Credit: https://www.cascade.org/

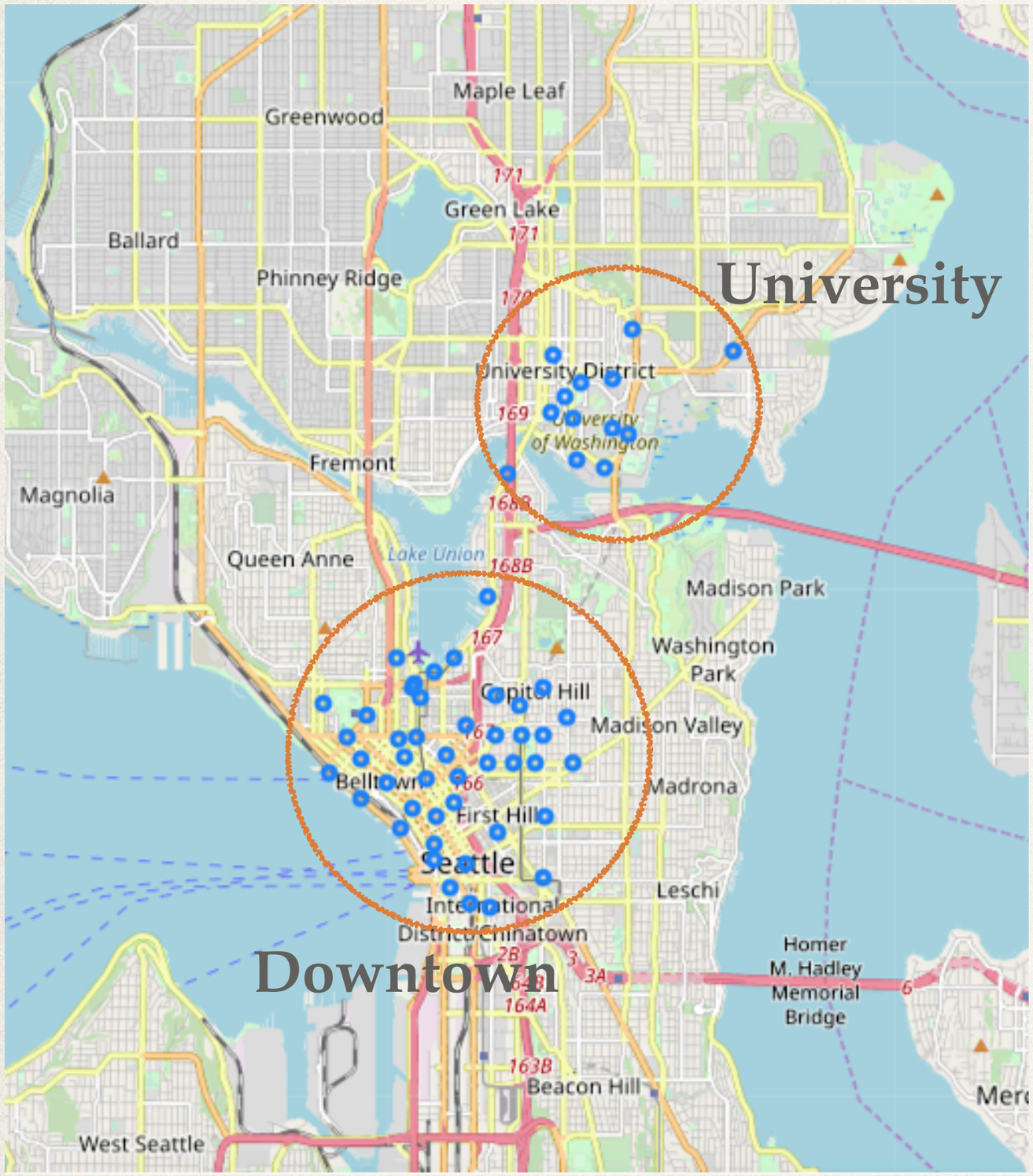
Pronto Bike Sharing Seattle

Capstone Project

Dr. Jorrik Fulda

Content

1. Overview



The blue points are the 54 Docking Stations

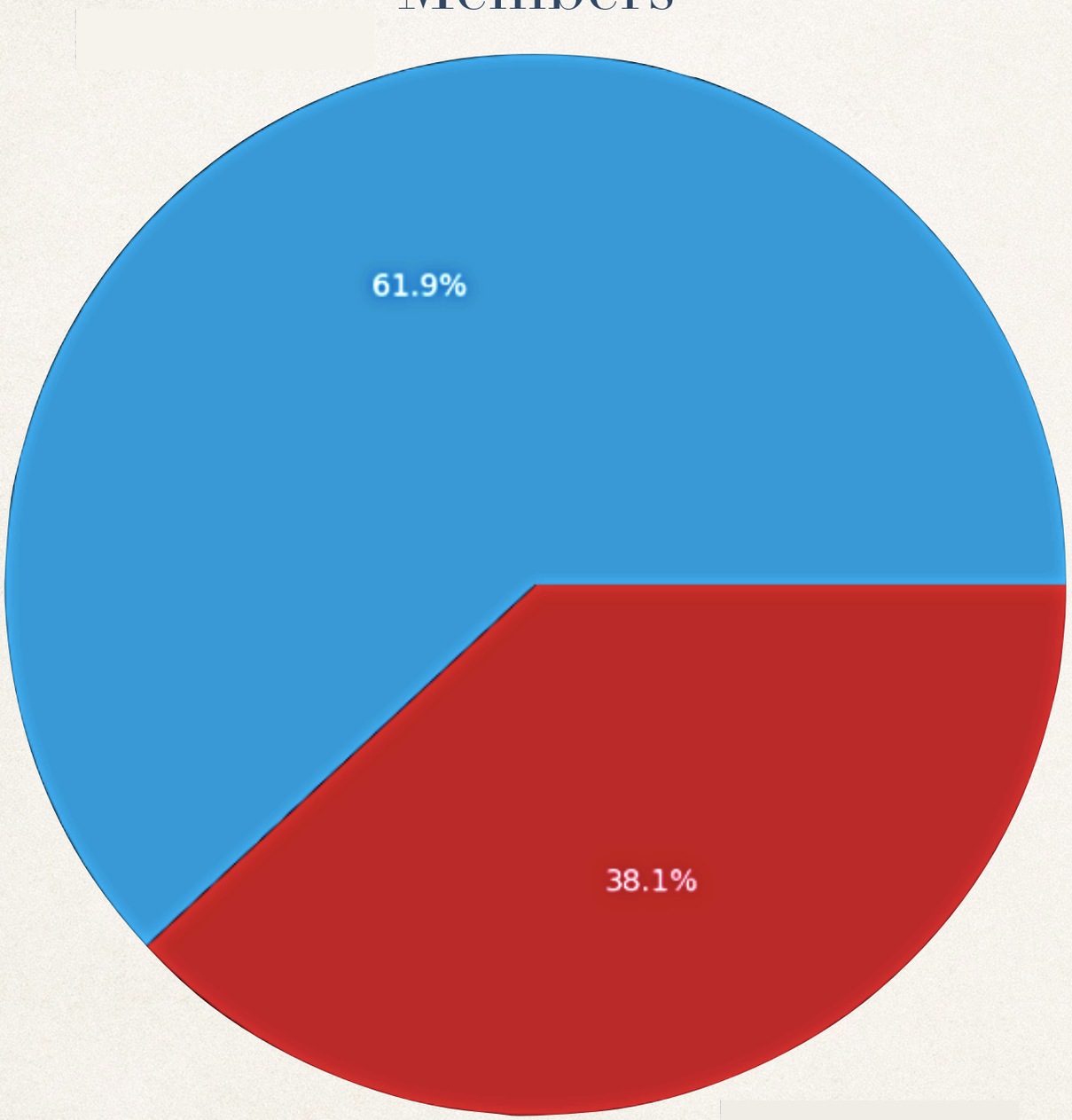
- 54 Docking Stations
- 500 Bikes
- 8 $ day, 85 $ y
- for unlimited 30 min. rides

- 236.000 Trips
- 10/2014 - 09/2016

2. Business Objective

To raise the revenue for pronto based on the analysis of the user behavior!

