

# Cyclistic riders: **casual riders** and **annual members**



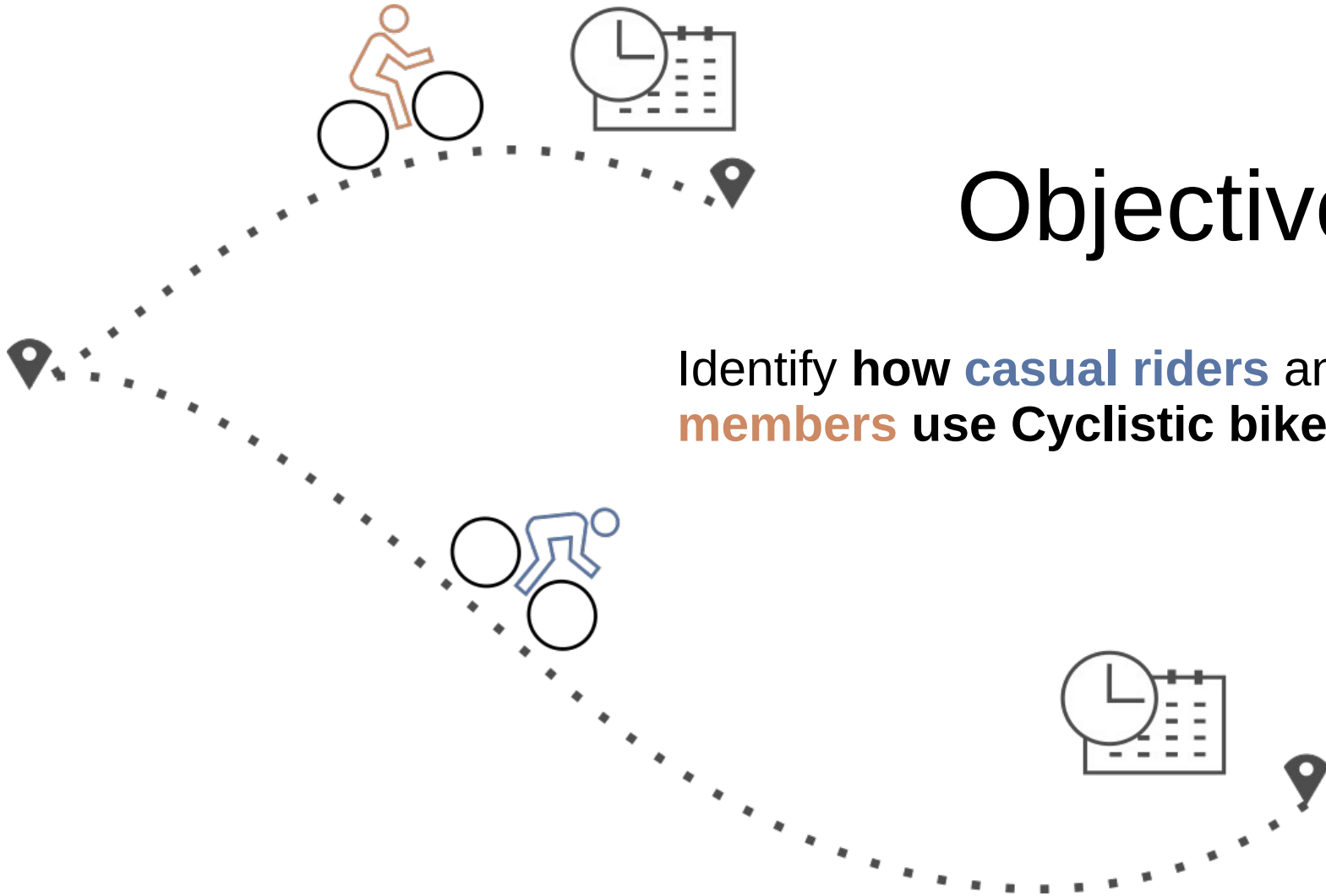
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Last update: 06/12/2021

# Table of contents

- Objective
- Data used
- Bike ride analysis
  - Monthly
  - Seasonly
  - Peak season
- Findings
- Suggestions
- Appendix

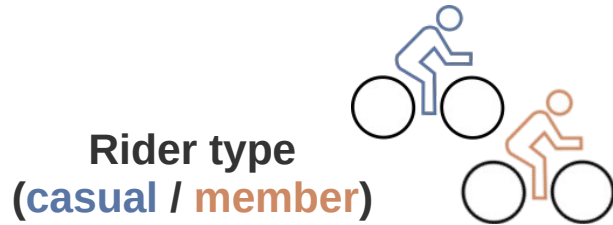
# Objective

Identify how **casual riders** and **annual members** use Cyclistic bikes differently.

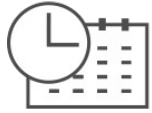


# Data used

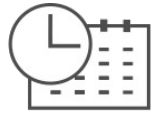
For every cyclistic trip:



