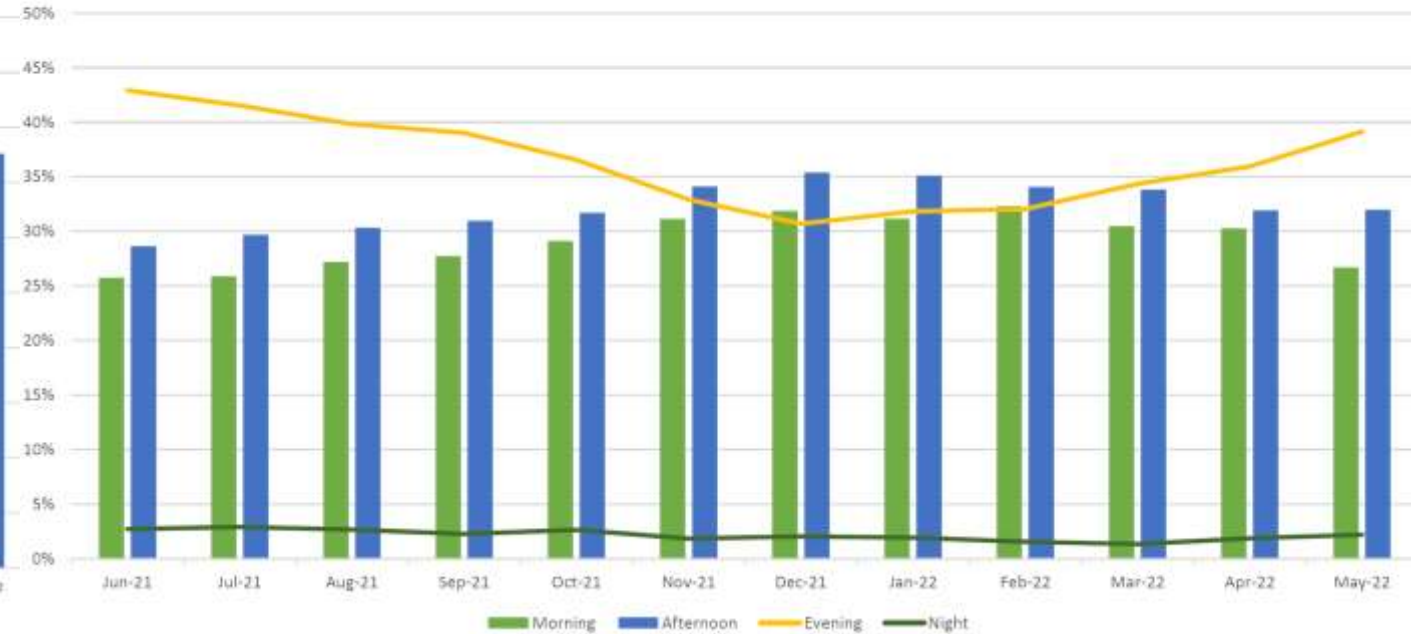


- Afternoon, evenings, nights similar usage yearly
- Members did more trips than Casuals in the mornings
- Afternoon and evening trips contribute the most for both Members and Casuals

Casual rider trips start time in a bike sharing program in Chicago, IL, for the period from June, 2021 to May, 2022
Morning [5am; 12pm), afternoon [12pm; 5pm), evening [5pm; 00am), night [00:00am; 5am)