3. Data Analysis: Usertype

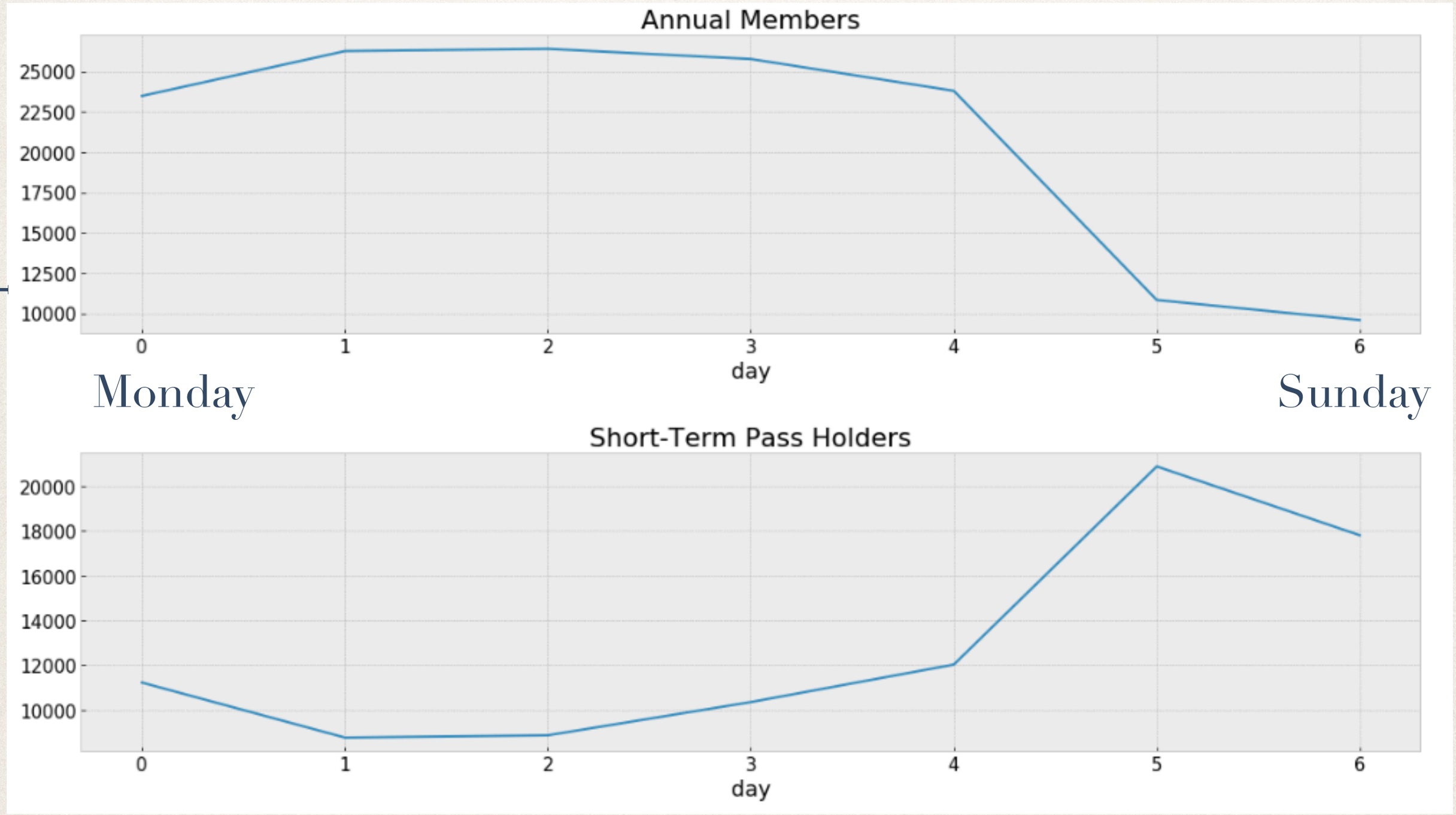


2 Kind of User:

- Annual members, who pay 85 $ for unlimited 30 min. rides throughout the year

- Short-Term Pass Holder, who pay 8$ a day for unlimited 30 min. rides on that day

