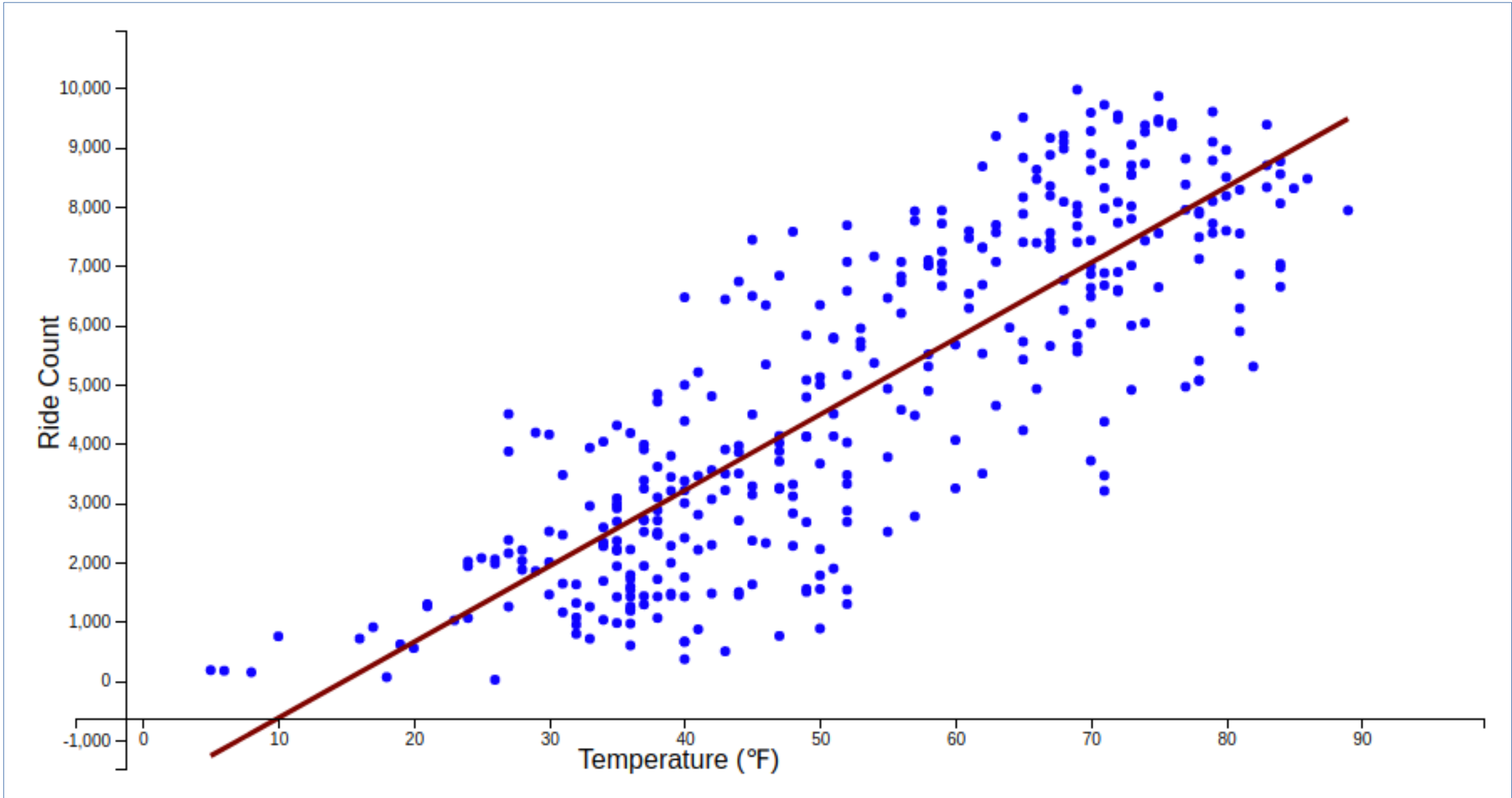


Commuting and Weather in Boston

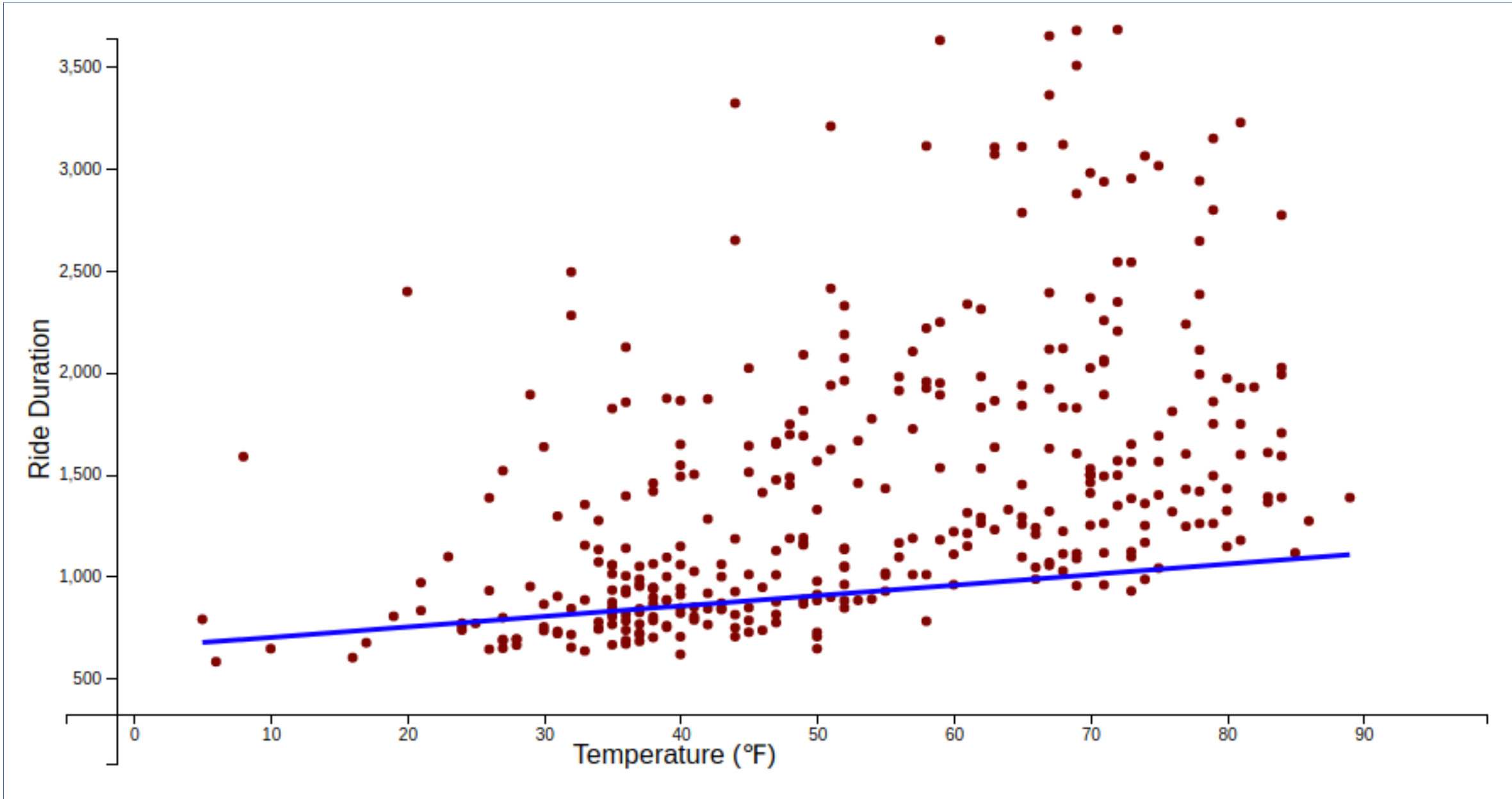
Ken Garber, CS 504 Data Mechanics

BlueBike

Temperature and Bike Rides



Correlation: 0.831 P-Value: 0