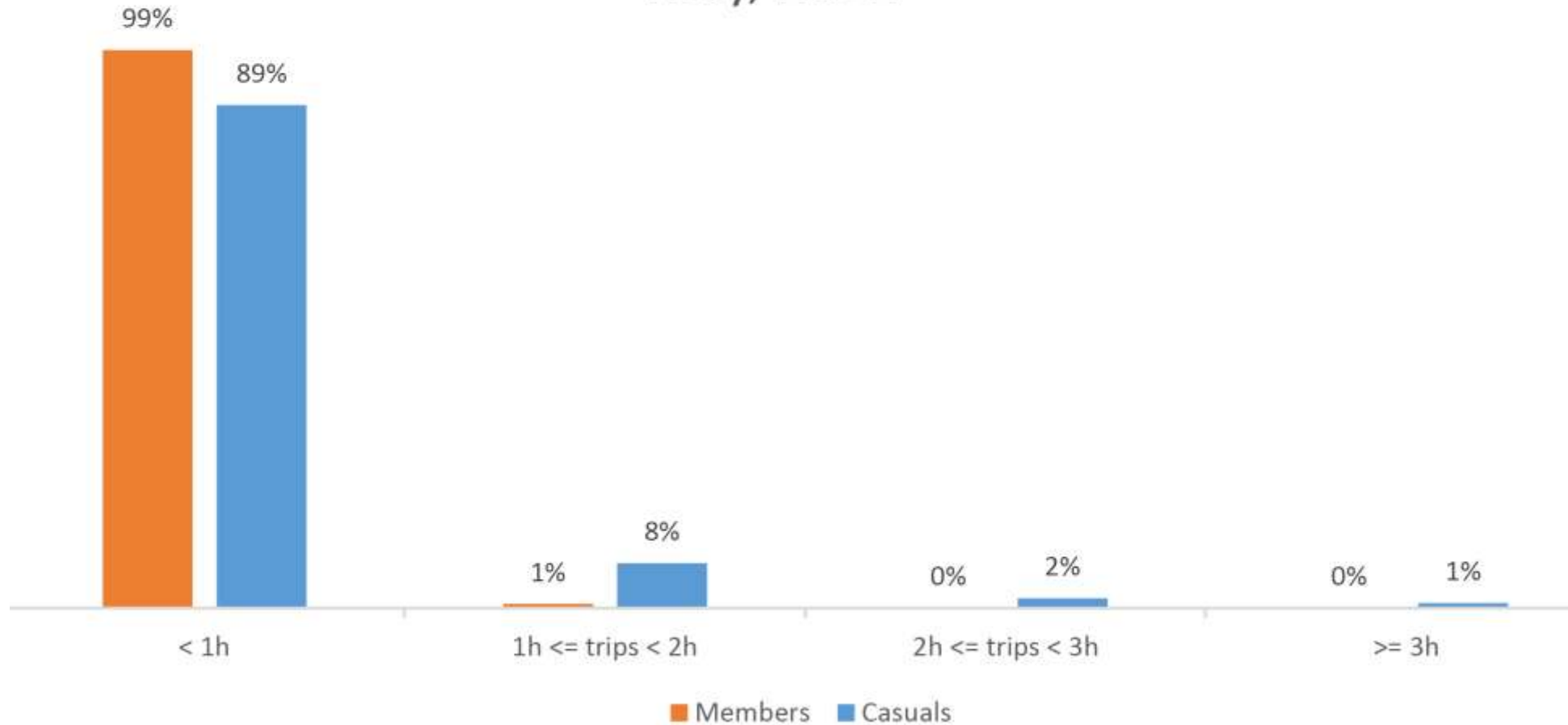
Member rider trips start time in a bike sharing program in Chicago, IL, for the period from June, 2021 to May, 2022
Morning [5am; 12pm), afternoon [12pm; 5pm), evening [5pm; 00am), night [00:00am; 5am)



- Casuals: most evening trips in June, most afternoon trips in March
- Members: most evening trips in June, most afternoon trips in Dec and Jan

How long

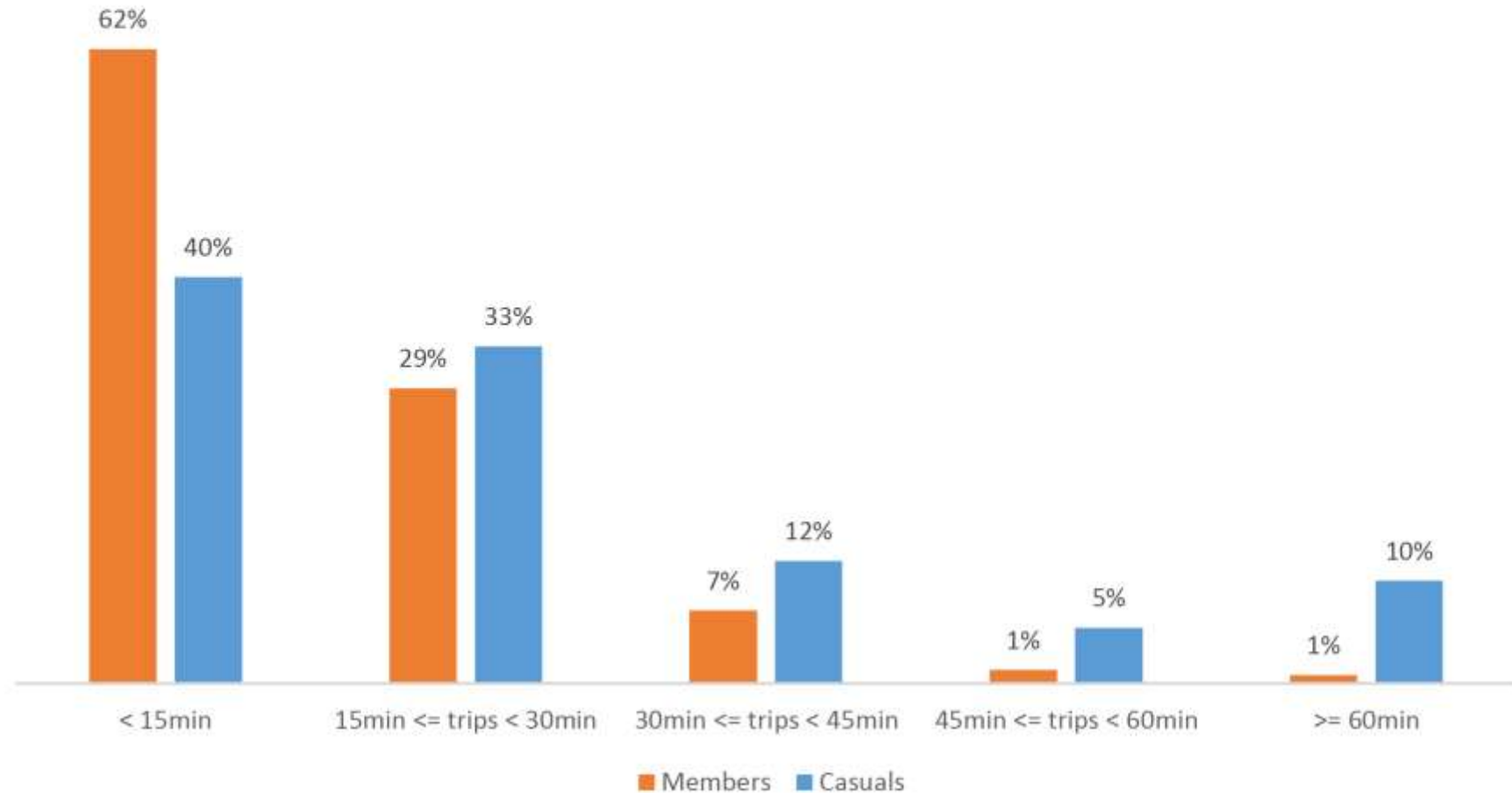
Trips durations for Casuals and Members in a bike sharing program in Chicago, IL, from June, 2021 to May, 2022