Start station,  
date and time



End station,  
date and time

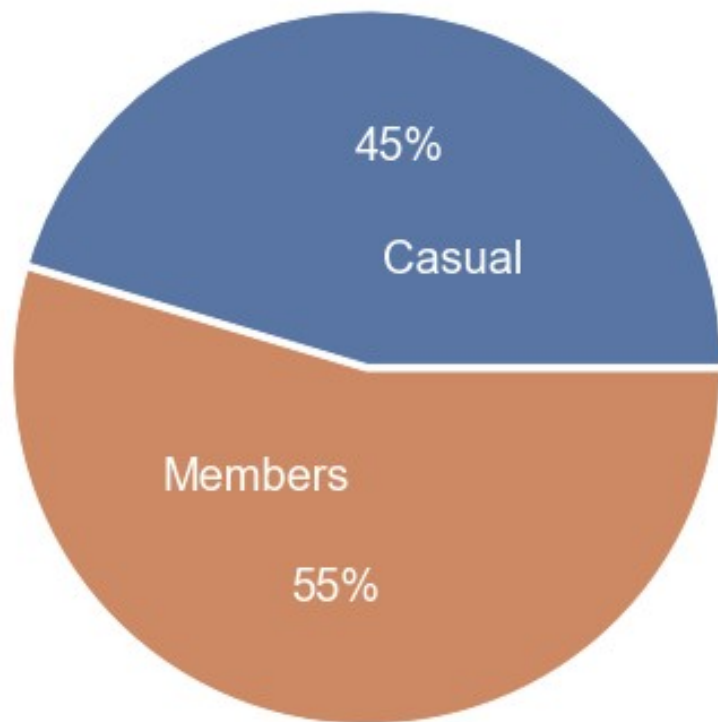


Data for **one year:**  
**09/2020 - Jul/2021**

Total rides\*:  
**4.831.096**

\*After data cleaning

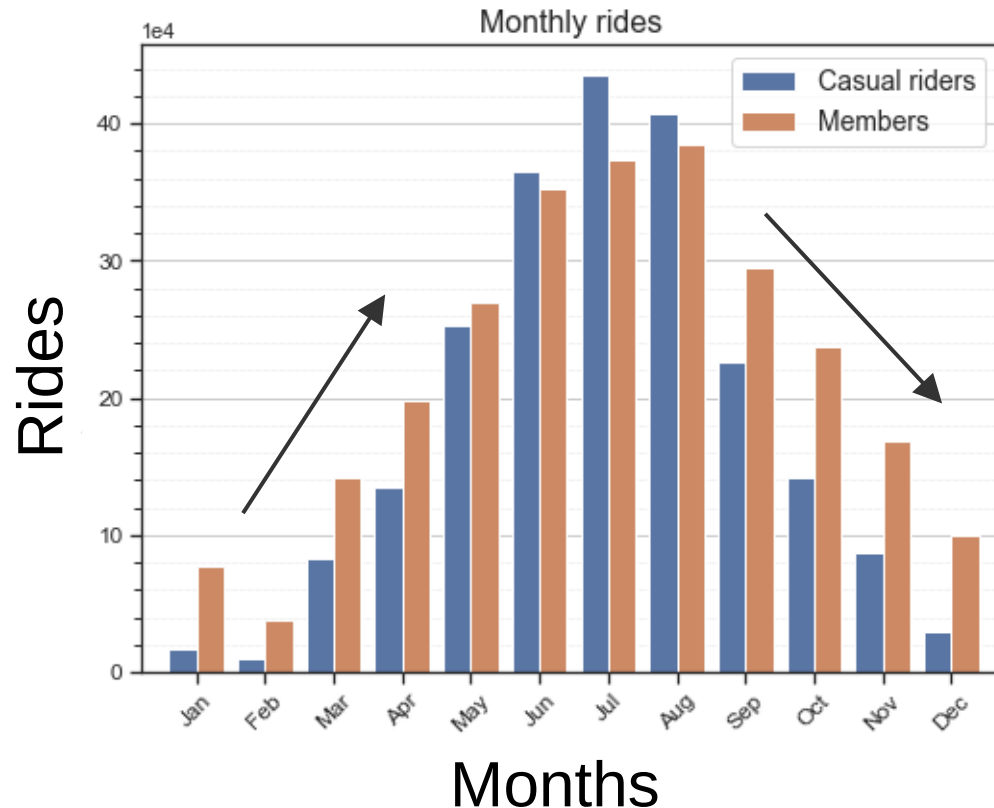
# Cyclistic rides per rider type



For a period of **12 months**, **casual riders** make **45%** of all rides

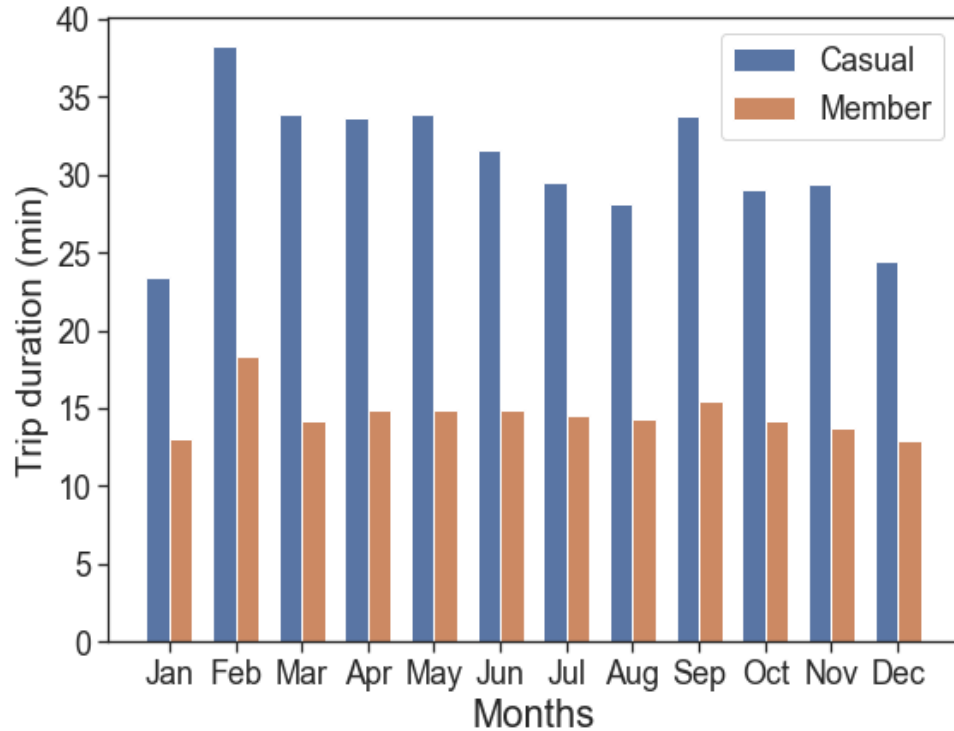
| Casual riders | Members | Total |
|---------------|---------|-------|
| 2.2M          | 2.6M    | 4.8M  |

# Monthly analysis



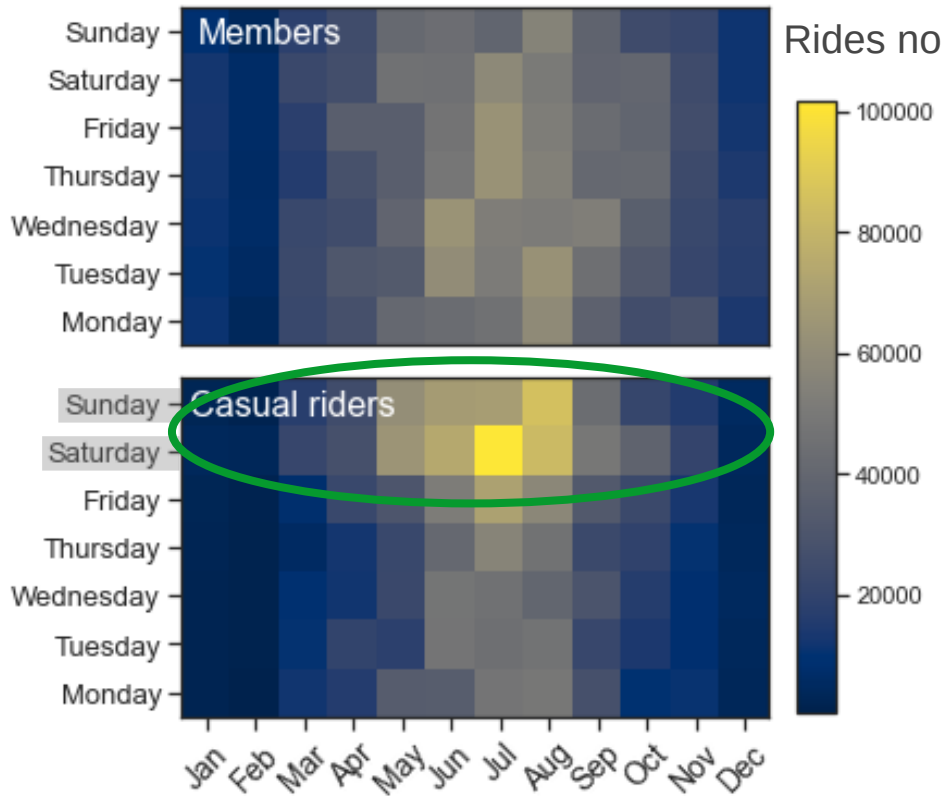
- Rides:
  - Increase from **March**
  - Decrease from **September**
- Peak during **summer months**  
Preferred month:
  - **July** for **casual riders**
  - **August** for **members**

# Monthly analysis: trip duration



- **Casual riders** trip duration is **more** than **members** through the year.

# Day-of-the-week analysis per month



- **Casual riders** use cyclistic more on **weekends**.
- **Members** don't have a strong preference.



# Preferred day per month

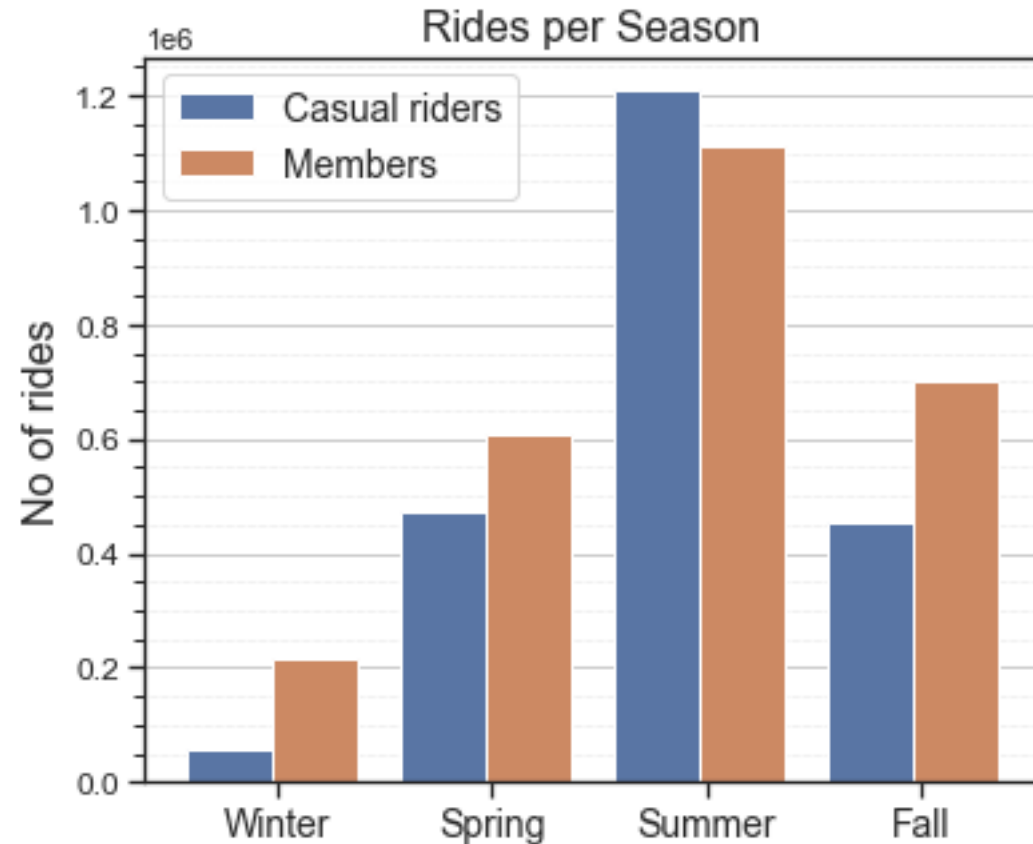
| Month     | Preferred day (Percent of month*) |             |
|-----------|-----------------------------------|-------------|
|           | Casual                            | Members     |
| January   | Sat. (22%)                        | Frid. (16%) |
| February  | Sat. (34%)                        | Wed. (17%)  |
| March     | Sat. (26%)                        | Tues. (16%) |
| April     | Sat. (20%)                        | Frid. (18%) |
| May       | Sat. (25%)                        | Sat. (17%)  |
| June      | Sat. (20%)                        | Thur. (18%) |
| July      | Sat. (23%)                        | Wed. (17%)  |
| August    | Sun. (21%)                        | Tue. (16%)  |
| September | Sat. (22%)                        | Wed. (18%)  |
| October   | Sat. (27%)                        | Thur. (17%) |
| November  | Sat. (24%)                        | Mon. (17%)  |
| December  | Sun. (17%)                        | Wed. (17%)  |

- **Casual riders** prefer **Saturdays (20-26%)**  
(Except Aug. and Dec.).