3. Aggregated Bike Trips of each Group each day of the week



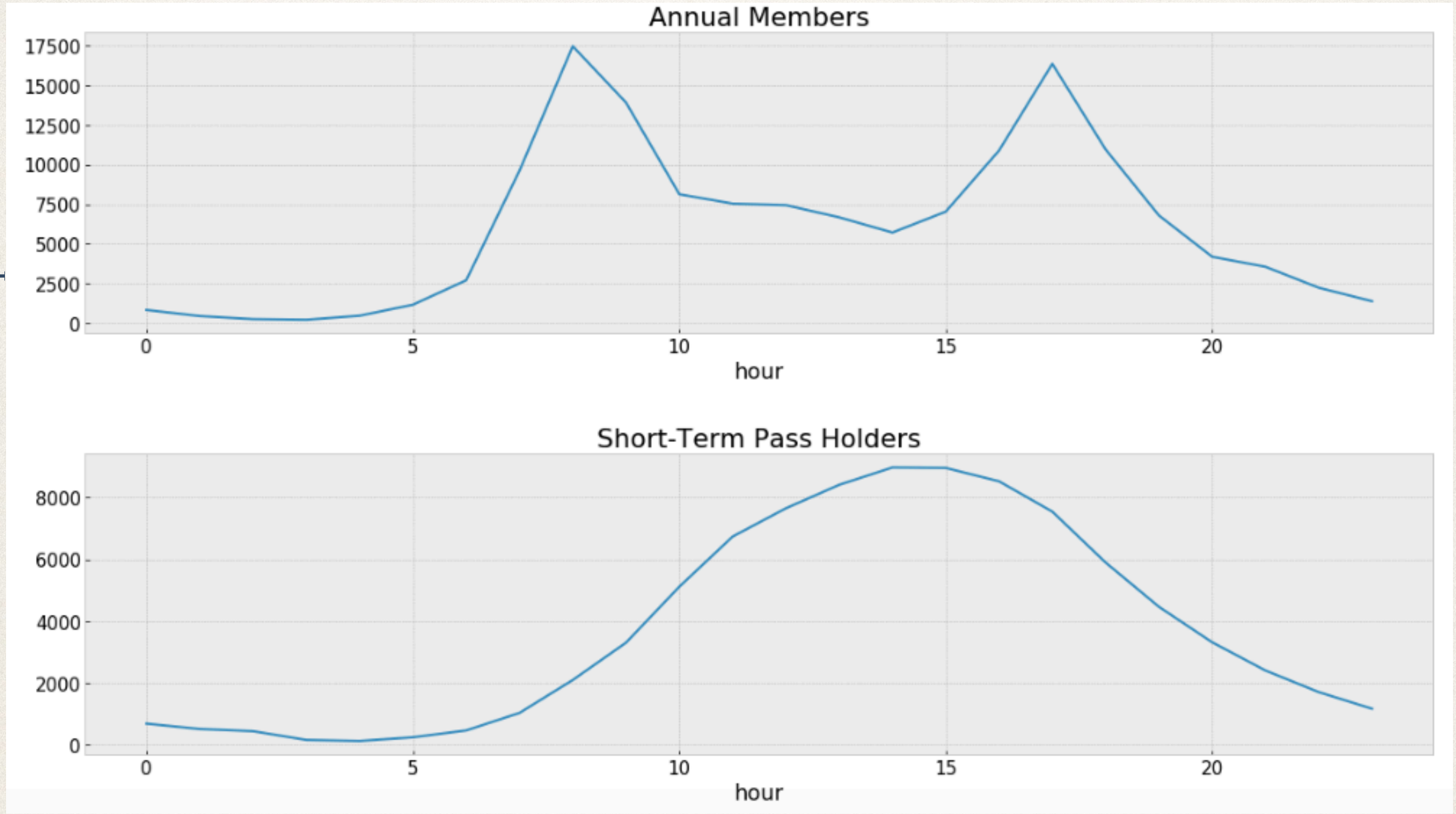
Count of Bike Trips

Monday

Sunday

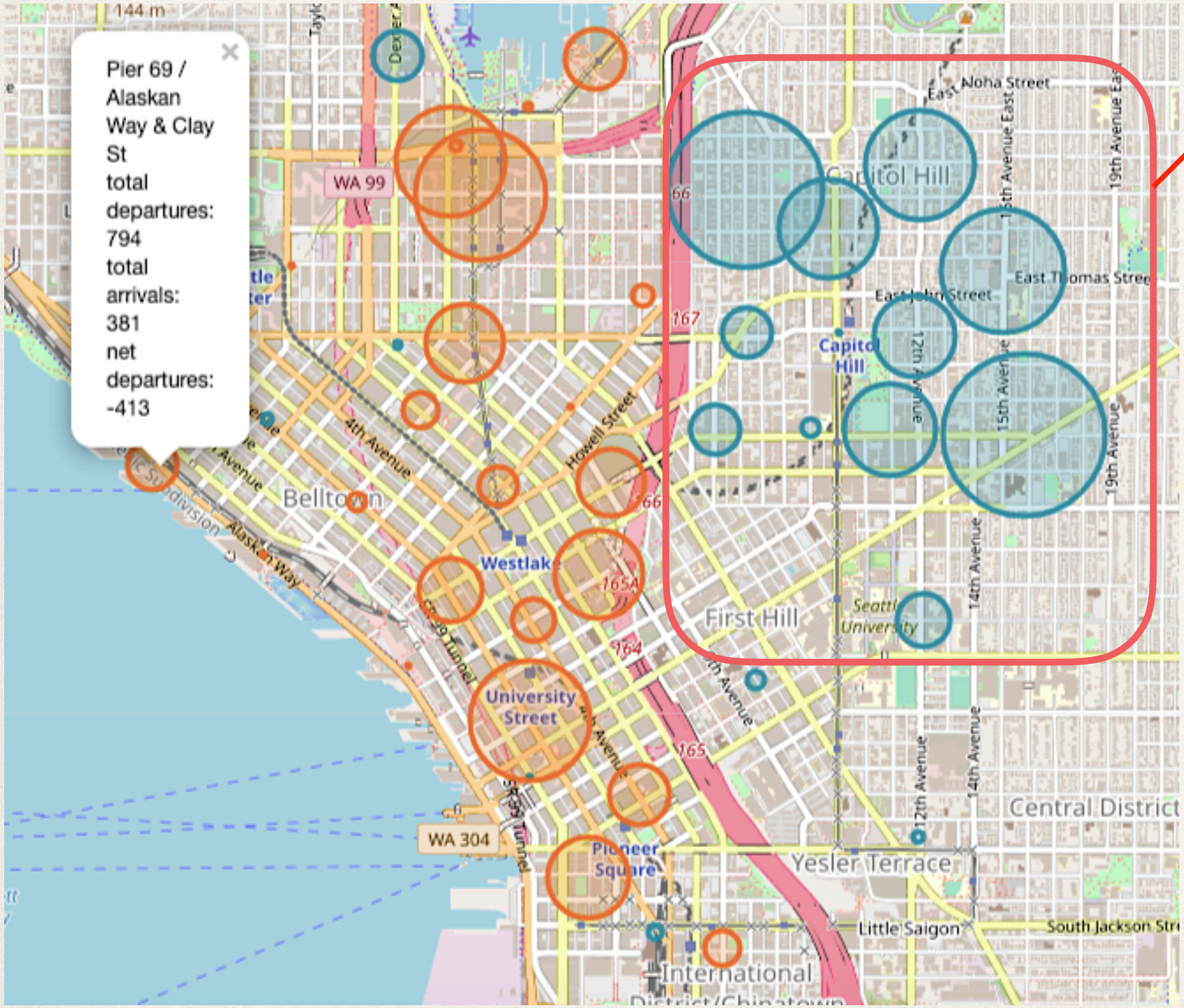
Members are cycling throughout the week, Tourists are cycling on weekends!