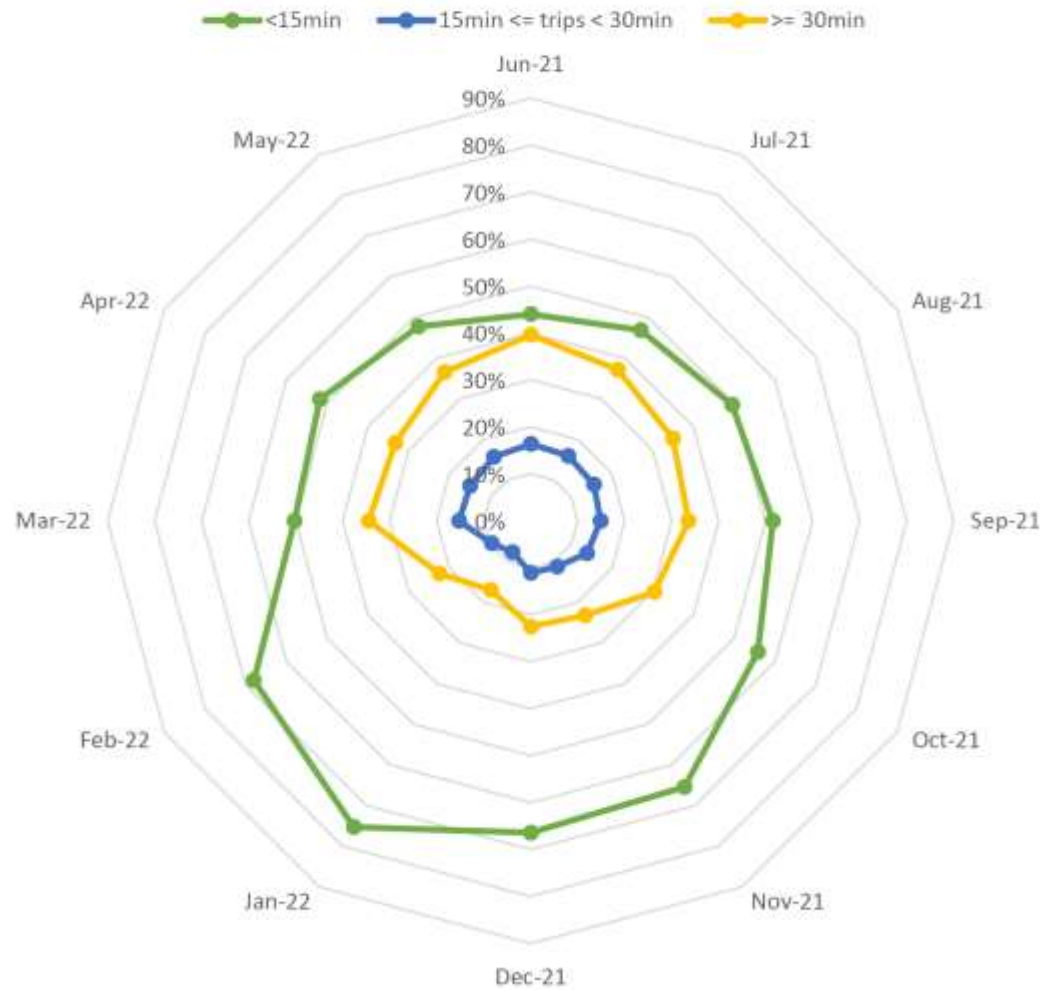
- Majority of the trips < 1h
- Casuals like also longer trips [1h; 2h)

Trips durations for Casuals and Members in a bike sharing program in Chicago, IL, from June, 2021 to May, 2022

- Members ride short trips (<15min)
- Casuals ride the most short trips; but a significant number of trips have is longer >15min



Trip durations by casual riders in a bike sharing program in Chicago, IL, for the period from June, 2021 to May, 2022



Feb-Oct – a peak for short trips for Casuals.
 Jun – a peak for longest trips for Casuals.