- **Member** riders don't have a strong  
preference, but prefer weekdays (except  
May)

\*Percent is of rides per month per member/casual.

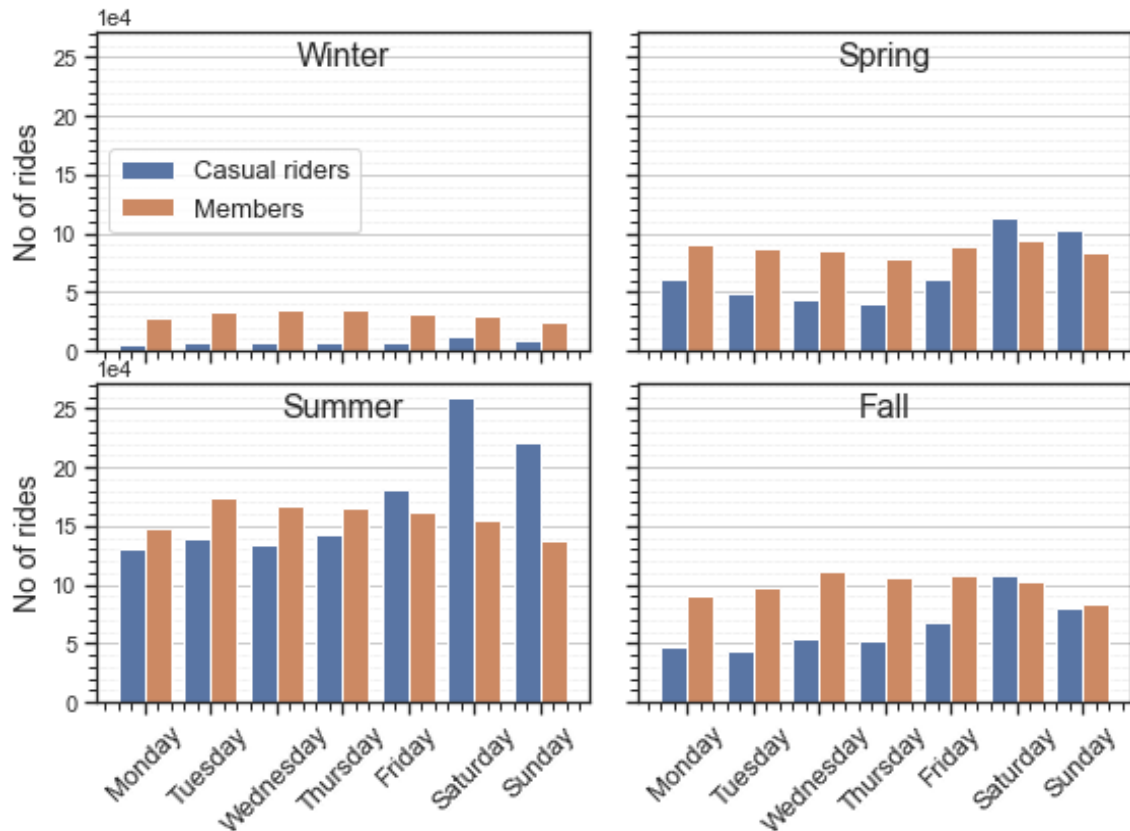
# Seasonal analysis



- Rides **peak** during **summer**.
- **Casual rides** are **more** than **member rides** during **peak season**.
- **Winter** has the **less** no of rides (for both casual riders and members).

\*Winter: 01Dec-28Feb, Spring: 01Mar-31May, Summer: 01Jun-31Aug, Fall: 01Sep-31Nov

# Days of the week (per season)



- **Casual** rides are more during **weekends**. During summer, Fridays are also preferred.
- **Member** rides are more uniformly distributed between days.

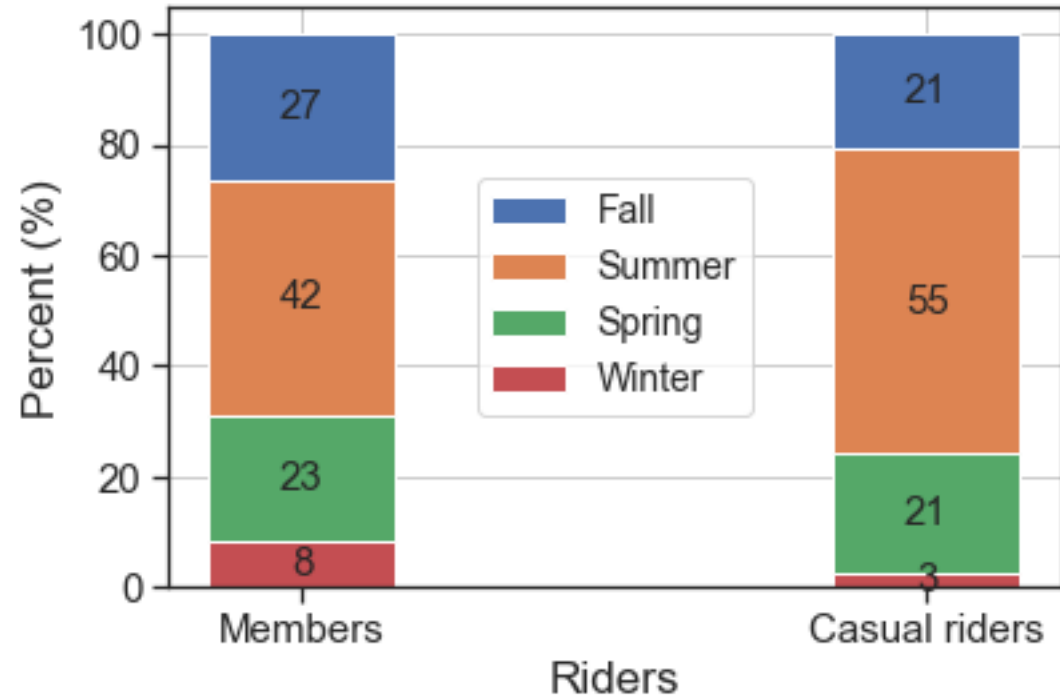
# Seasonal round trips

- **Casual riders** prefer round trips **more** than **Members**.
  - ~11 % of all casuals
  - 3 % of members
- **More round trips** during the **weekdays**,
  - **Except spring** for **casuals** were they are the same during the weekday and for the weekend.
- Per day analysis\* showed that:
  - **Casuals** do more round trips on **weekends**
  - **Members** do the same round trips any day of the week.

| Season | Week period | Casuals (%) | Members (%) |
|--------|-------------|-------------|-------------|
| Winter | Weekday     | 6           | 2           |
|        | Weekend     | 4           | 1           |
|        | Week        | 10          | 3           |
| Spring | Weekday     | 6           | 2           |
|        | Weekend     | 6           | 1           |
|        | Week        | 12          | 3           |
| Summer | Weekday     | 5           | 2           |
|        | Weekend     | 3           | 1           |
|        | Week        | 8           | 2           |
| Autumn | Weekday     | 7           | 2           |
|        | Weekend     | 5           | 1           |
|        | Week        | 12          | 3           |

