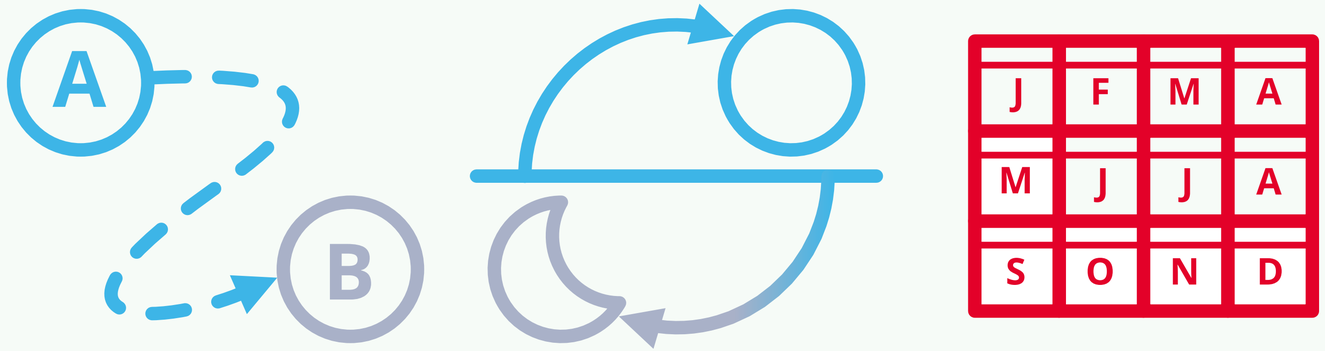
Divvy Bike Share Case Study

To Increase Membership, Know Your Users

analysis by Alex Konczal, Spring 2023
alex.konczal@gmail.com

Company Profile

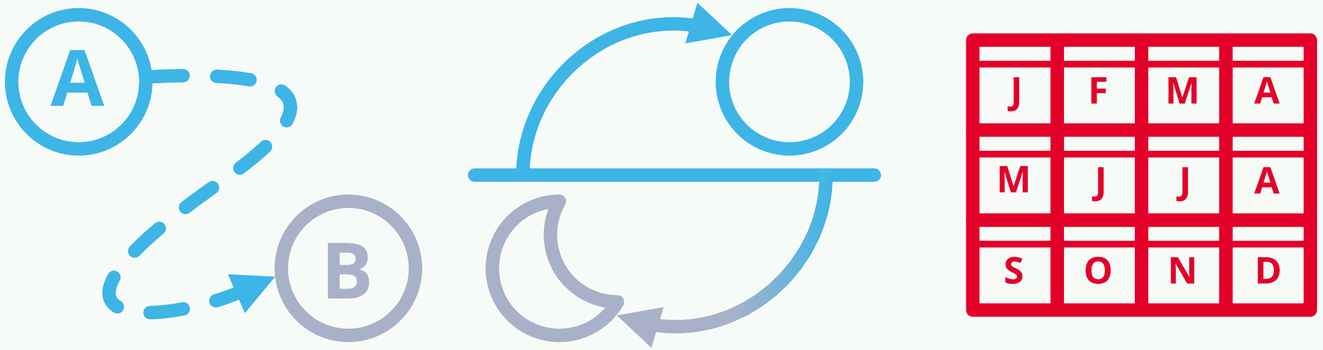
Divvy provides Chicago with an affordable bike share service. Users rent and return classic and electric bikes at docking stations located throughout the city.



Users can pay for an **individual trip pass**, a **full-day pass**, or an **annual membership**. While all users are charged for each individual use, longer pass holders pay lower rates than the one-time use customers.