Trip durations by member riders in a bike sharing program in Chicago, IL, for the period from June, 2021 to May, 2022

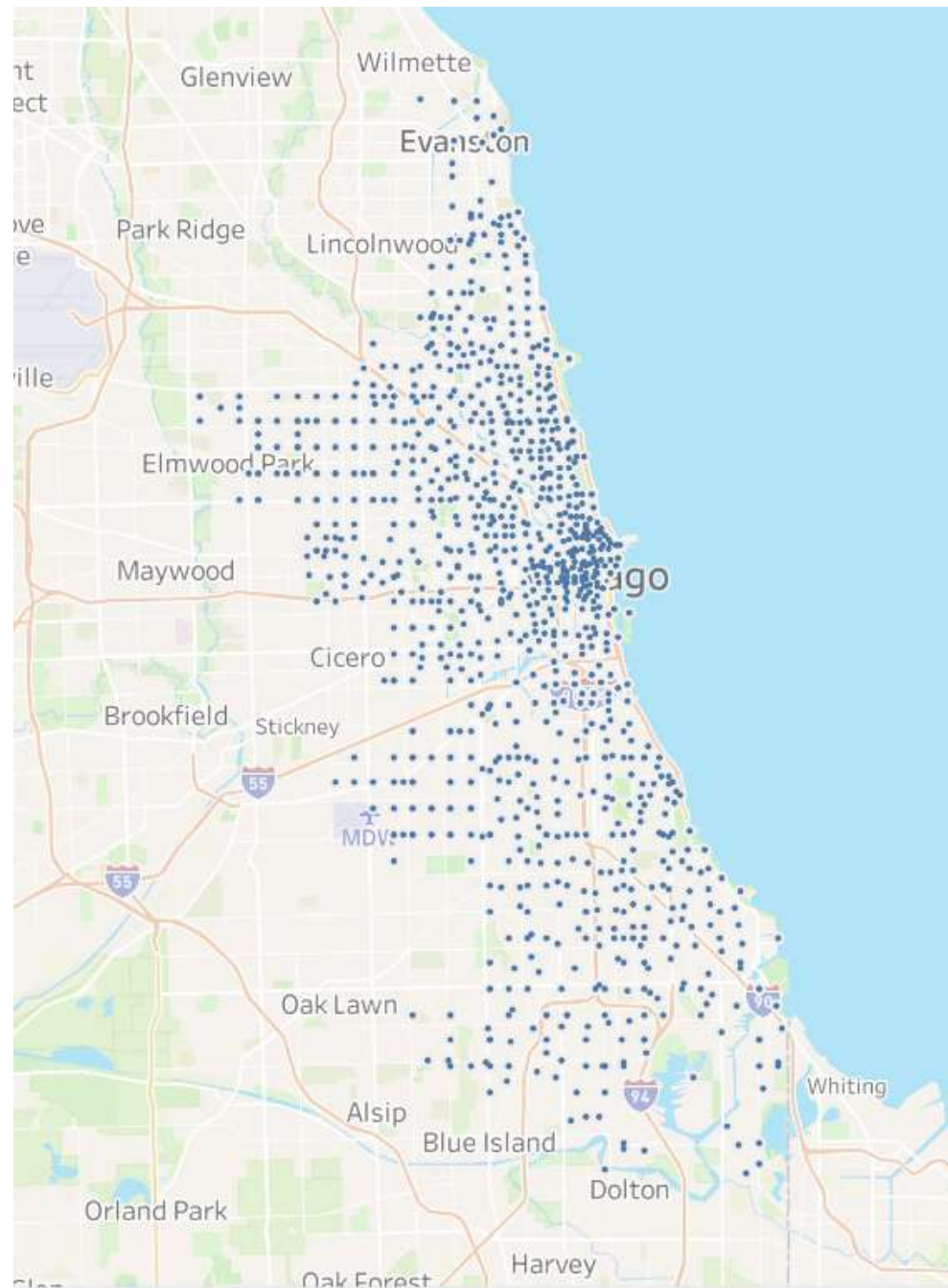


Members consistently ride short trips all year long.