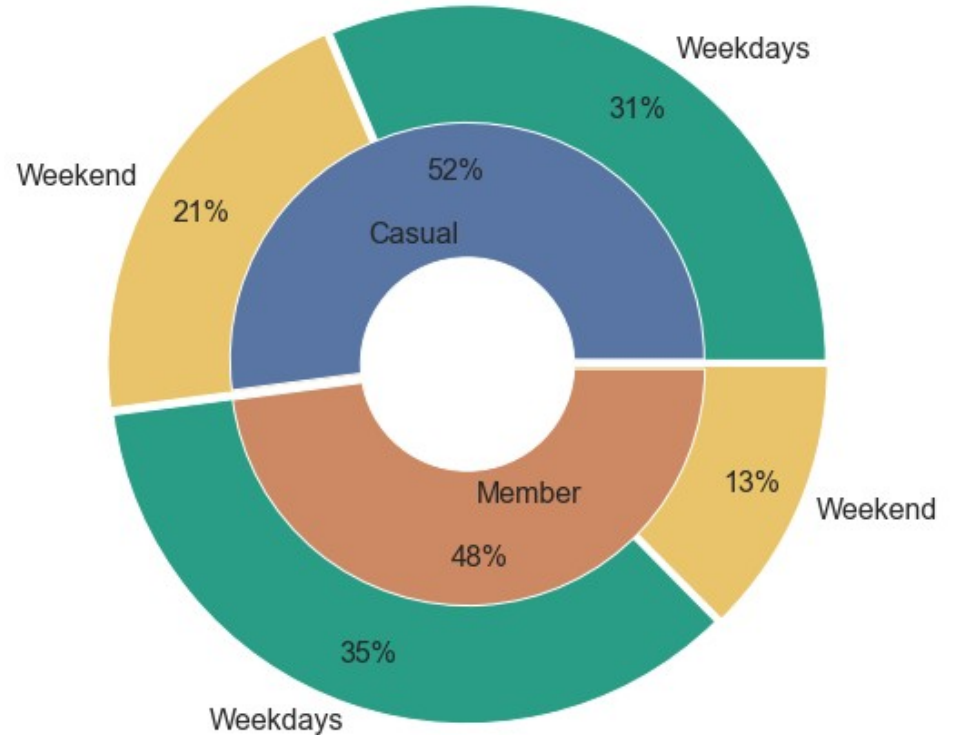
# Focusing on summer

The peak season

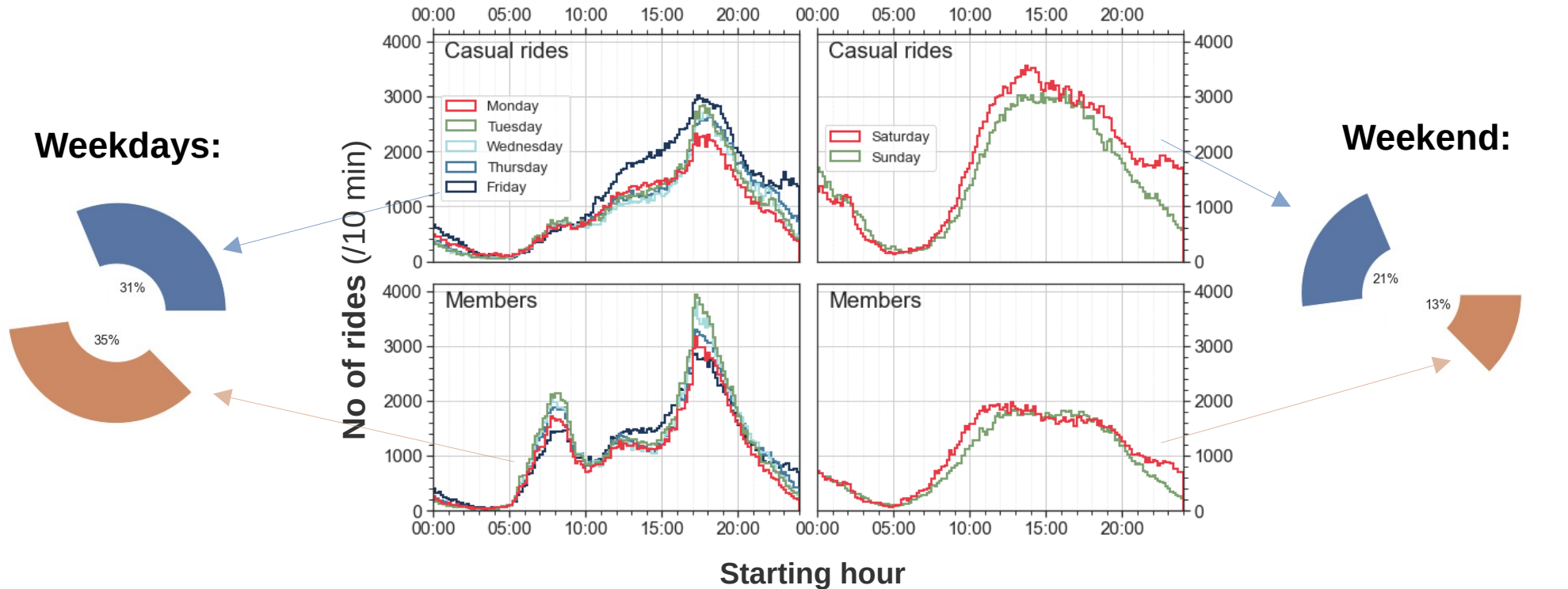


# Summer rides during weekdays and weekend

- **Most rides** are during the **weekdays**, for both **casual riders** and **members**
- **Casual rides** are **more** than **member rides** during the **weekend**.



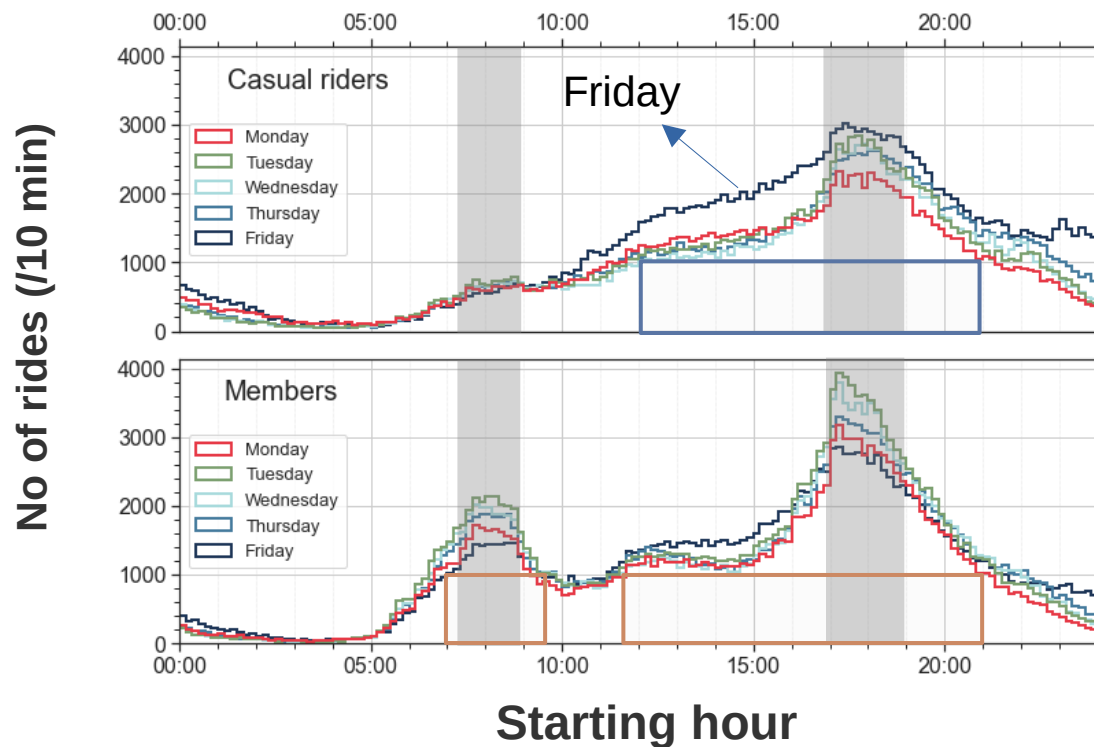
# Summer analysis: Day of the week hourly analysis



\*All seasons hourly analysis in appendix A

# Summer analysis: hourly analysis

## Weekdays



Key take aways:

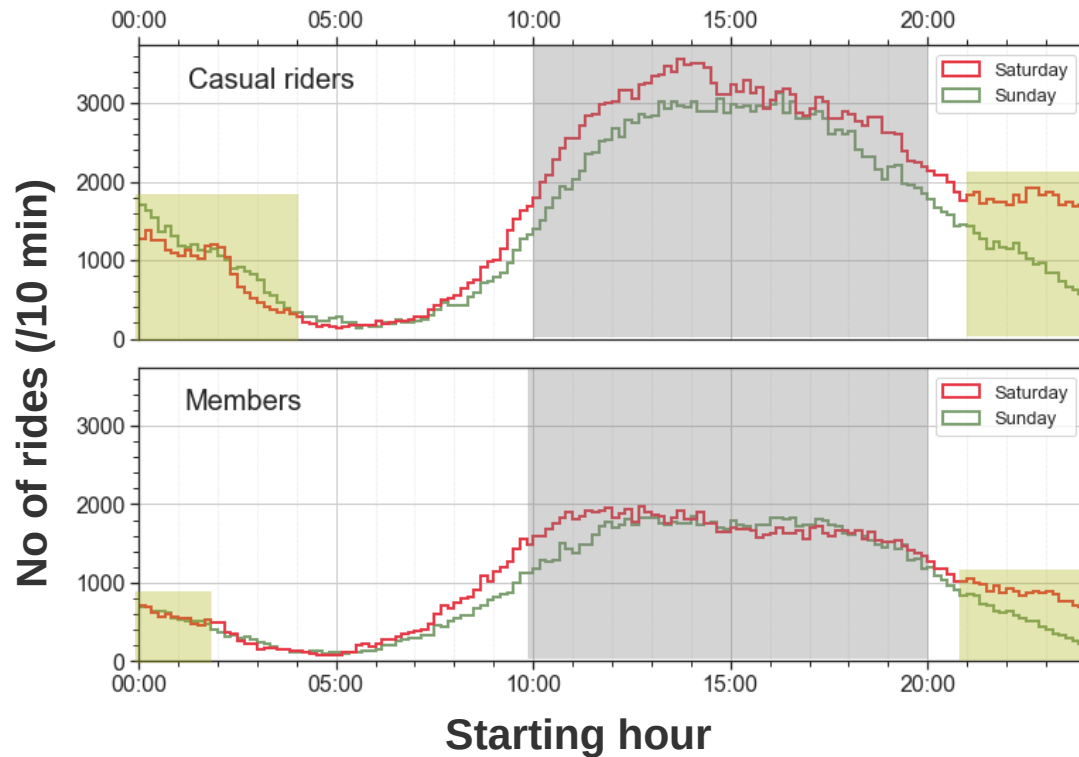
- Compared to **member**, **casual rides**:
  - Are much **lower** during **morning hours**.
  - have **more** rides during **Friday**.
- Both **casual** and **member** rides peak between **17:00–19:00**.
- **Increased rides zone** (> 1000 rides)
  - 12:00 – 21:00** for **casuals**,
  - 07:00-09:30 & 11:30 – 21:00** for **members**

\*More details in appendix B



# Summer analysis: hourly analysis

## Weekend

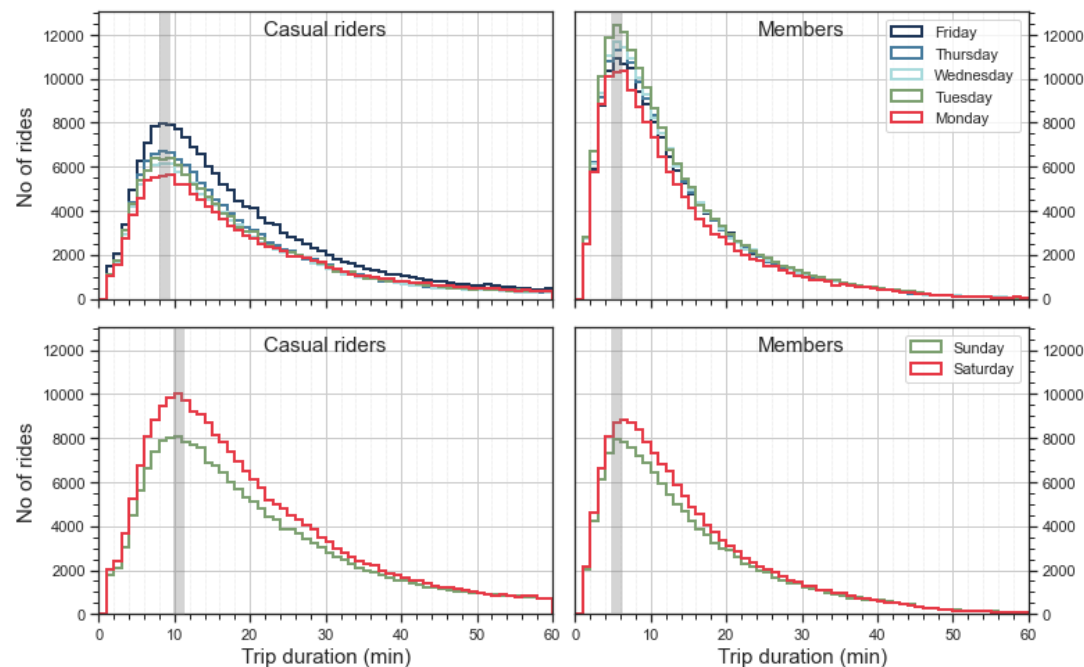


**Casual riders** use cyclistic bikes more than **member rides** during:

- **daytime** (10:00-20:00), and
- **night hours** (21:00-04:00)

# Summer analysis: Trip duration

## Trip duration – day analysis



|                     | Casual rides | Member rides |
|---------------------|--------------|--------------|
| Peak duration (min) | ~9           | ~5           |

Key take aways:

**Casual rides** are **longer** (almost x2) than **member rides**.

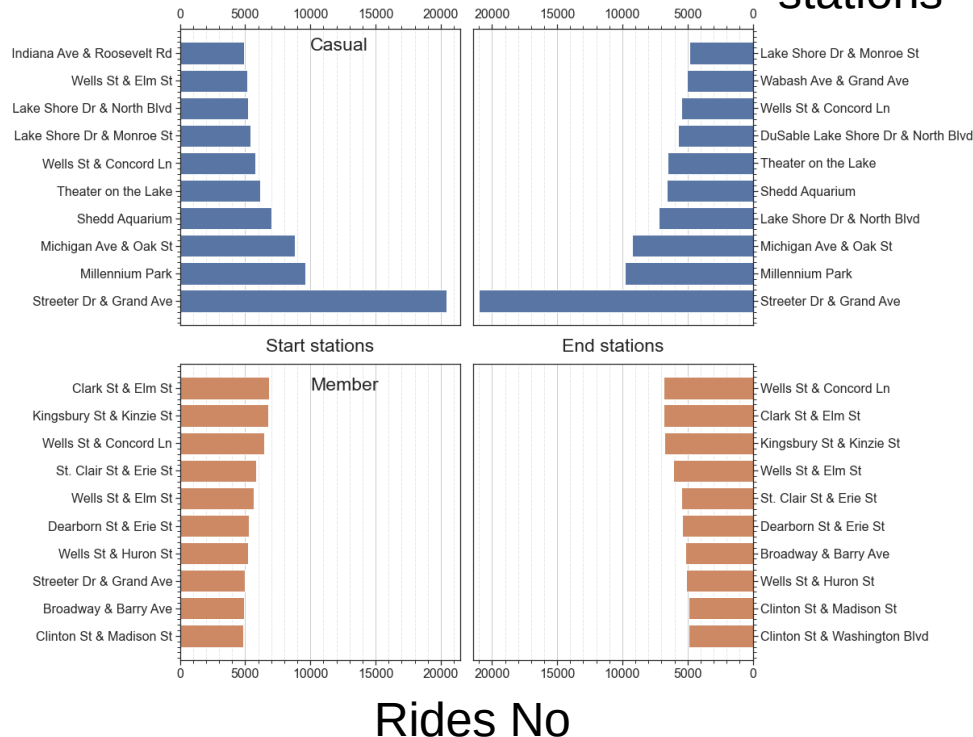
\*More details in appendix D

# Summer analysis: Top 10 bike stations

Start  
stations

Weekday

End  
stations



- **Top 3** stations for **casual riders**, compared to **members**:
  - ➔ **More rides**, resulting in a **larger decline**
- During the **weekend\*** **casual riders** and **members** have **more stations in common** compared to weekdays.

\*Detailed analysis in appendix E

# Common patterns between casual and member rides

- Similar **season preferences** for riders. **Summer** is the preferred season. During the summer:
  - Most rides during the **weekday period**.
  - **Weekday peak** hours between **17:00-19:00**.
  - **Weekend**: broader peak between **10:00-20:00**.
  - **Friday and Saturday** nights have more rides compared to other days
  - Between top 10 bike stations casual and member riders use more **common bike stations** during the **weekend**



# Differences between casual and member riders

- **Days of weekend** have much more rides for casual riders compared to weekdays. Members prefer **weekdays**.
- Casual rides have a **longer duration** than members
- Casual riders make **more round trips** than members.
- During summer (52% of all casual rides):
  - **Friday**, casual rides are more than **other weekdays**.
  - **Friday and Saturday nights** are noticeably more for casual riders than members.
  - During **weekdays**, casual riders **do not** prefer to cycle for the **morning commute** (as members do).
  - No of **rides** in the **top 3 bike** stations is much larger for casual riders than members.

# Suggestions

1) **Target specific groups** that will gain when becoming annual members: groups that use cyclistic often throughout the week.

i) Put more focus on weekday group (80%):

- Peak hour (**17:00-19:00**) includes **12% of all casual rides**
- Increased hour zone (**12:00 – 21:00**) include **40% of all casual rides**.

Why? Probably use of cyclistic throughout the week (to commute), thus have more to gain with annual membership, thus, **higher conversion probability**.

ii) Put less effort/budget on other groups (20%):

- Friday-Saturday night group / riders that make long trips / riders that make round trips / weekend group.

# Suggestions (cont'd)

## 2) Be **time specific** when advertising:

- Start advertising more aggressively on **March**.

Why?

Rides start increasing and keep increasing for the following months. Riders that will use cyclistic for the following months will have **more to gain** with annual membership early through the year. Thus **higher conversion probability** for riders that start during march.