3. Aggregated Bike Trips of each Group each hour the day



Members are commuting, tourists start after a late breakfast!

3. Location of aggregated Leasing Commuters did at 8 AM



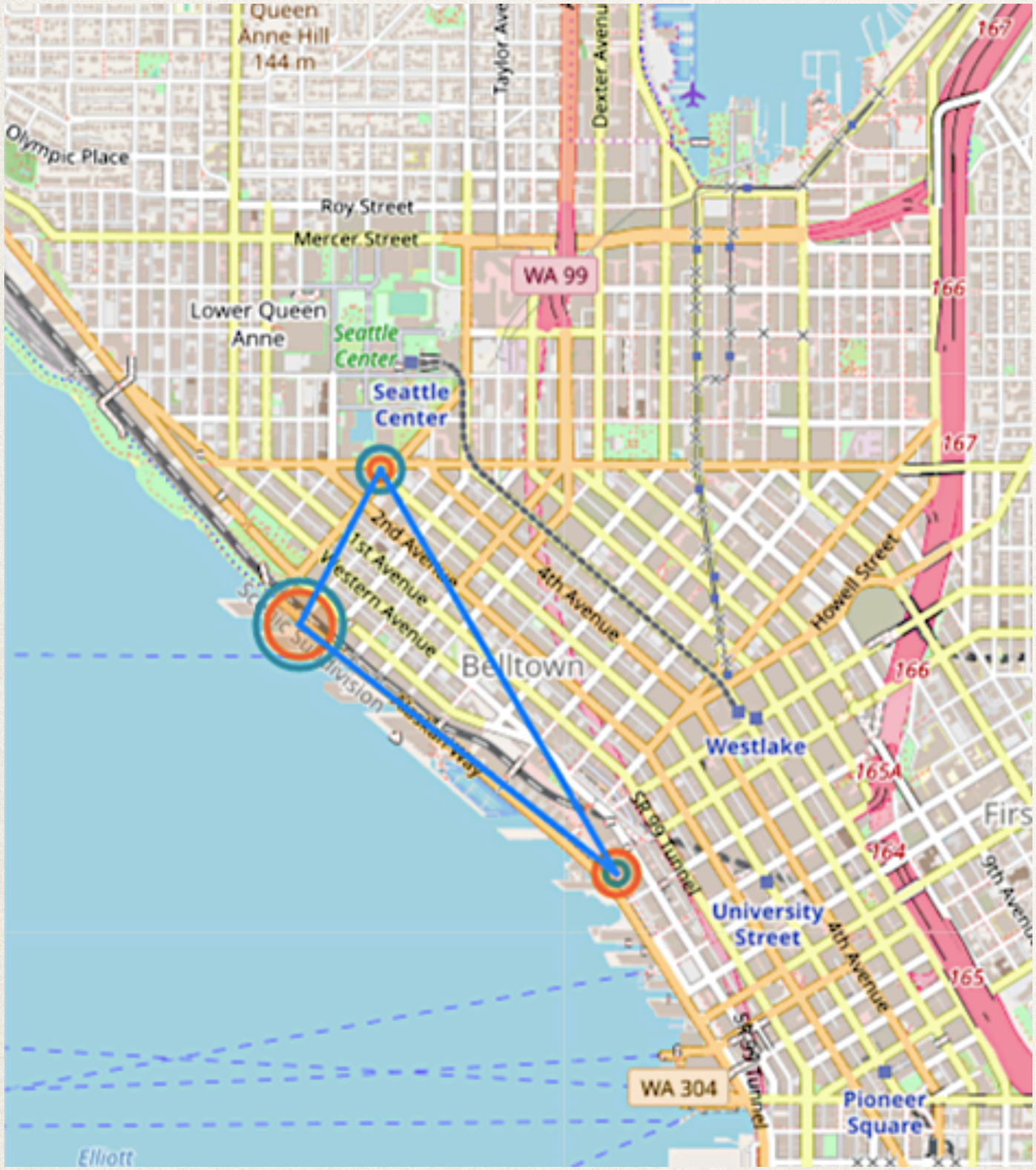
In this area there are more arrivals than departures, the bigger the circle the more bikes were leased/returned