Where

Bike Stations

1135 bike stations



Top 10 Stations

Members top
start stations



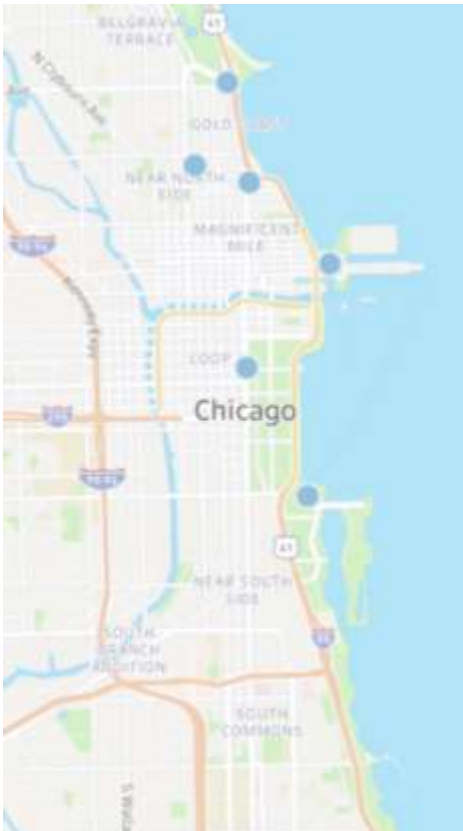
Kingsbury St & Kinzie St	0.9%
Clark St & Elm St	
Wells St & Concord Ln	
Ellis Ave & 60th St	
University Ave & 57th St	
DuSable Lake Shore Dr & North Blvd	
Clinton St & Washington Blvd	
Wells St & Elm St	
Streeter Dr & Grand Ave	
Lake Shore Dr & North Blvd	

Members top
end stations



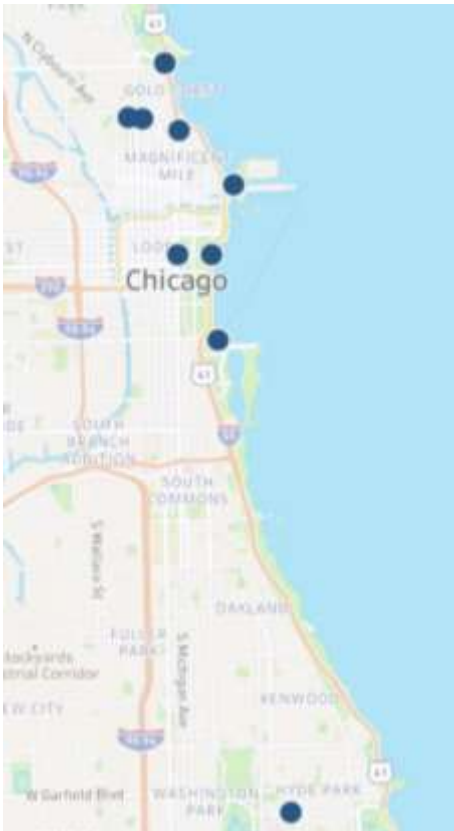
Clark St & Elm St	
Clinton St & Madison St	
Clinton St & Washington Blvd	
DuSable Lake Shore Dr & North Blvd	
Ellis Ave & 60th St	
Kingsbury St & Kinzie St	0.6%
Lake Shore Dr & North Blvd	
University Ave & 57th St	
Wells St & Concord Ln	
Wells St & Elm St	

Casuals top
start stations

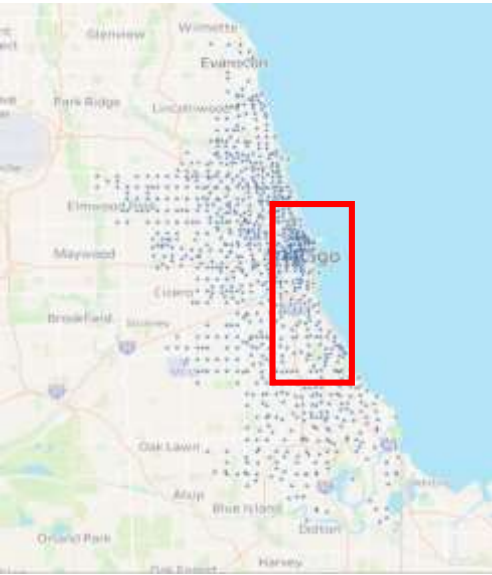


Streeter Dr & Grand Ave	3.4%
DuSable Lake Shore Dr & Monroe St	
Millennium Park	
Michigan Ave & Oak St	
Shedd Aquarium	
Lake Shore Dr & North Blvd	
Lake Shore Dr & Monroe St	
Theater on the Lake	
Clark St & Elm St	
Wells St & Concord Ln	