Business Questions

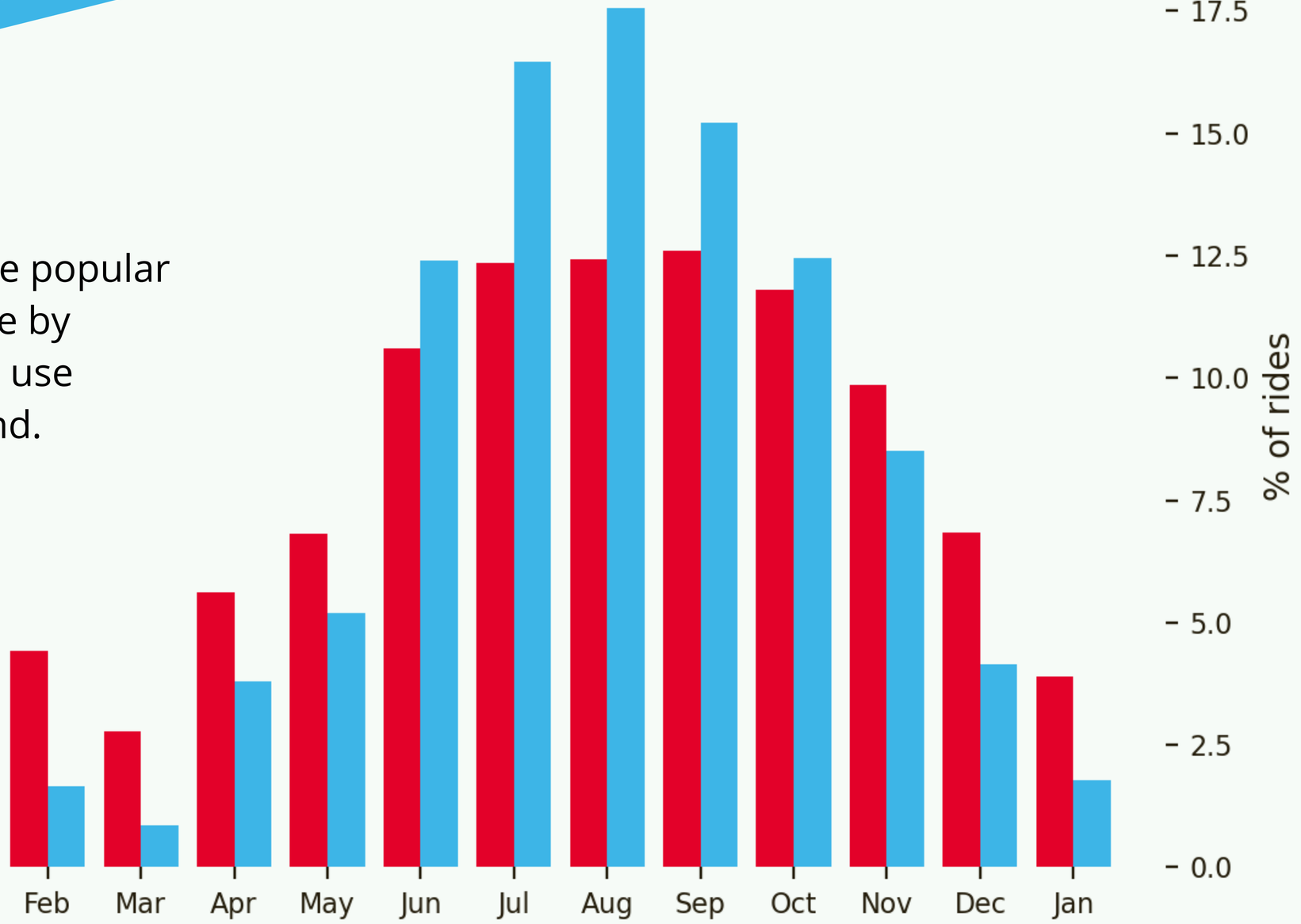
Currently, Divvy is aiming to increase profit by **converting** existing **"casual"** users (single-trip or day pass holders) to **annual members.**



Divvy has provided data recorded by their bikes listing where and when users rent and return bikes, along with whether the bike used was electric or classic. Using this data, we can **build user profiles** and **develop marketing strategies** targeting existing Divvy customers.

Use Patterns - When?

Predictably, bikes are more popular in warmer months, but use by **members** is steadier than use by **casual users** year-round.

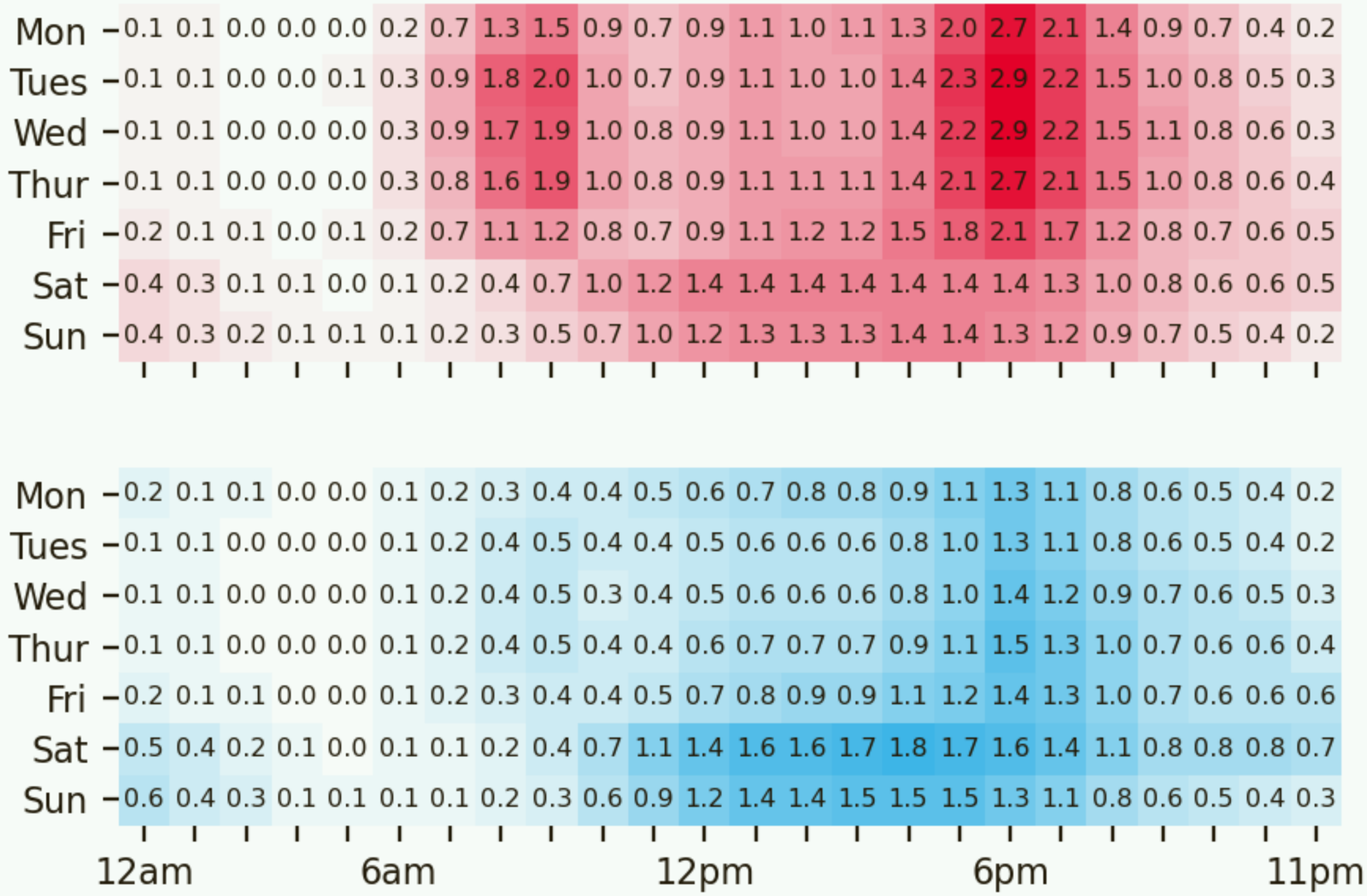


use % by month

Use Patterns - When?

