# How recreational Boston's neighborhoods are?

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Narrative:

We are trying to find out how sportive or recreational neighborhoods in Boston are and to see how quantities of different public recreational places or facilities (open spaces, swimming pools and bicycle stations) are correlated. By using these new information, people could have one more perspective to view a neighborhood and decide whether they want to live in such neighborhood. Moreover, government officers could also reflect from these information to see whether a neighborhood need a improvement on the provision of recreational places. Researchers could also incorporate the data we got to study more about Boston's neighborhoods.
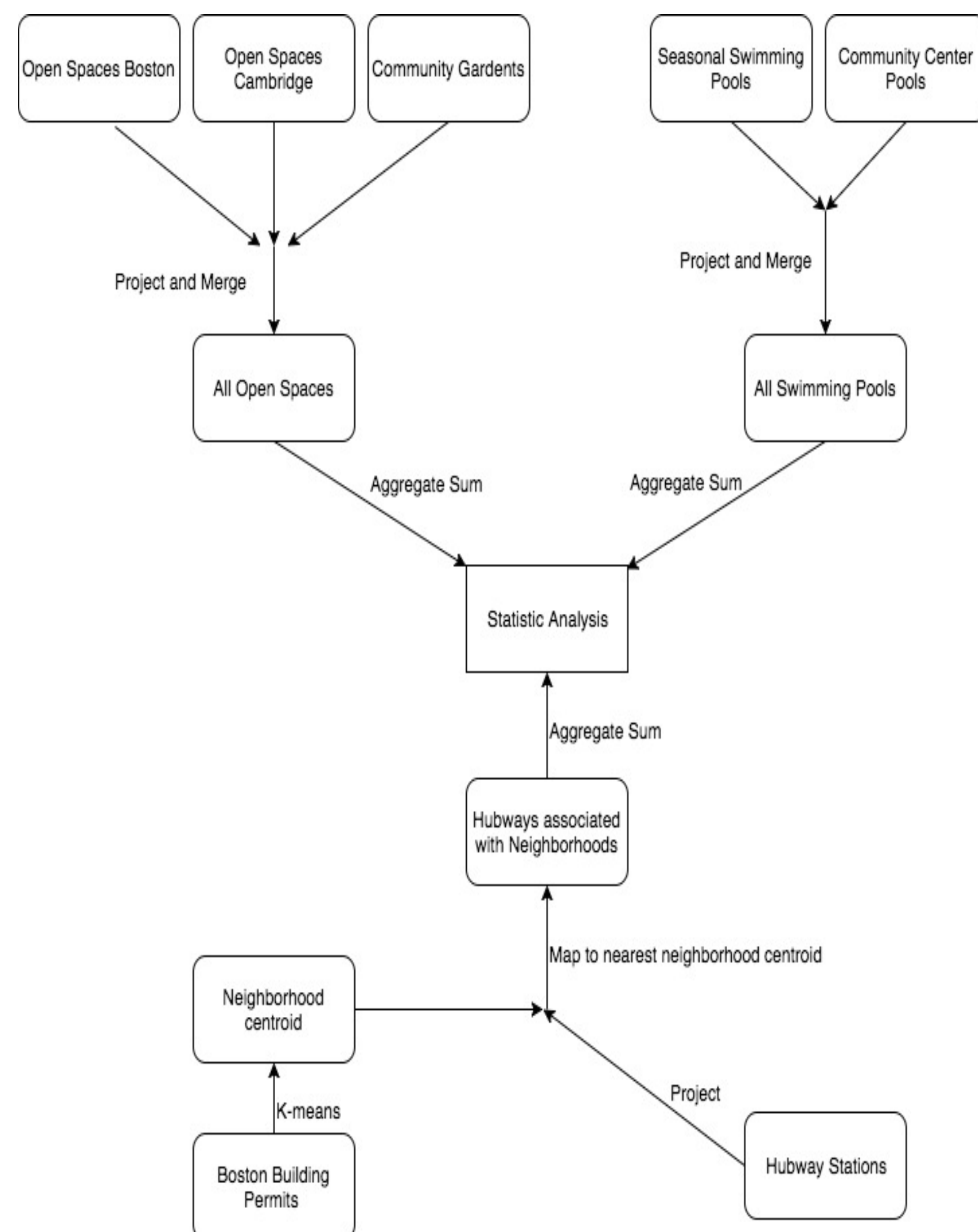
Algorithms:

We could not find data about centroid coordinates of neighborhoods in Boston, therefore we calculated an estimation by ourselves. We retrieve new data about all building permits in Boston, and then we use **K-means** algorithm to estimate centroid coordinate for each neighborhood. + When we get all neighborhoods' centroids, we incorporate new recreational facility data about hubway (bicycle) stations in Boston. Since the hubway station data include coordinates, we map each hubway station to its closest neighborhood centroid.