Casuals end
end stations



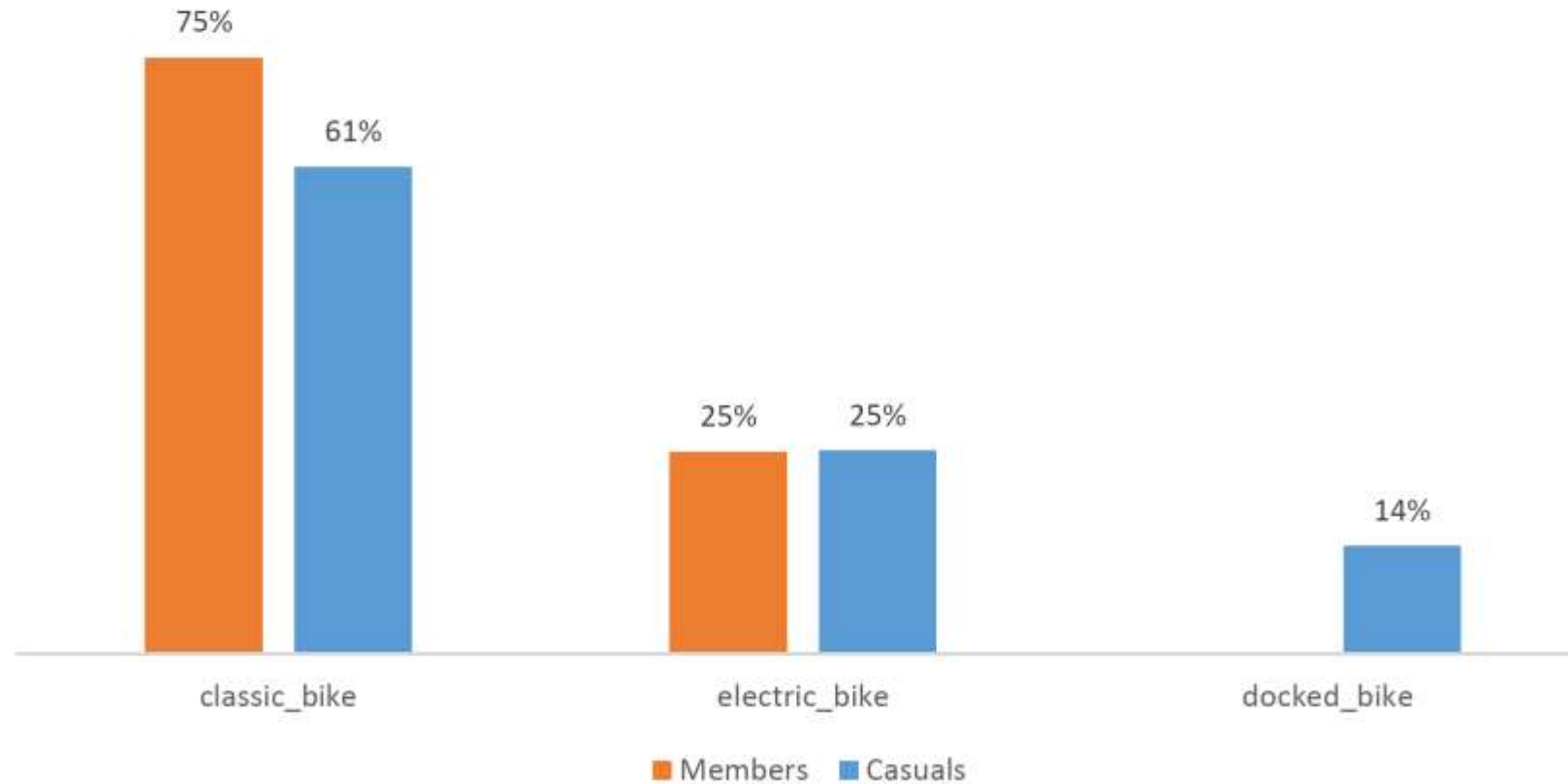
Clark St & Elm St	
DuSable Lake Shore Dr & Monroe St	
DuSable Lake Shore Dr & North Blvd	
Lake Shore Dr & North Blvd	
Michigan Ave & Oak St	
Millennium Park	
Shedd Aquarium	
Streeter Dr & Grand Ave	3.2%
University Ave & 57th St	
Wells St & Elm St	