There's a clear difference between groups when we look at use % by ride day and start time:

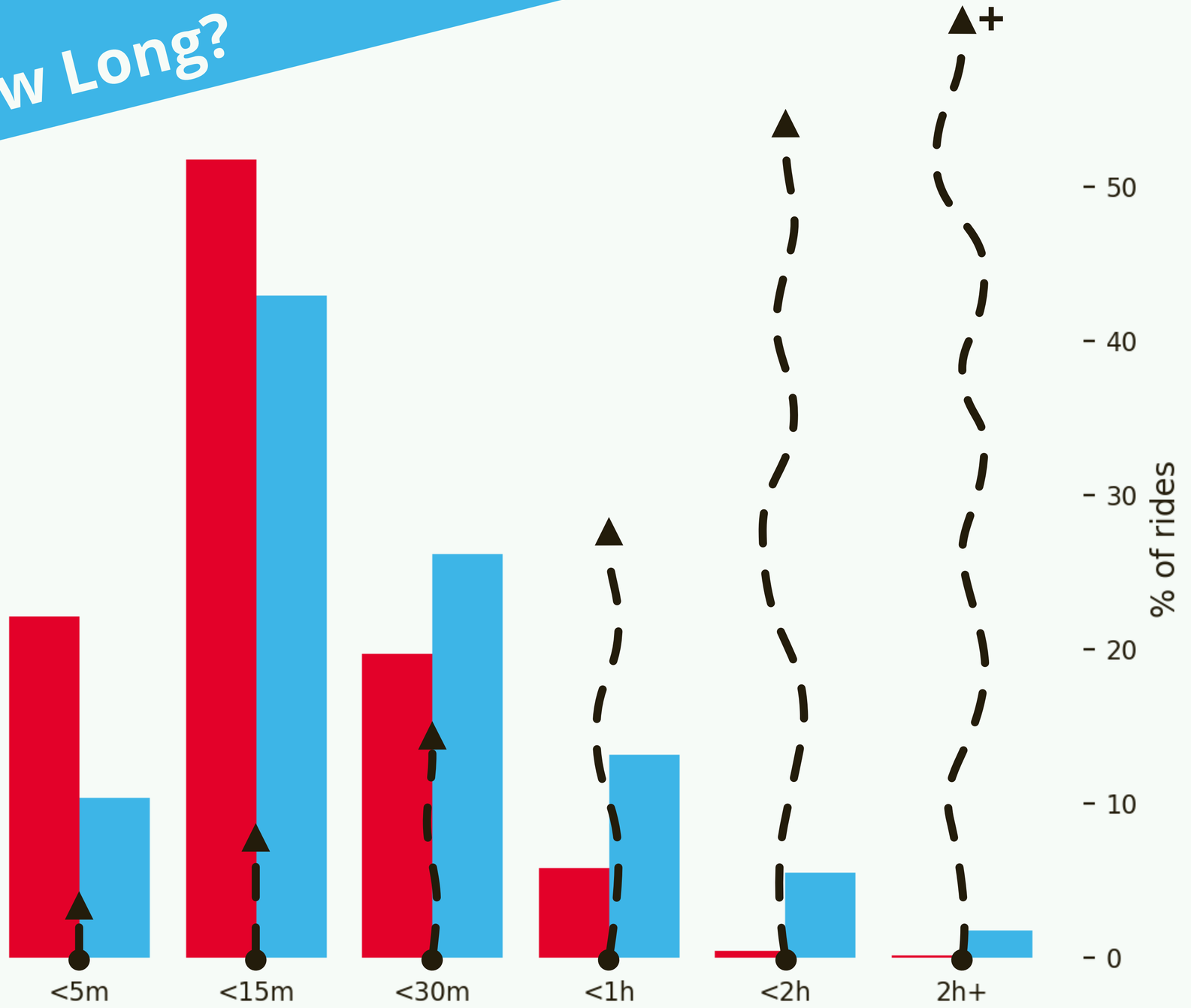
-**Members** ride most at the beginning and end of the standard workday.
-**Casuals** ride most on weekend afternoons.



Use Patterns - How Long?

Trip length also differs between user types.

