

“AGE-FRIENDLY” SCORING IN BOSTON



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Introduction

Projections from the City of Boston's 2014 report on "Aging in Boston" indicate that by 2030, about 20% of Bostonian residents will be age 60 or older.

Boston is a member of the World Health Organization's Age Friendly Cities Network. The Milken Institute, an economic think tank, ranked Boston fourth on its 2013 list of “Best Cities for Successful Aging” in the US.

Factors that are considered important to older adults, professionals who work with them, and other community leaders include:

- . Physical health
- . Transportation access
- . Housing costs
- . Access to social services
- . Mental wellbeing
- . Cost of healthcare

Some metrics developed by private and public entities measure factors like transportation access, retail access, and general walkability. These are usually general measures for either the general public or consumers, without a specific target audience/population. They include the Greater London Authority's Public Transport Accessibility Levels (PTAL), Walk Scores' “walkability” service, and the Location Affordability Index's Retail Access Index.

Project

This project attempts to create a distance-based score for a given location in Boston to quantify its “age-friendliness.” At this point, the score does not include other information such as healthcare/housing expenses or population composition.

Location data, including longitude/latitude and address, of resources including hospitals, MBTA stops, and community centers (Figure 1), are collected and processed. A particular (potentially arbitrary) input location's geocoded location is then used to compute distances between a given resource and the input location. The distance measures used are either walking distance between the input and destination locations (via the MapQuest API) or approximate absolute distance using Vincenty's formulae.

Currently, the distance to the nearest location or the median value in a restricted set of locations is calculated to represent a subscore for that resource. These subscores are then weighted and summed to produce an overall distance-based score.