Correlation: 0.421 P-Value: 0

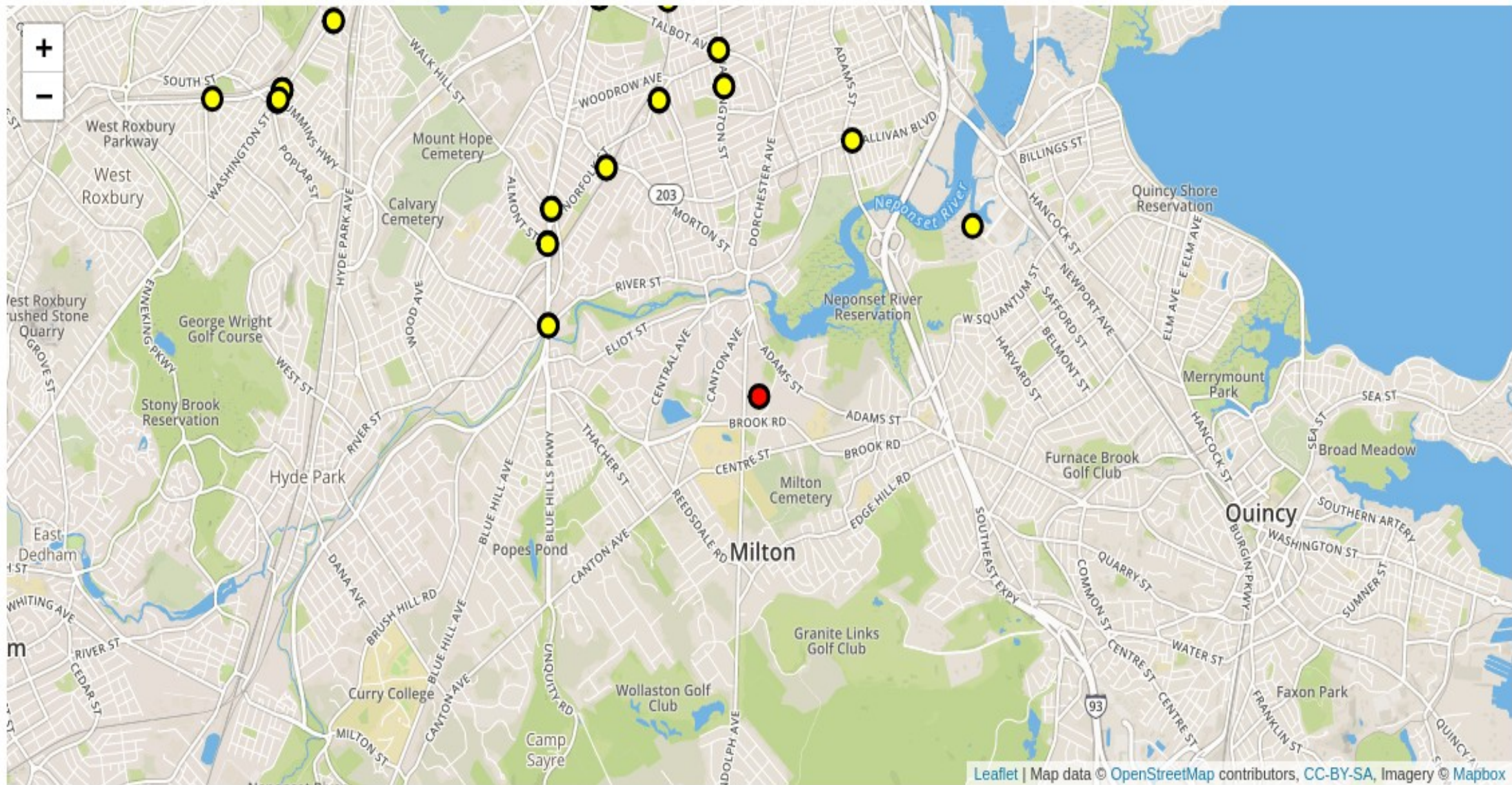
Placing a New Station

We can find a good location for a new BlueBike station using optimization. Our goal is to expand the network, reaching new users, without making it too sparse and making stations hard to reach.

Objective: Maximize distance from all stations to the new station.

Constraints: Station can't be in the ocean and must be within a set distance of at least 3 other stations.