Legend:
- Beacon Hill
- West End
- North End
- Back Bay
- Bay Village
- Charlestown
- East Boston
- South Boston
- Waterfront
- Fenway/Kenmore
- Downtown
- Chinatown
- South End
- Mission Hill
- Jamaica Plain
- Roxbury
- Mattapan
- Dorchester
- Allston/Brighton
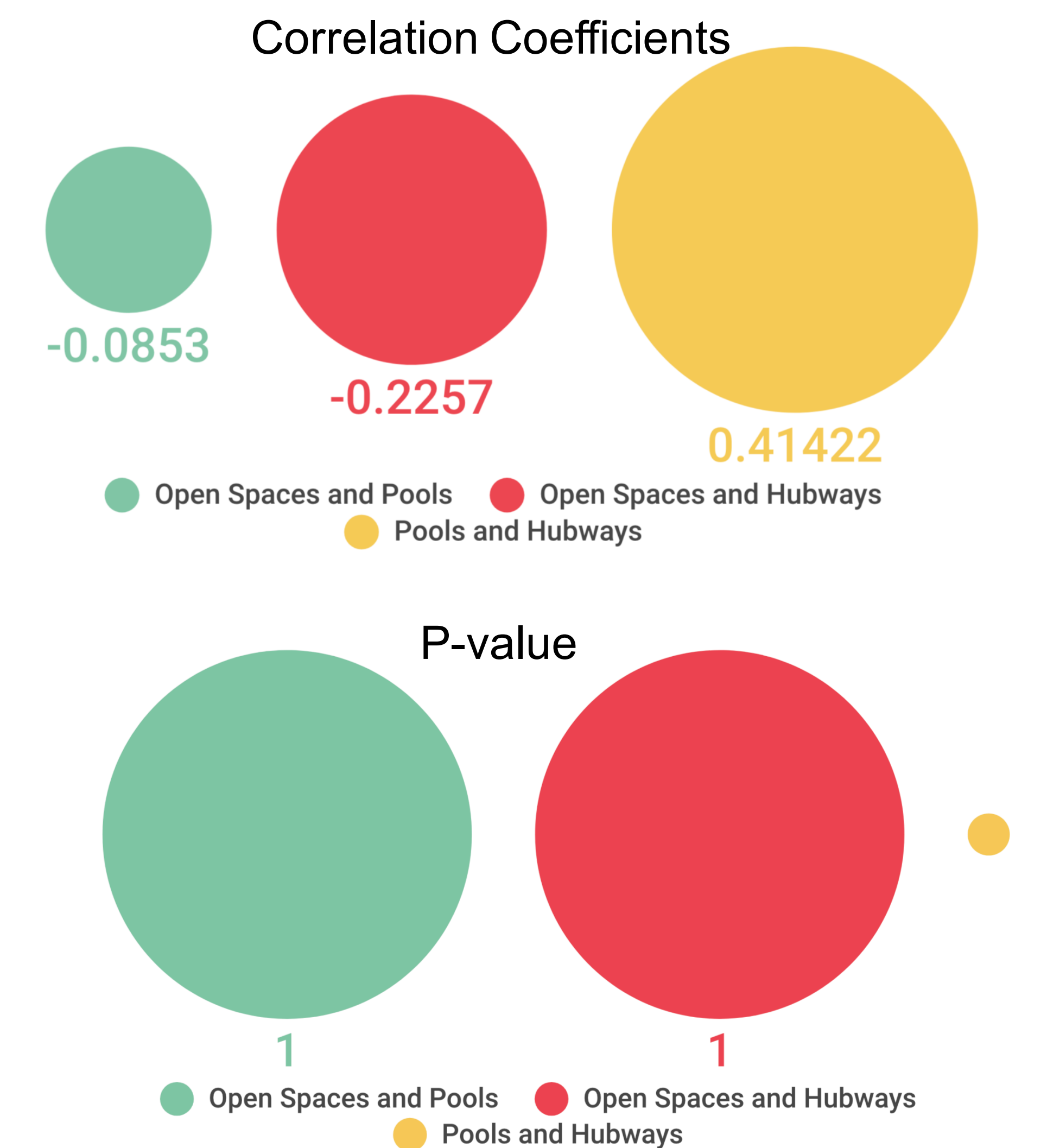- Brighton-Allston line
- Hyde Park
- West Roxbury
- Roslindale
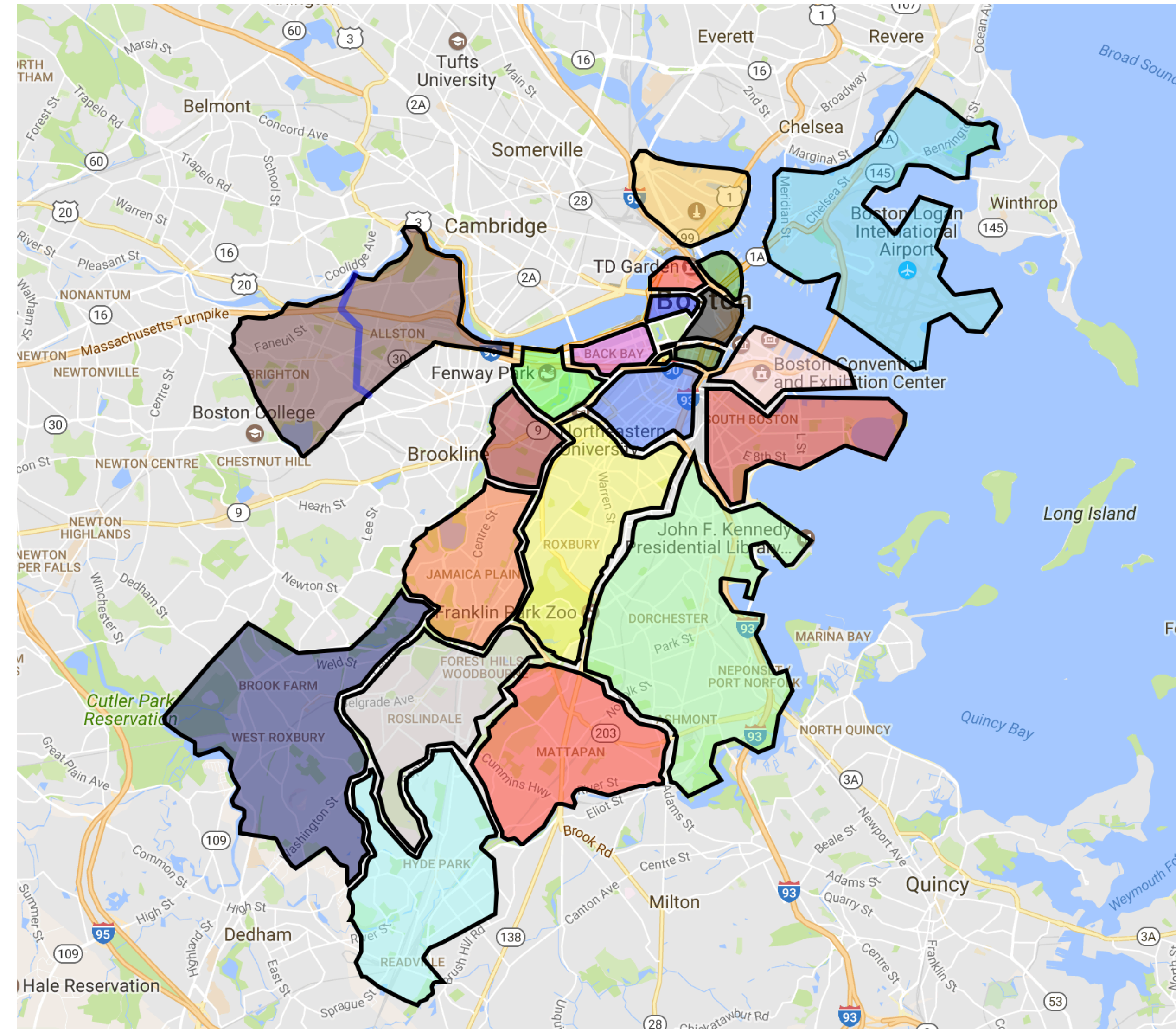
Number of Recreational places in Boston's Neighborhoods