Teal = more arrivals

Tangerine= more departures

Each circle or dot is the location of a bike station

6. Location of the 3 most used stations by Daypass Users



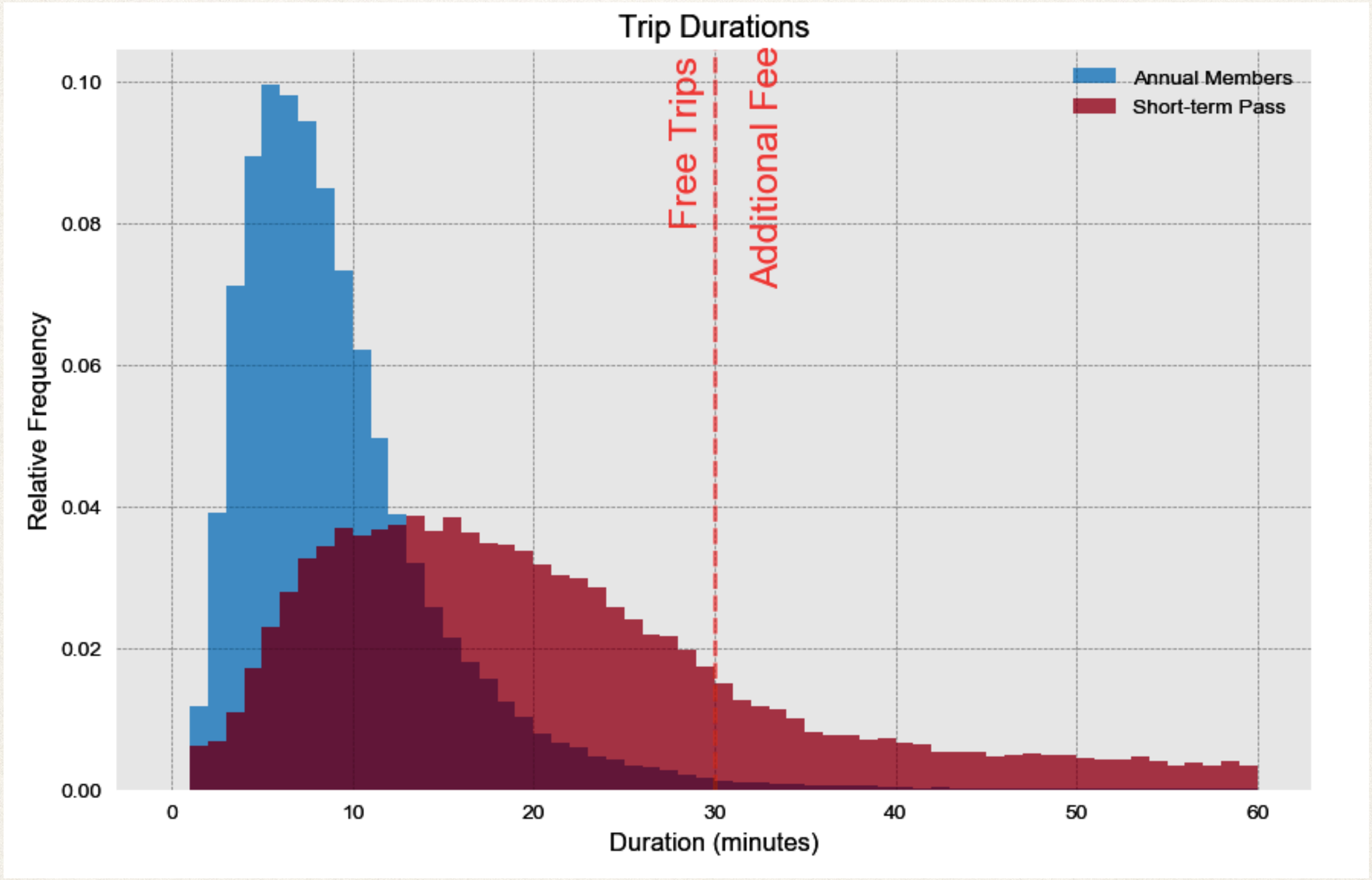
This is a plot of the overall numbers of departure or arrival in 2 years