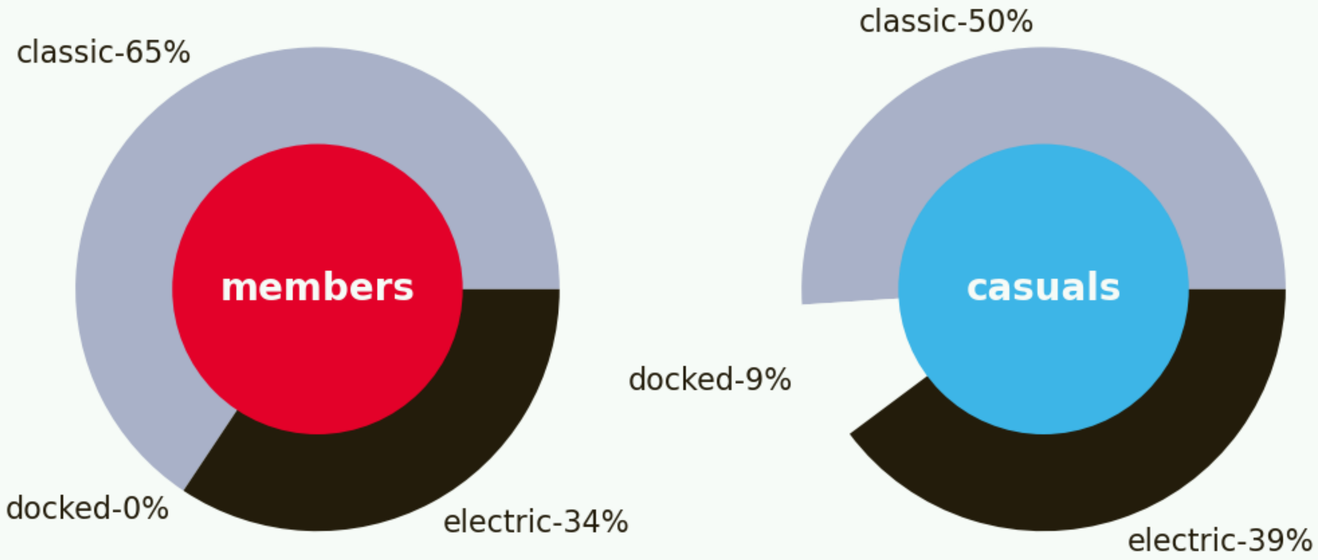
-**Members** overwhelmingly take short trips, typically under 3 miles at average city biking speeds.
-**Casuals** are much more likely to take a longer trip.



Use Patterns - Which?

Both **members** and **casuals** appear to prefer classic pedal powered bikes to electrically assisted bikes, but this may be a matter of supply.

Casual users also logged non-trivial length rentals of "docked bikes", but all Divvy bikes must be docked. Divvy hasn't cleared up what this term means, so the bike type for these trips remains unclear.



Use Patterns - Where?

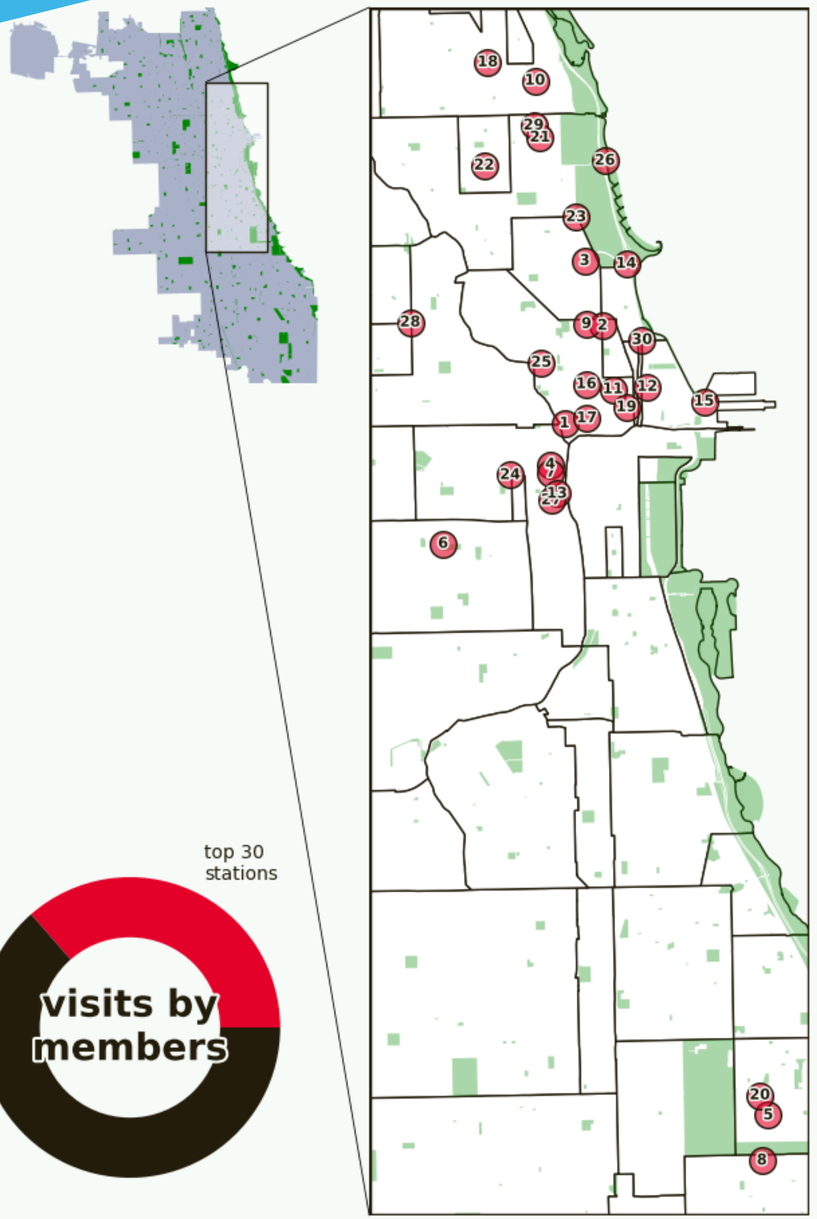
There are hundreds of stations throughout the city, and some are visited much more than others, whether as the start or end point of a journey.