Legend: open spaces, swimming pools, hubway stations
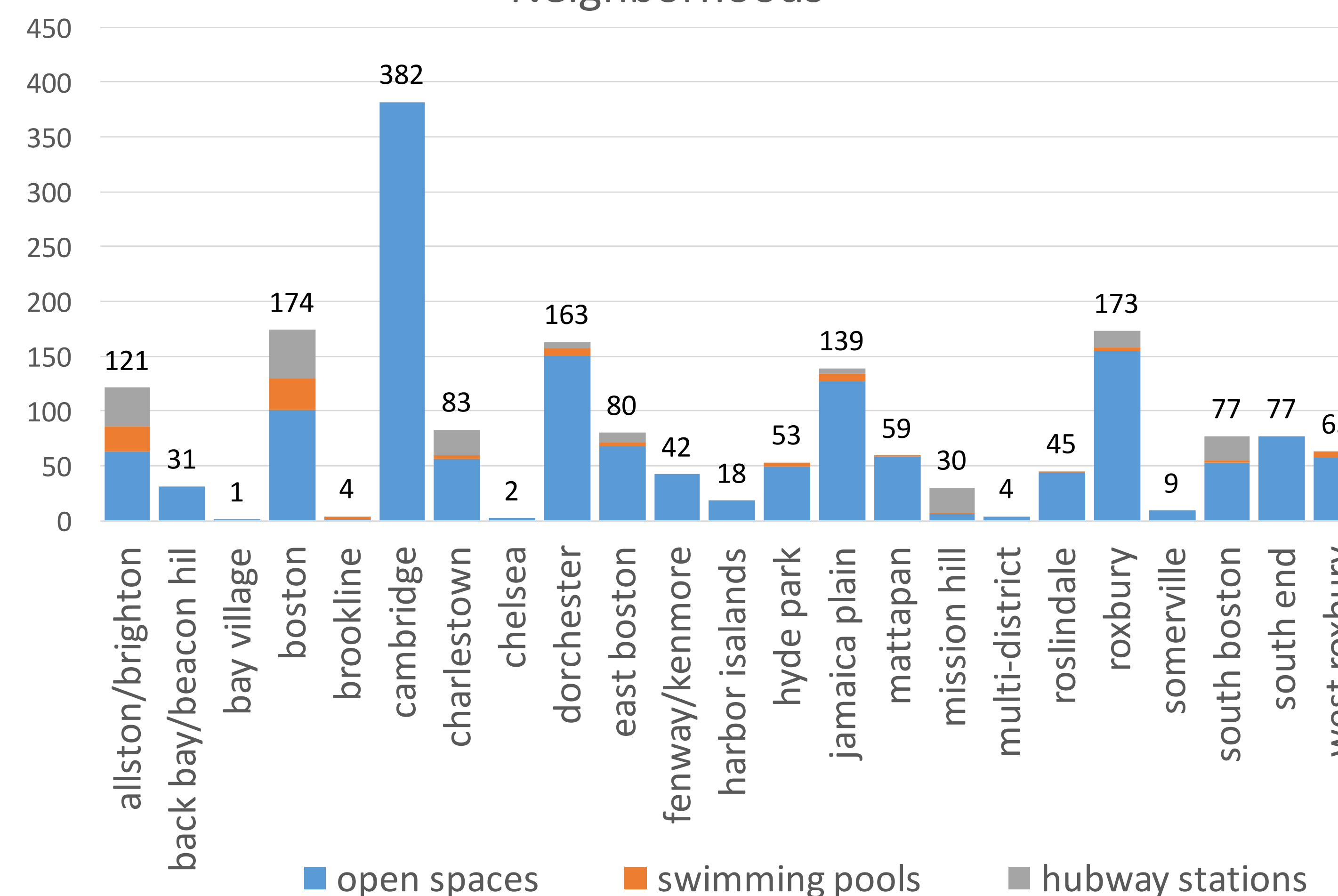
Conclusions:

We sum up the number of hubway stations, open spaces and swimming pools for each neighborhood. After that, we use the stats collected above to calculate **correlation coefficient and p-value** b/w number of open spaces and swimming pools, b/w number of open spaces and hubway stations and b/w number of swimming pools and hubway stations. As you could see from the bubble graphs, the results we got are quite different from what we expect. The relationships b/w number of open spaces and swimming pools or number of hubway stations are not very correlated because their p-values are 100%, which means their C.C. are insignificant. On the other hand, the number of pools is relatively more correlated with the number of hubway stations and their p-value is low, which means the correlation is pretty significant.

Correlation Coefficients

-0.0853   -0.2257   0.41422

Open Spaces and Pools   Open Spaces and Hubways   Pools and Hubways

P-value

1   1

Open Spaces and Pools   Open Spaces and Hubways   Pools and Hubways

Future Work:

Since we could not find boundaries data of Boston's neighborhoods, we calculated the centroid of each neighborhood using a dataset about building permits in Boston, which means that the centroid is not exactly the center of a neighborhood. In the future, we would try to use a dataset about boundaries of Boston's neighborhoods instead. Moreover, we would associate recreational places with zip codes instead of neighborhood, which is more specific and precise.

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