- Advertise more at the **end of peak hour in the afternoon** during peak days.

Why?

- Riders will not have the focus of work and will not skip the ad that easily.

# Suggestions (cont'd)

- 3) **Define metrics** to help in constant evaluation and adjustment of the ad campaign:
  - Percent of weekday change of casual and member rides compared to previous week.

Aim: reduce casual rides and increase member rides during peak hours.

  - Keep monitoring how ride peaks in hourly graphs change for weekdays, to redefine time of ads and or target group on a weekly basis.
  - **Verify that company gains when casual riders are converted**, early in the process. Cancel campaign if original hypothesis is not true.



# Appendix

- A: Seasonal round trips
- B: Daily hourly analysis for each season
- C: Summer hourly analysis
- D: Summer duration analysis
- E: Top 10 Summer bike stations (Weekend)

# Appendix A: Seasonal round trips

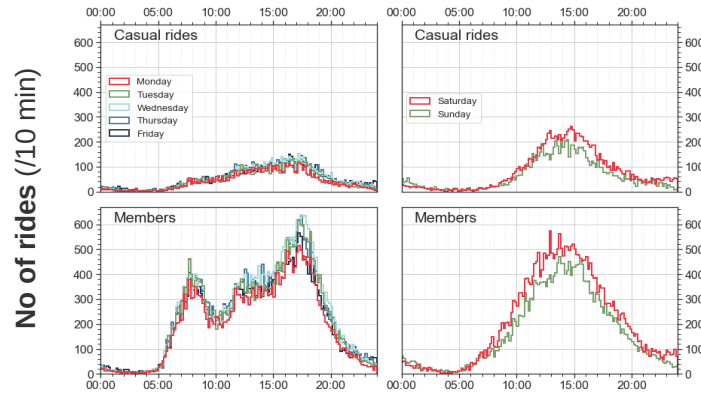
We calculated the percent of casual and member riders for

- Trips during:
  - Weekday
  - Weekend
  - Week
- **Per day of:**
  - Weekday (sum / 5)
  - Weekend (sum / 2)
  - Week (sum / 7)

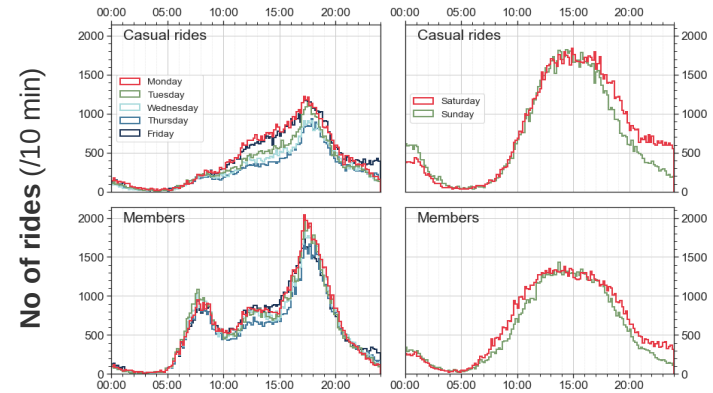
| Season | Period   | Casuals (%) |         | Members (%) |         |
|--------|----------|-------------|---------|-------------|---------|
|        |          | Sum         | Per day | Sum         | Per day |
| Winter | Weekdays | 6           | 1.1     | 2           | 0.4     |
|        | Weekend  | 4           | 2.1     | 1           | 0.5     |
|        | Total    | 10          | 1.4     | 3           | 0.4     |
| Spring | Weekdays | 6           | 1.3     | 2           | 0.4     |
|        | Weekend  | 6           | 3.0     | 1           | 0.5     |
|        | Total    | 12          | 1.8     | 3           | 0.4     |
| Summer | Weekdays | 5           | 1.0     | 2           | 0.3     |
|        | Weekend  | 3           | 1.7     | 1           | 0.4     |
|        | Total    | 8           | 1.2     | 2           | 0.4     |
| Autumn | Weekdays | 7           | 1.3     | 2           | 0.5     |
|        | Weekend  | 5           | 2.7     | 1           | 0.5     |
|        | Total    | 12          | 1.7     | 3           | 0.5     |