Teal = Departure
Tangerine=Arrival

As we can see the Locations are identical, so we can call it the „Tourist Triangle“

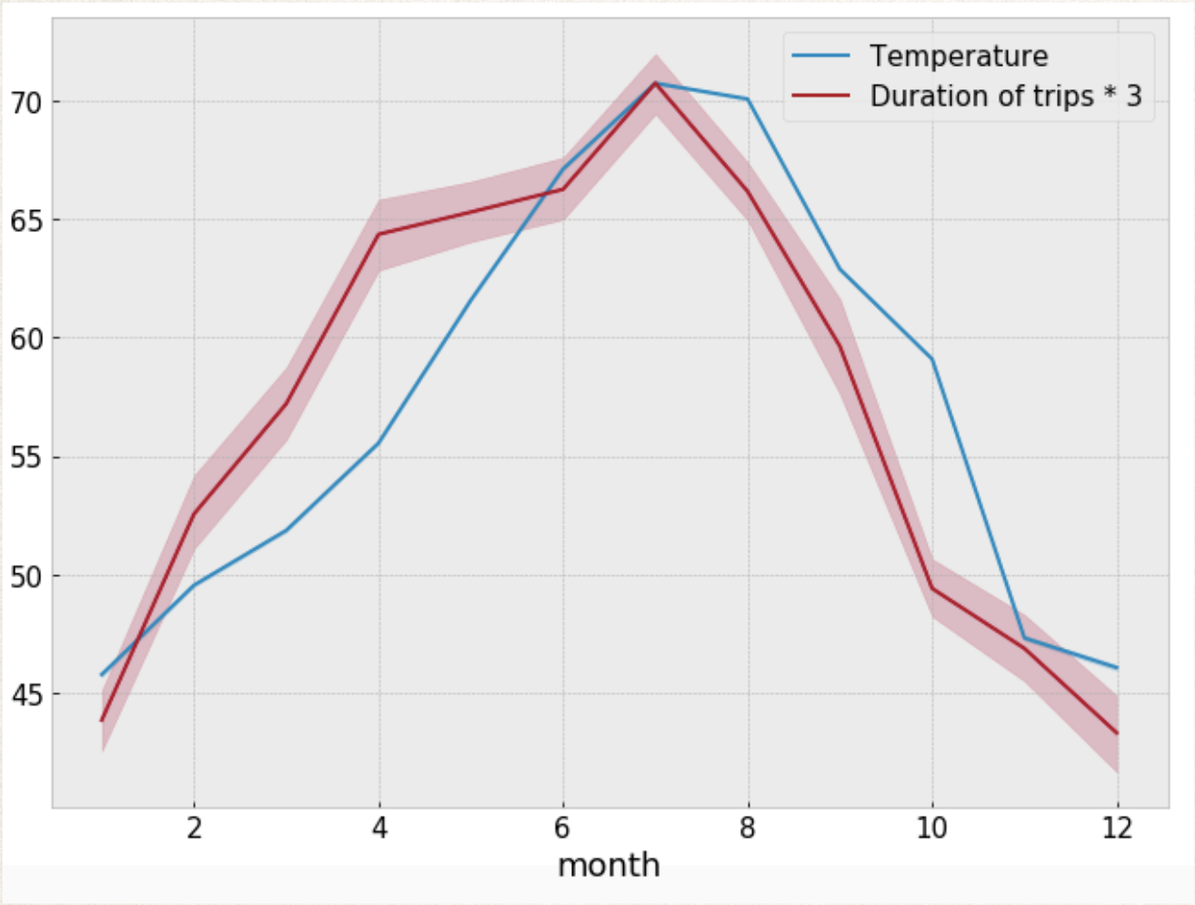
As Pier 69 is used the most, maybe tourists arrive by ferry on the weekends