Divvy users' 30 most visited stations occur in a narrow band largely centered around the City's center and the harbor.

rank	top 30 stations for all riders	visits
1	Streeter Dr & Grand Ave	142214
2	DuSable Lake Shore Dr & North Blvd	77414
3	DuSable Lake Shore Dr & Monroe St	76825
4	Michigan Ave & Oak St	74852
5	Wells St & Concord Ln	69087
6	Millennium Park	66112
7	Clark St & Elm St	64844
8	Theater on the Lake	62347
9	Kingsbury St & Kinzie St	62045
10	Wells St & Elm St	57460
11	Broadway & Barry Ave	54193
12	Clark St & Armitage Ave	53846
13	Wabash Ave & Grand Ave	51083
14	Clark St & Lincoln Ave	50497
15	Indiana Ave & Roosevelt Rd	49885
16	Clinton St & Madison St	49769
17	Wilton Ave & Belmont Ave	49365
18	Clinton St & Washington Blvd	49321
19	Dearborn St & Erie St	48856
20	Clark St & Wrightwood Ave	47714
21	University Ave & 57th St	47671
22	Shedd Aquarium	47202
23	St. Clair St & Erie St	47006
24	Wells St & Huron St	46944
25	Michigan Ave & Washington St	45394
26	Ellis Ave & 60th St	45196
27	LaSalle St & Illinois St	44682
28	Wells St & Hubbard St	44484
29	Sheffield Ave & Fullerton Ave	43966
30	Clark St & Newport St	42944

Use Patterns - Where?

Members' top 30 stations are spread slightly wider than the overall top 30, and exclude the Loop, Chicago's central business district and commerical core of the city. There's also a small cluster of top stations near the Washington & Hyde Park neighborhoods.