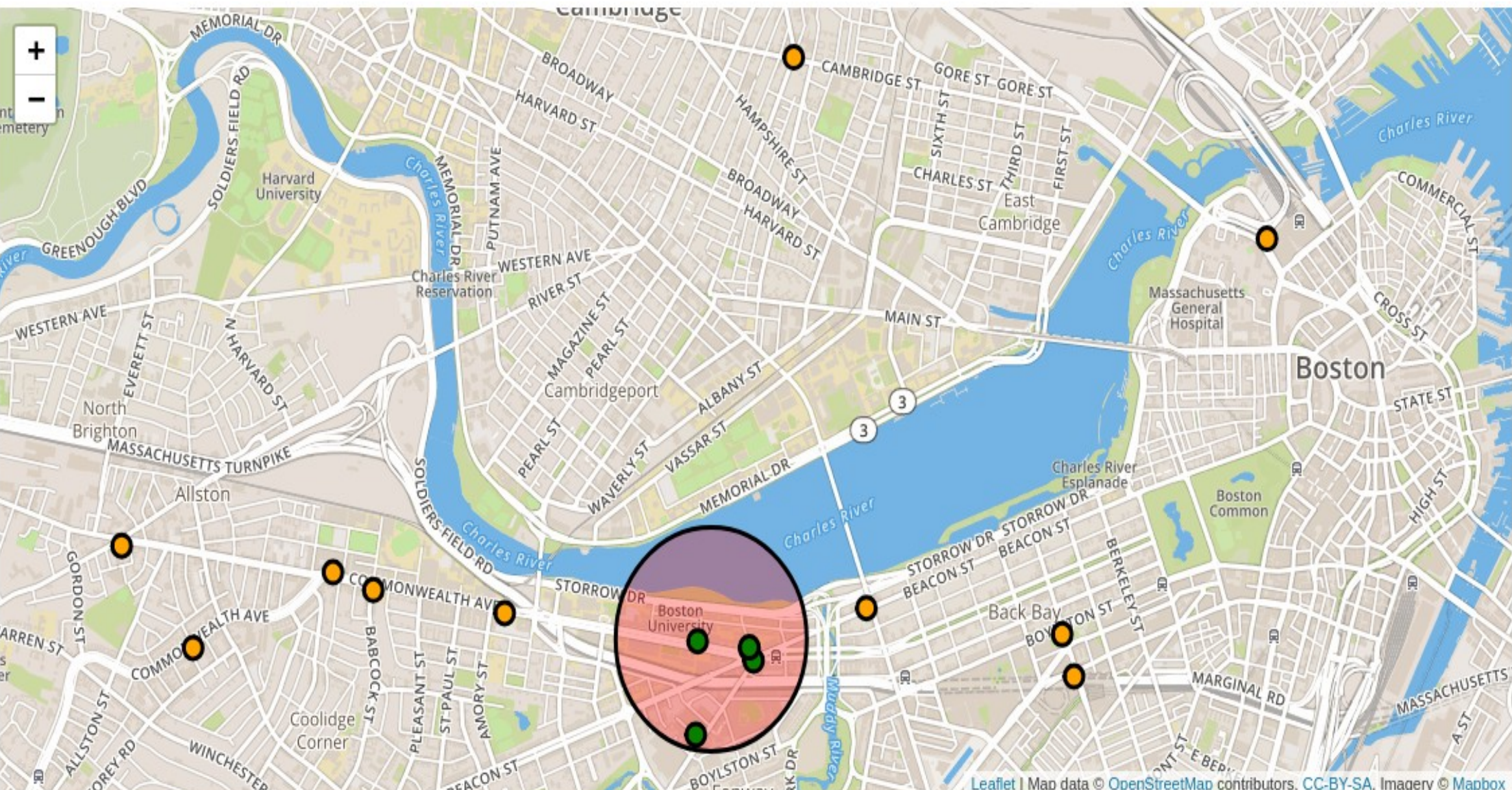
Method: Python's z3-solver optimization library.



Where Do BU Students Live?

We can see from where people commute to BU using the BlueBike data and the following transformations:

- 1) Filter for stations within a mile of BU.
- 2) Filter for rides that end at the above BU stations.
- 3) Filter for rides between 7 AM and 11 AM.
- 4) Count the above rides for each starting station. The stations with the highest counts are the stations from which BU students, faculty, and employees commute to BU.



MBTA Trains

Average Daily Temperature	Average Daily Service Alerts
0-10	9
10-20	5
20-30	6
30-40	5
40-50	5
50-60	5
60-70	4
70-80	5
80-90	4

There is a -0.185 correlation coefficient with a 0.0008 p-value between service alerts and temperature for the Green, Red, Orange, and Blue line.

This means there is a weak correlation between alerts and weather – the colder it is, the more alerts there are.

Conclusion

Commuting in Boston gets harder in the winter. People bike less, they bike shorter distances, and the trains have reduced performance.

While it's hard to convince people to bike in the cold, we can focus our efforts on clearing bike lanes of snow and other obstructions.

We can also focus on improving train infrastructure so that reliability isn't reduced during the colder months.

Data Sources

- data.boston.gov
- bluebikes.com/system-data
- NOAA
- MBTA



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