# Appendix A: Daily hourly analysis for each season

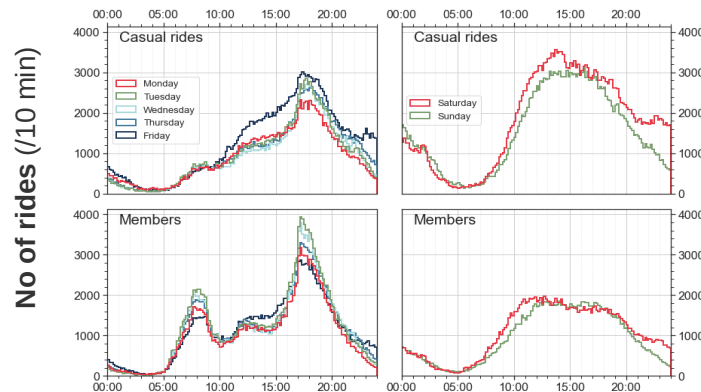
## Winter



## Spring

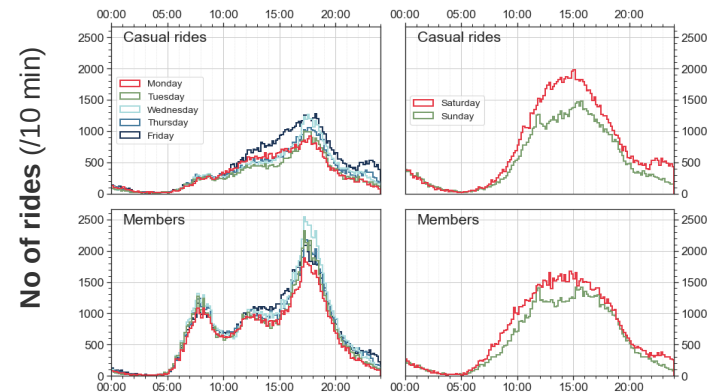


## Summer



Starting hour

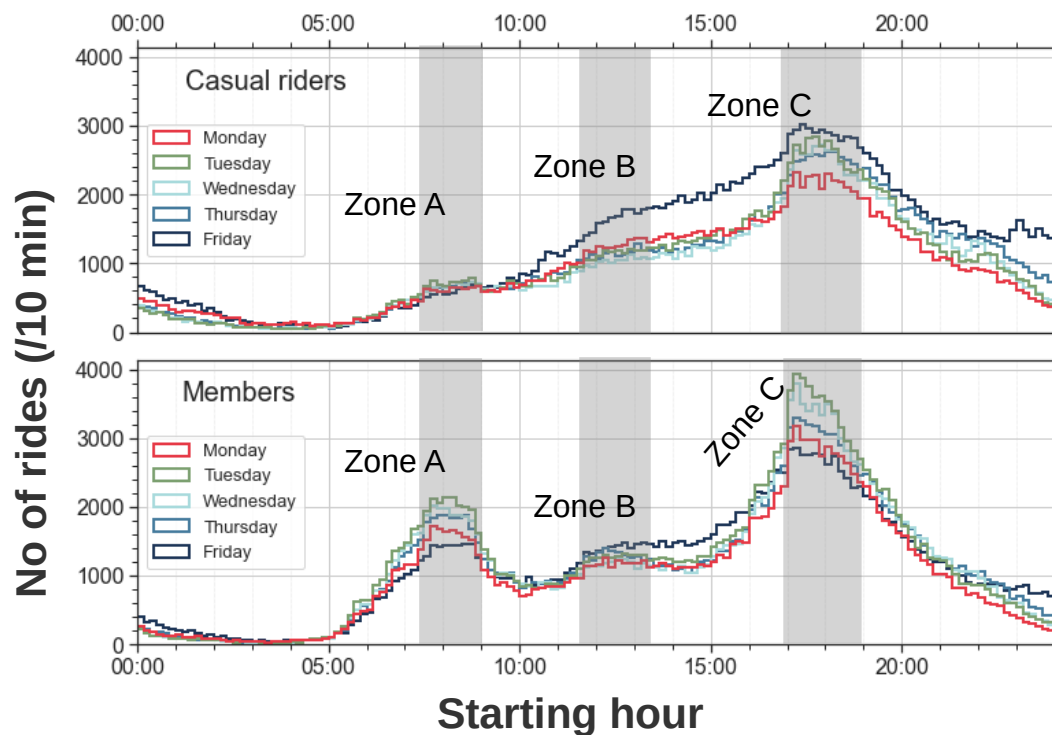
## Fall



Starting hour

# Appendix C: Summer hourly analysis

## Weekdays

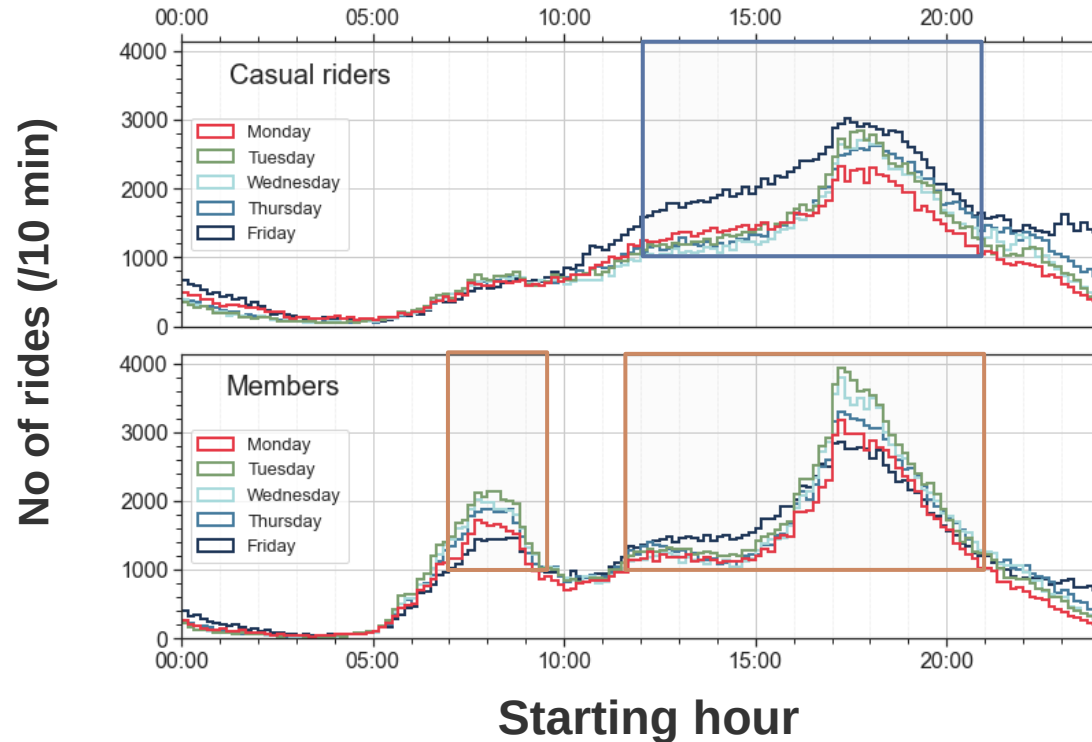


| Time period           |                | Casual rides | Member rides |
|-----------------------|----------------|--------------|--------------|
| Zone A<br>07:30–09:00 | Peak           | ~600         | ~1700        |
|                       | Yearly percent | 2%           | 7%           |
| Zone B<br>11:30–13:30 | Peak           | ~1200        | ~1300        |
|                       | Yearly percent | 6%           | 7%           |
| Zone C<br>17:00–19:00 | Peak           | ~2600        | ~3500        |
|                       | Yearly percent | 12%          | 16%          |

**Peak:** the no of rides per 10 min in the time period specified.  
**Yearly percent:** the percent of the rides done in this period (from casuals or members) for all the yearly rides.

# Appendix C: Summer hourly analysis

## Weekdays (cont'd)

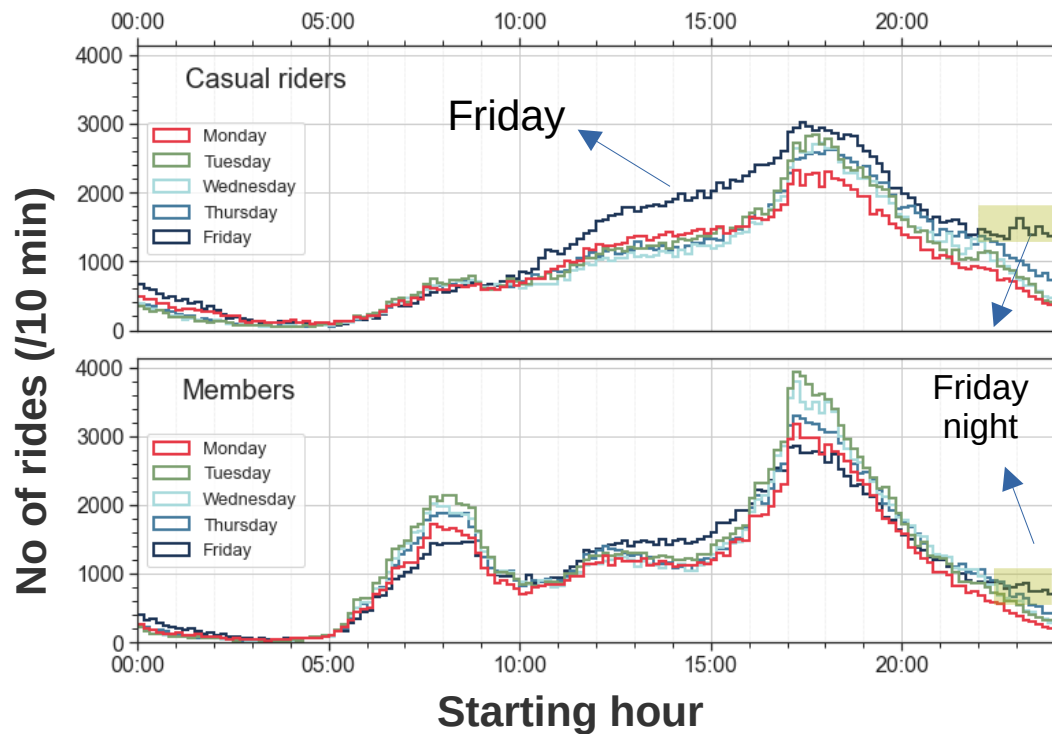


- **Increased rides zone (> 1000)**
  - **12:00 – 21:00 for casuals.**  
Casual rides during this time throughout the year are **40% of all the casual rides**.
  - **07:00-09:30 & 11:30 – 21:00 for members.**

\*More details in appendix B

# Appendix C: Summer hourly analysis

## Weekdays (cont'd)

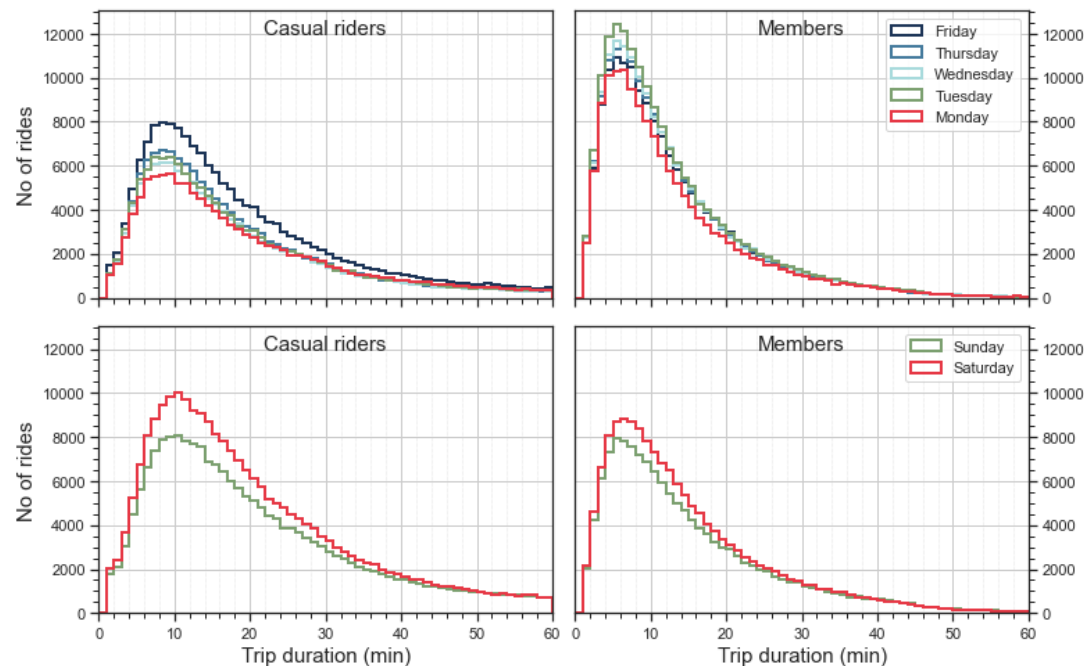


### Friday:

- Increased **casual rides** (after 10:00).
- **Casual riders** use cyclistic more during **friday night** compared to **members**.

# Appendix D: Summer trips duration analysis

## Trip duration – day analysis



|         |                      | Casual<br>(min) | Members<br>(min) |
|---------|----------------------|-----------------|------------------|
| Weekday | Mean duration        | 28              | 14               |
|         | <b>Peak duration</b> | 8-9             | 5-6              |
| Weekend | Mean duration        | 32              | 16               |
|         | <b>Peak duration</b> | 10              | 5-6              |

Further analysis showed that **9% of casual rides** is for more than **60min**, compared to less than **1% for members**. Our analysis suggests that these rides are recreational.