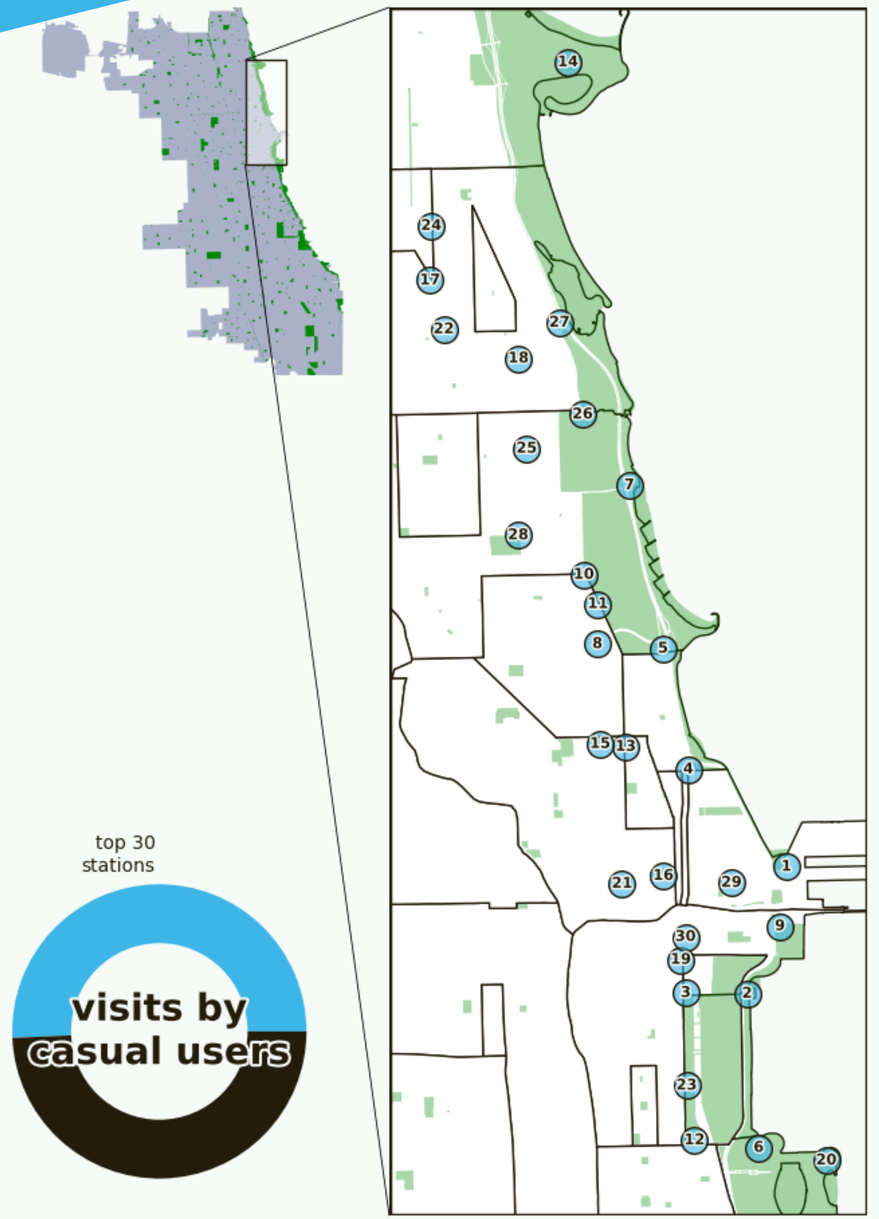


rank	top 30 stations for members	visits
1	Kingsbury St & Kinzie St	46659
2	Clark St & Elm St	41586
3	Wells St & Concord Ln	39897
4	Clinton St & Washington Blvd	39200
5	University Ave & 57th St	37412
6	Loomis St & Lexington St	37273
7	Clinton St & Madison St	36454
8	Ellis Ave & 60th St	36360
9	Wells St & Elm St	35181
10	Broadway & Barry Ave	32678
11	Dearborn St & Erie St	31205
12	St. Clair St & Erie St	31078
13	Canal St & Adams St	30525
14	DuSable Lake Shore Dr & North Blvd	30415
15	Streeter Dr & Grand Ave	30407
16	Wells St & Huron St	29730
17	Wells St & Hubbard St	29233
18	Wilton Ave & Belmont Ave	29050
19	Wabash Ave & Grand Ave	29043
20	Ellis Ave & 55th St	28594
21	Clark St & Wrightwood Ave	28554
22	Sheffield Ave & Fullerton Ave	28454
23	Clark St & Armitage Ave	28211
24	Green St & Madison St	27734
25	Larrabee St & Kingsbury St	26781
26	Theater on the Lake	26630
27	Clinton St & Jackson Blvd	26558
28	Ashland Ave & Division St	26344
29	Clark St & Drummond Pl	26190
30	Michigan Ave & Oak St	26144

Use Patterns - Where?

Casual users' top 30 stations form a shorter, much more narrow cluster in the City's main commercial neighborhoods, with many stations in and near the Loop.

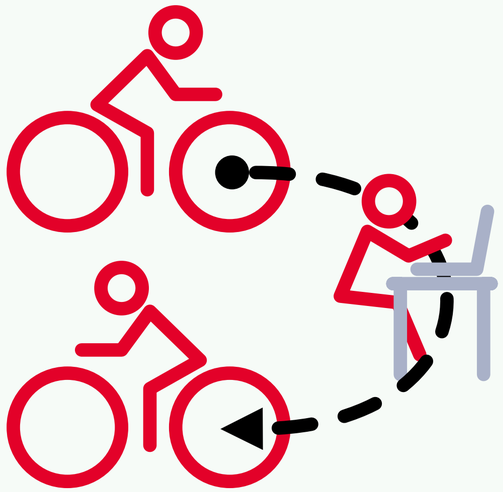
Over half of all casual users start or end their Divvy ride at one of these 30 stations.



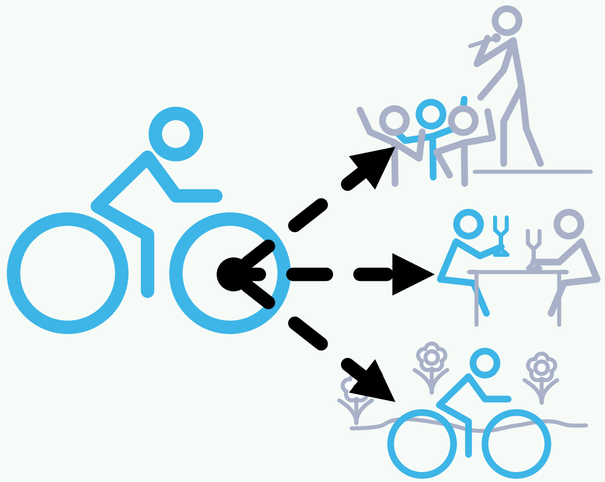
rank	top 30 stations for casual users	visits
1	Streeter Dr & Grand Ave	111807
2	DuSable Lake Shore Dr & Monroe St	58217
3	Millennium Park	49379
4	Michigan Ave & Oak St	48708
5	DuSable Lake Shore Dr & North Blvd	46999
6	Shedd Aquarium	37375
7	Theater on the Lake	35717
8	Wells St & Concord Ln	29190
9	Dusable Harbor	25864
10	Clark St & Armitage Ave	25635
11	Clark St & Lincoln Ave	25195
12	Indiana Ave & Roosevelt Rd	24605
13	Clark St & Elm St	23258
14	Montrose Harbor	22997
15	Wells St & Elm St	22279
16	Wabash Ave & Grand Ave	22040
17	Clark St & Newport St	21960
18	Broadway & Barry Ave	21515
19	Michigan Ave & Washington St	21169
20	Adler Planetarium	20988
21	LaSalle St & Illinois St	20360
22	Wilton Ave & Belmont Ave	20315
23	Michigan Ave & 8th St	20265
24	Sheffield Ave & Waveland Ave	19735
25	Clark St & Wrightwood Ave	19160
26	DuSable Lake Shore Dr & Diversey Pkwy	19100
27	DuSable Lake Shore Dr & Belmont Ave	18969
28	Larrabee St & Webster Ave	18703
29	New St & Illinois St	18640
30	Michigan Ave & Lake St	18443

Insight - User Profiles

This analysis suggests Divvy's users ride for **separate, distinct reasons.**



Members use Divvy to bridge the short gap between home or public transit and work during the week, mostly during warmer months.



Casuals use Divvy to extend what they can do almost exclusively on weekends in warmer months, taking both short trips and pleasure rides.

Insight - Research Needed

Data Collection -

• What does the 'docked_bike' code represent? All Divvy bikes must be docked, so is this type an error?

• Why do 22% of rides have missing or incomplete start/end data? Is this due to bike misuse, hardware damage, software problems, or data pipeline problems?