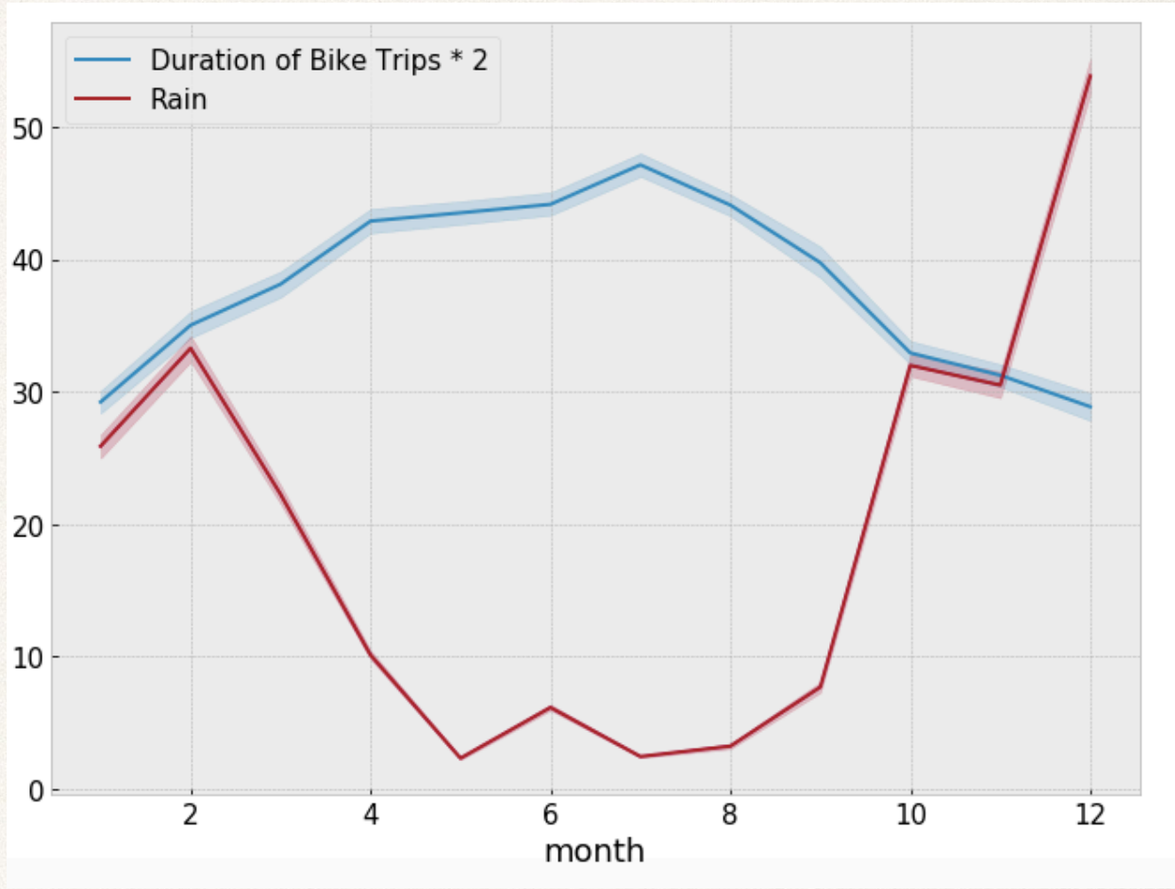
6. Trip Duration for each Usergroup



Commuters take 10 min rides, tourists take longer trips (and pay added fee)!

III. EDA: Influence of Weather on Cycling





The mean temperature and trip duration throughout the year are positively correlated whereas precipitation and trip duration are negatively correlated!

This means we can apply Linear Regression for Predictive Modeling!

IV. Predictive Modeling

Leasing Rate

How many Bikes will be rented at any given day in the year based on weather data?

Can be predicted with 73% Accuracy!

Model	R2-Score
Linear Reg	0.69
Polynomial	0.66
XG Boost Reg	0.73
Random Forest Reg	0.69

5. 3 Business Recommendations

1. Raise the number of bikes in the „tourist triangle“ on weekends, especially because tourists take longer rides (additional fee)

2. Raise the number of bikes where the most commuter-departures take place throughout the week, so maybe more people will start commuting

3. Install more bike-stations all over the town and raise the number of bikes available, to get new customers

6. Future Work

- Get weather data for every hour each day of time-period, to make better predictions
- Animated plot of net departure
- Use neural network for prediction
- Analyse a trip-dataset from the best competitor: uber/jump ebikes

THANK YOU!