1135 bike stations

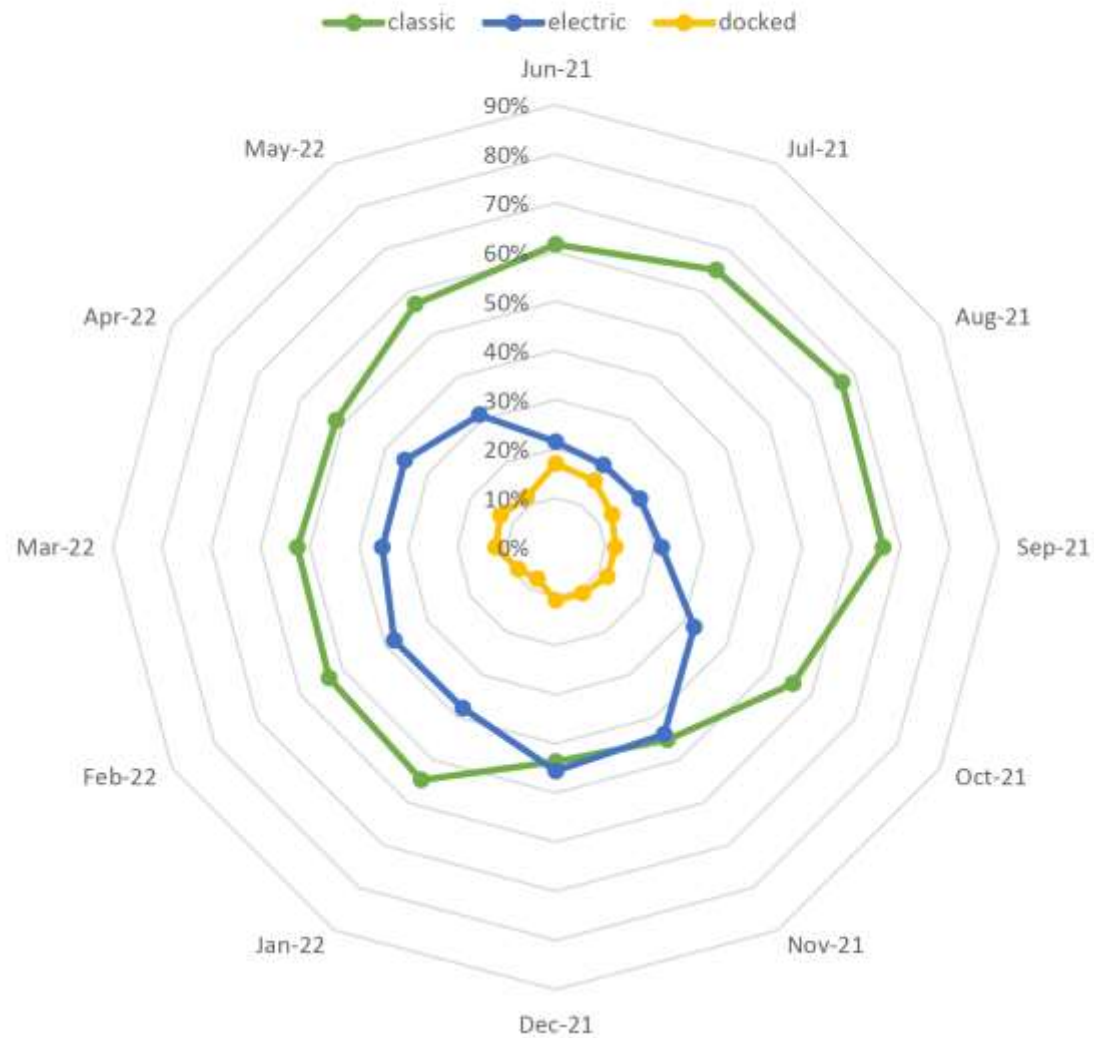
What bikes

Trips that used a particular bike type in the bike sharing program by Casual and Member riders in Chicago, IL, in the period from June, 2021 to May, 2022



No member record contains docked_bike

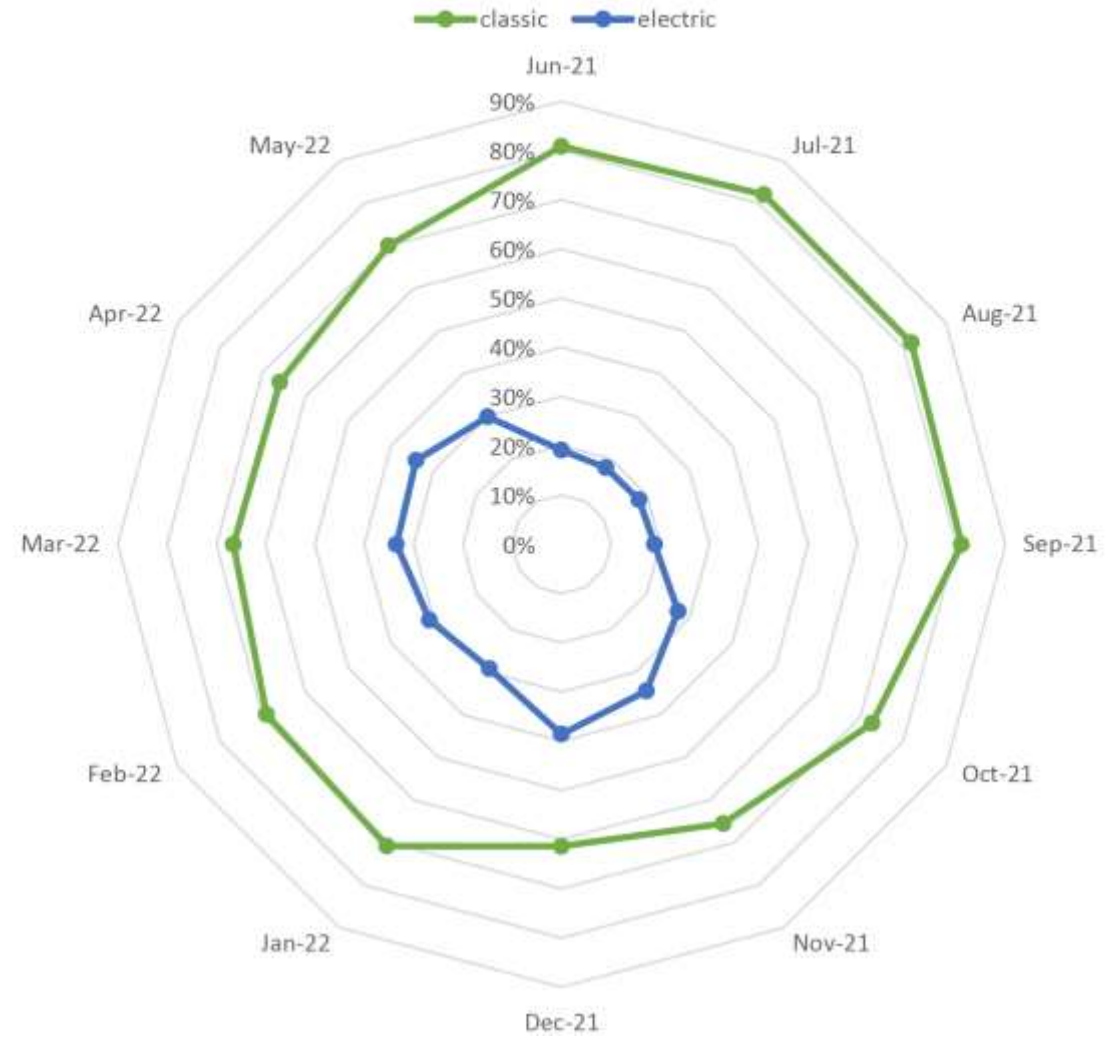
Types of bikes used by casual riders in a bike sharing program in Chicago, IL, from June, 2021 to May, 2022