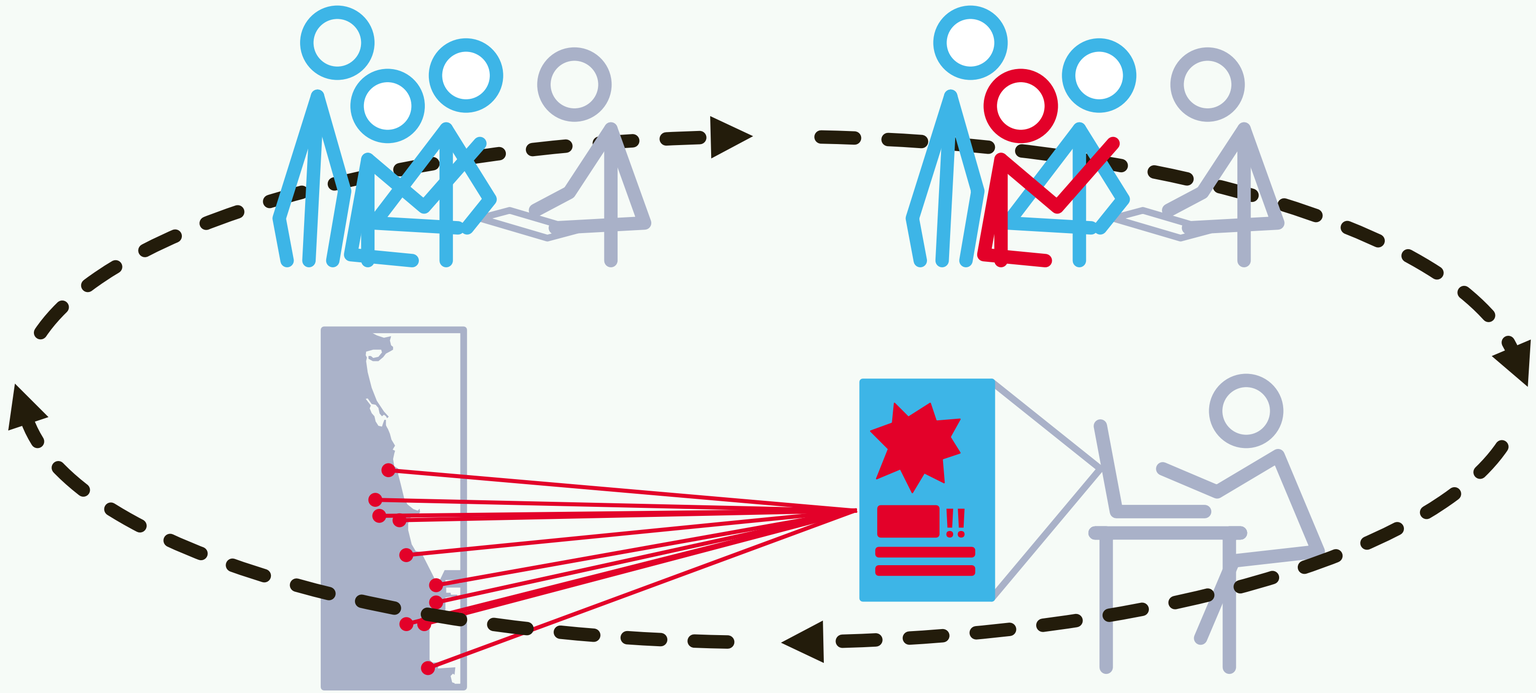
Bike Supply -

• Is bike type choice constrained by supply of each type?

• Are some riders not becoming members due to low bike availability at their prefered stations, whether total or for their prefered type?

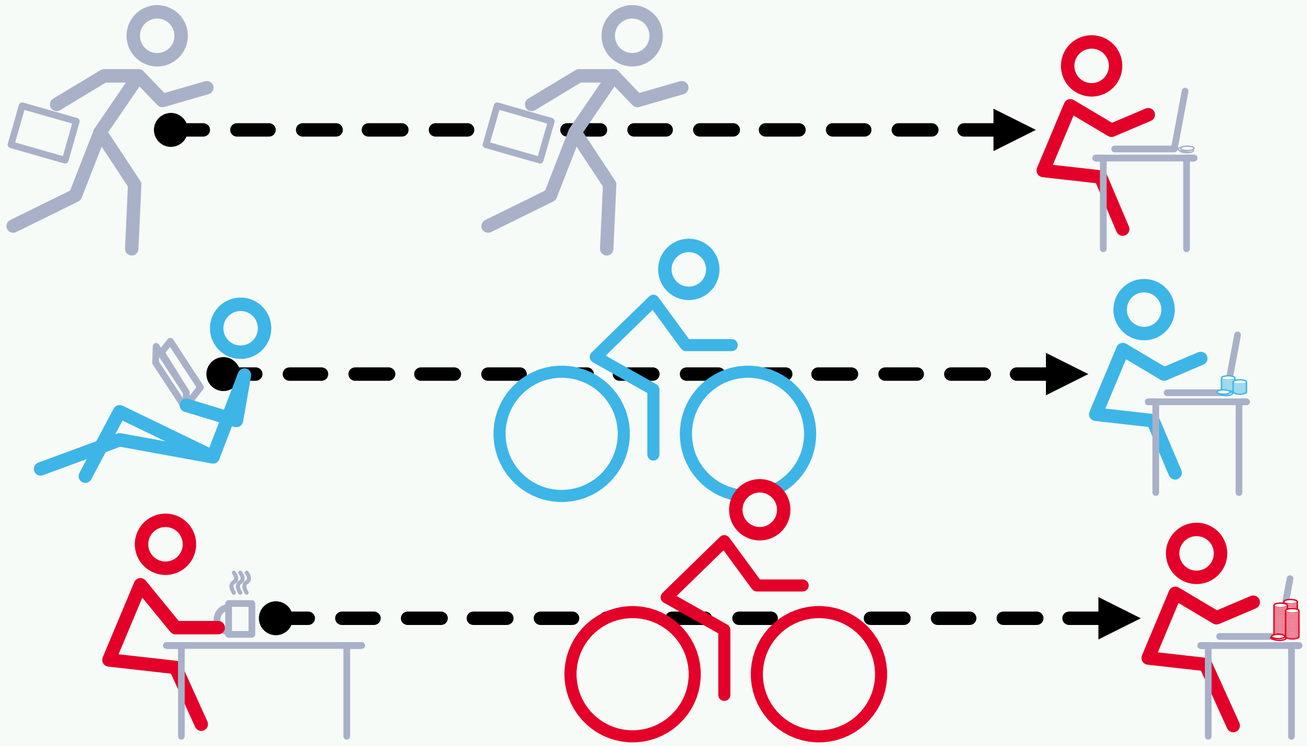
• Can marketing campaigns shift customer use patterns to ease supply pinch points?