Key take away:

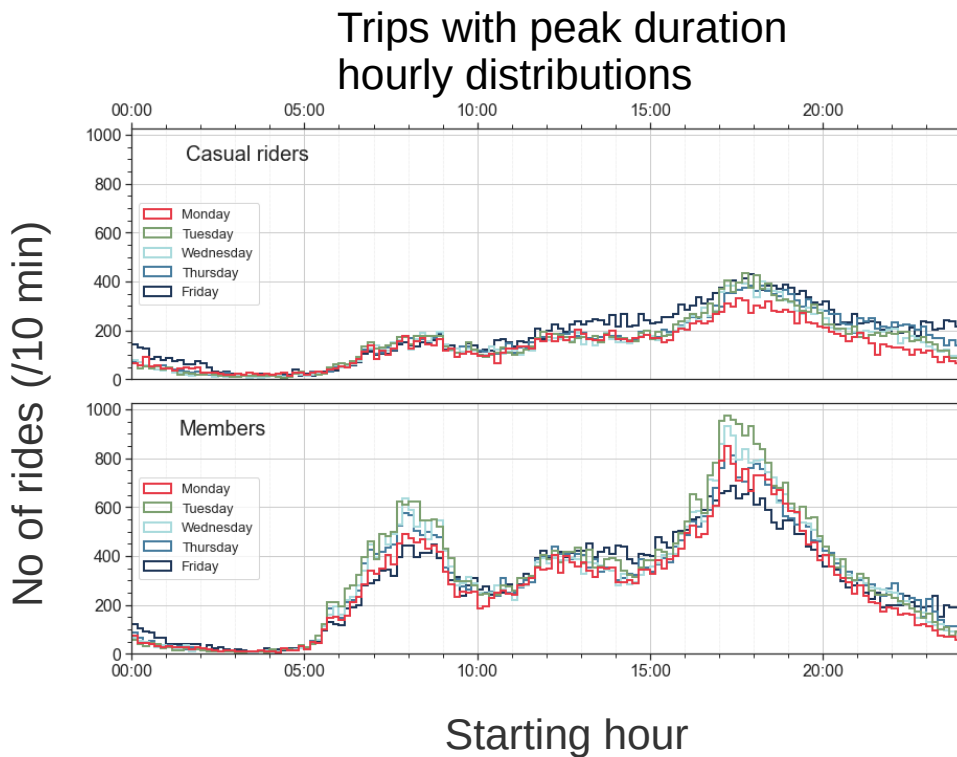
**Casual rides** are **longer** than **member rides**.

# Appendix D: Summer trips duration analysis (cont'd)

Focusing on trips with peak duration:

- **When** do they happen?
  - Throughout the day, **same trip distribution** as all the rides.

Analysis included **only** trips with durations 4-8 min for members and 8-12min for casuals (4 min intervals).



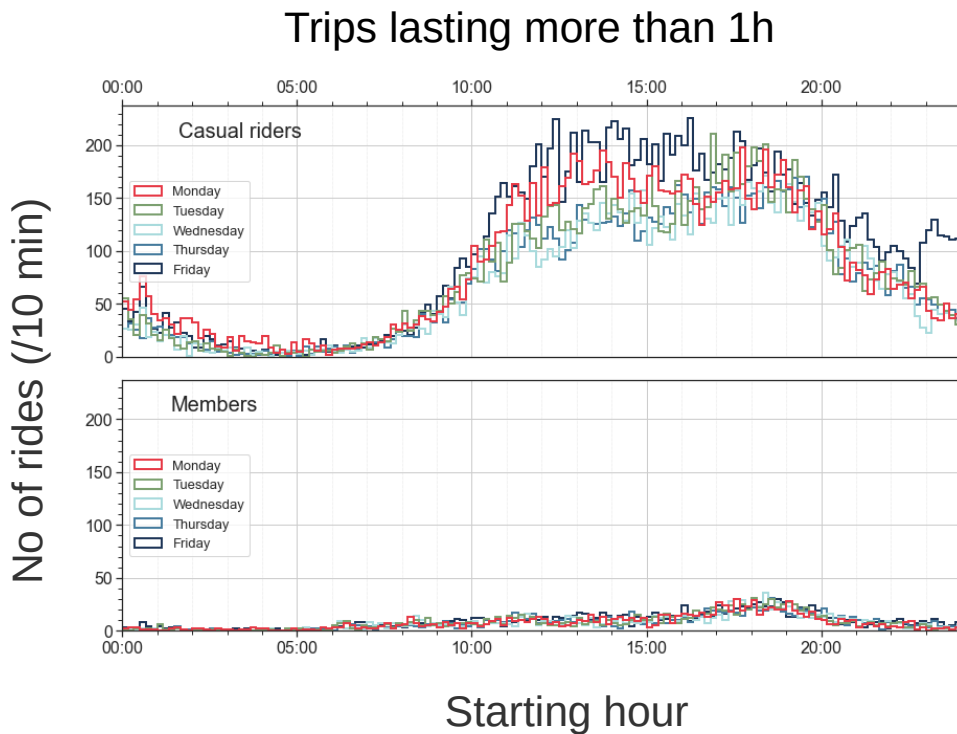


# Appendix D: Summer trips duration analysis (cont'd)

Focusing on trips with duration >1h:

- Hourly profile for casuals is **similar with the weekend profile** for all casual riders.
  - This suggests that these rides are **recreational**.

Analysis included **only** trips with durations between 1h - 24h.



# Appendix E: Top 10 Summer bike stations



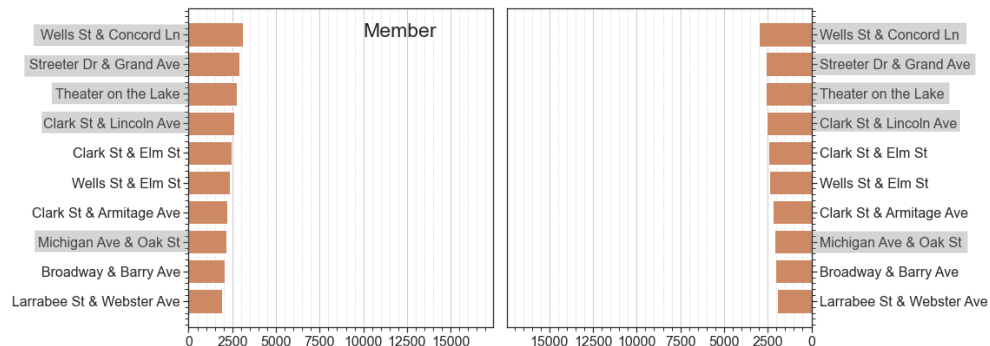
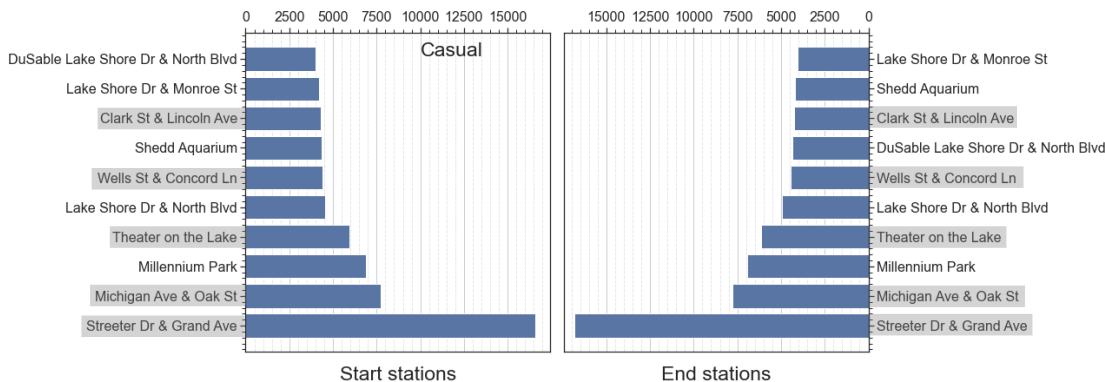
- **Top 3 stations for casual riders, compared to members have:**
  - ➔ **More rides.**
  - ➔ **Larger decline**
- Casual riders and members have more **start stations in common** (highlighted) than end stations.
- Top 10 **starting and ending** stations are almost the **same** (except squared) and with **similar order of preference** for casual riders, as well as for members.

# Appendix E: Top 10 Summer bike stations (cont'd)

Start  
stations

Weekend

End  
stations



- **Casual** and **member** rides have **5 stations in common**, for starting and ending (more than during weekdays).
- Top 10 **starting and ending** stations are the **same** and with **similar order of preference** for **casual** riders, as well as for **members**.
- Casual riders prefer the “**Streeter Dr & Grand Ave**” bike station. It has the highest number of total rides during the summer.