Casuals:

- Top use of classic bikes from June to Sep
- Top use of electric bikes from Nov to May

Types of bikes used by member riders in a bike sharing program in Chicago, IL, from June, 2021 to May, 2022



Members:

- Top use of classic bikes from Jun to Sep
- Top use of electric bikes from Nov to May

How do Casuals and Members differ?

1. What is monthly bike usage by each of groups?
2. When do cyclists ride? Seasons, Days of the week, time of the day?
3. What is typical duration of the ride?
4. Where do cyclists ride? What are 10 top start/end stations?
5. Which bikes do cyclists ride?

Casuals vs. Members

	Feature	Casuals	Members
When	Seasons: - Warm season (May-Oct) - Cold season (Nov-Apr)	<ul style="list-style-type: none"> Larger bike seasonal usage differences 	<ul style="list-style-type: none"> Smaller bike seasonal usage differences
	Weekdays: - Weekend (Sat-Sun) - Workday (Mon-Fri)	<ul style="list-style-type: none"> Always weekends preference Sat most of the months but Feb and Mar when Sun is a preferred day 	<ul style="list-style-type: none"> They prefer workdays most of the months Oct and Apr the most trips was on Sat
	Time of the day - Mornings, Afternoons, Evenings, Nights	<ul style="list-style-type: none"> Most evening trips – June Most afternoon trips – March 	<ul style="list-style-type: none"> Most evening trips – June Most afternoon trips – Dec and Jan More morning trips than Casuals
Duration	Duration - Short trips <15min - [15min;30min) - >= 30min	<ul style="list-style-type: none"> <2h Feb-Oct – a peak for short trips Jun – a peak for longest trips 	<ul style="list-style-type: none"> < 1h Consistently ride short trips all year

Casuals vs. Members (cont.)

	Feature	Casuals	Members
Where	Start stations End stations	Streeter Dr & Grand Ave Common stations with members	Kingsbury St & Kinzie St Common stations with casuals
Bikes	Bike types - Classic - Electric - Docked	<ul style="list-style-type: none"> - Majority of trips use classic bikes - Same % of usage for electric bikes as members - Same trend of usage of classic and electric bikes as members 	<ul style="list-style-type: none"> - Majority of trips use classic bikes - Same % of usage for electric bikes as members - Same trend of usage classic and electric bikes as casuals - No use of “docked” bikes

How do Casuals and Members differ?

1. Weekends - Workdays

- Casuals ride more on weekends than workdays
- Members ride more on workdays than weekends

2. Members did more morning trips than Casuals (28% vs 18%)

3. Members trips are short, Casuals do short trips but also longer ones

- 62% of all member trips <15min, 1% trips $\geq 1h$
- 40% of all casual trips <15min, 10% trips $\geq 1h$

How to Encourage Casuals to become Members?

1. Free/Discounted daily passes:
 - Offer free daily passes/discounts for Casuals to ride on workdays.
 - Offer free daily passes for Casuals to ride on weekends - it might encourage Casuals to become Members after all.
2. Offer 2-/3-day workday passes
3. Advertise benefits of riding during workdays: environment friendly, workout, pleasure.
4. Encourage Casuals to use bikes in the mornings in their routines for commuting, workout, and/or pleasure.

Next Steps

- Find out why Casuals ride less in the mornings.
- Explore more sophisticated relationships that include more features like timing, start and end stations to get deeper insight into the profile of a casual and member rider.
- Study locations and trip patterns of the most bike usage by Casuals and Members.