Action - Target Top Stations



Even a **small deployment** of any marketing campaign would have an **outsized effect**, as **only 30 stations** need to be targeted to reach **half** of casual users; this means campaign strategies and marketing materials could be iterated on and deployed rapidly with new insights.

Action - Emphasize Savings

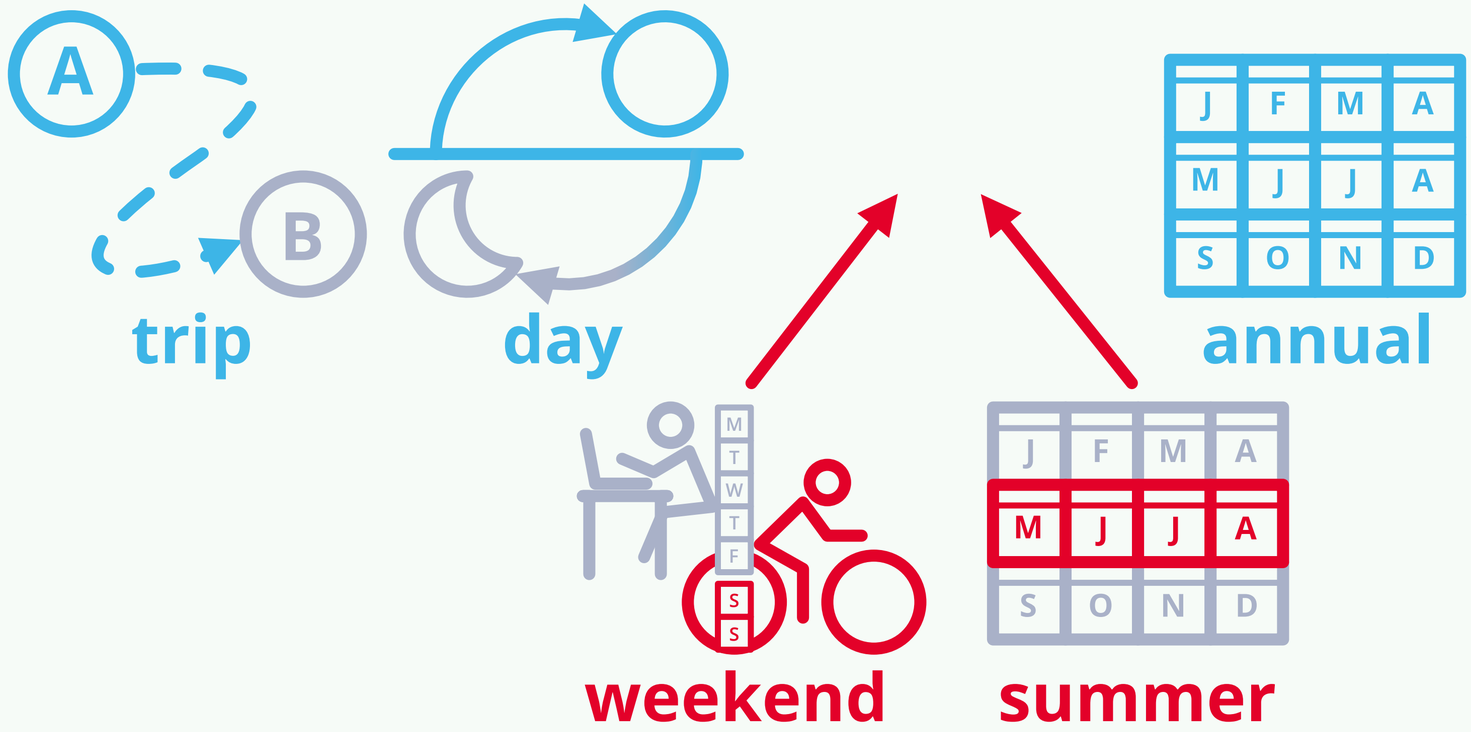


Casual users who fit the **member** demographic could be converted by marketing **protraying what they could be doing** with the time and money saved by commuting with Divvy daily.

Action - Emphasize Fun

Since casuals use bikes to facilitate leisure, Divvy should **partner with businesses** and **events,** trading promotion for deals given to Divvy **members**. This could increase traffic to businesses and add value to Divvy **membership.**

Action - Create New Passes



Some casual users may consider the commitment of an annual membership to be too big. Divvy could **cater to existing use patterns** with a **weekend** and **summer** pass.

Divvy can profit while helping people get to work and have fun.

Divvy data -
data: https://divvy-tripdata.s3.amazonaws.com/index.html
license: https://ride.divvybikes.com/data-license-agreement
Chicago geodata -
data: https://data.cityofchicago.org/
license: https://www.chicago.gov/city/en/narr/foia/data_disclaimer.html
Analysis & dataviz -
conducted using Python
Presentation graphics -
made in Corel Vector