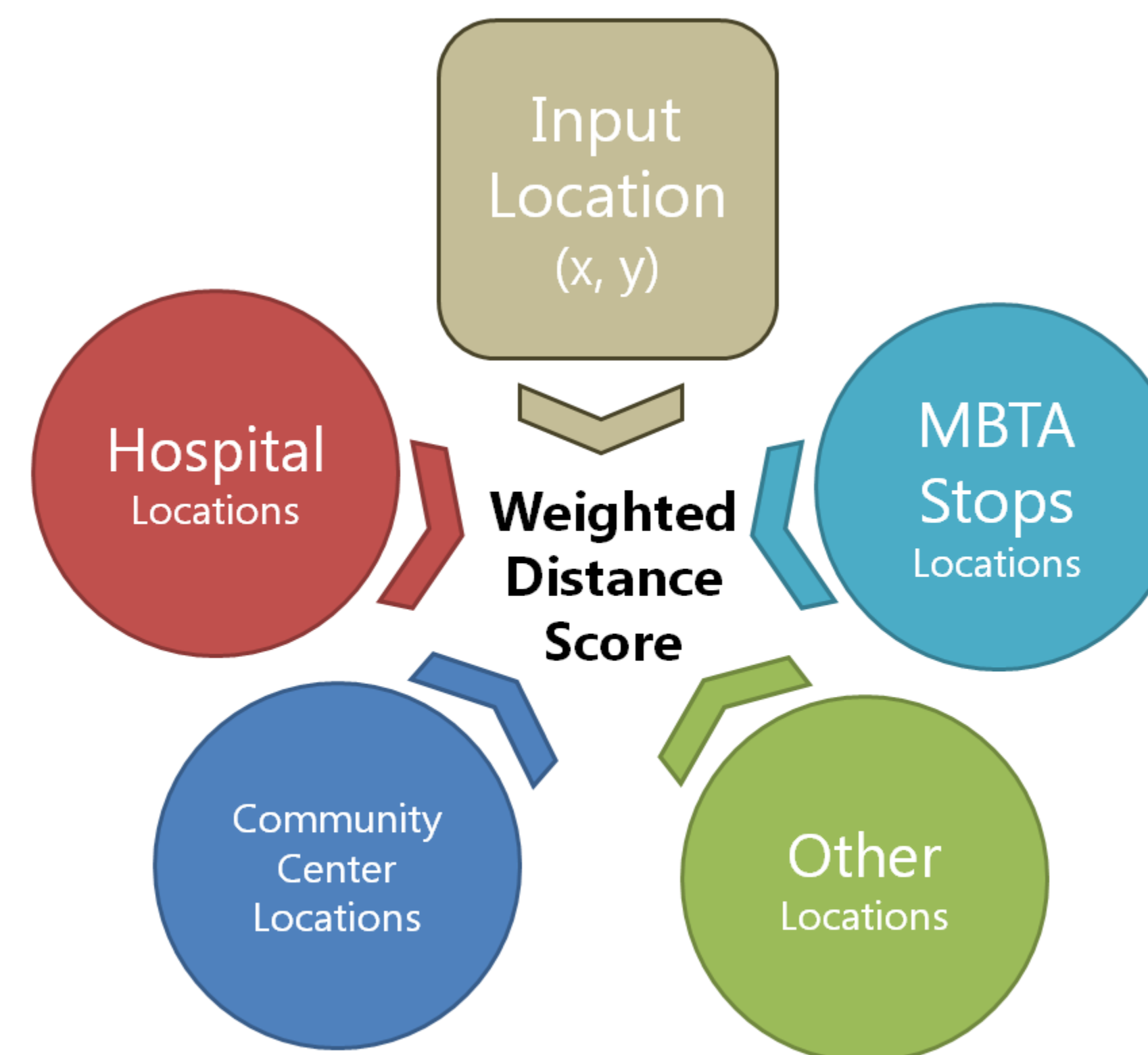
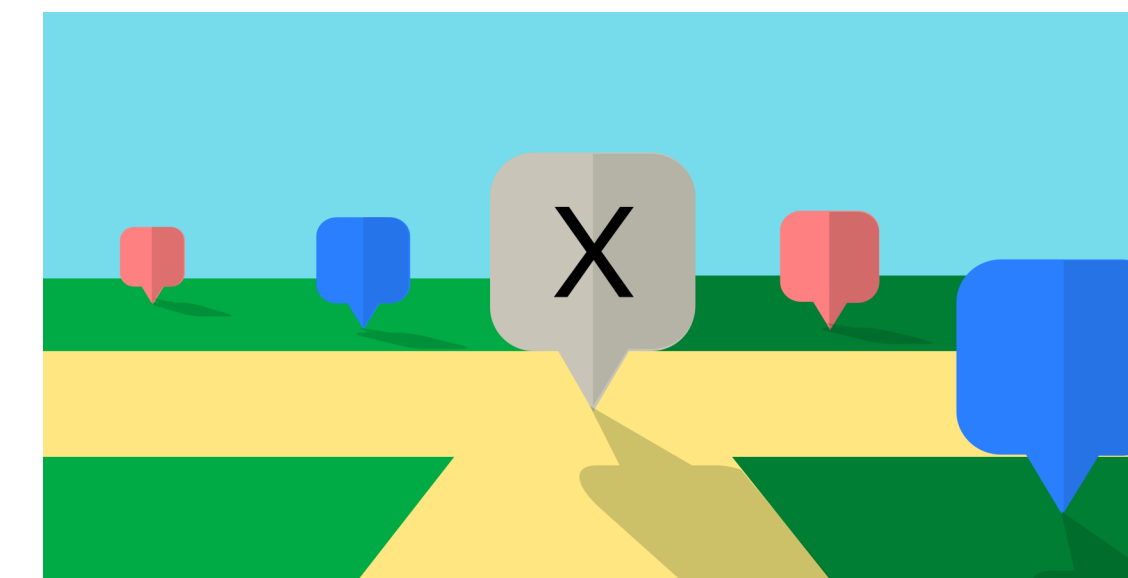


Figure 1. Some of the major data sets used in this project.

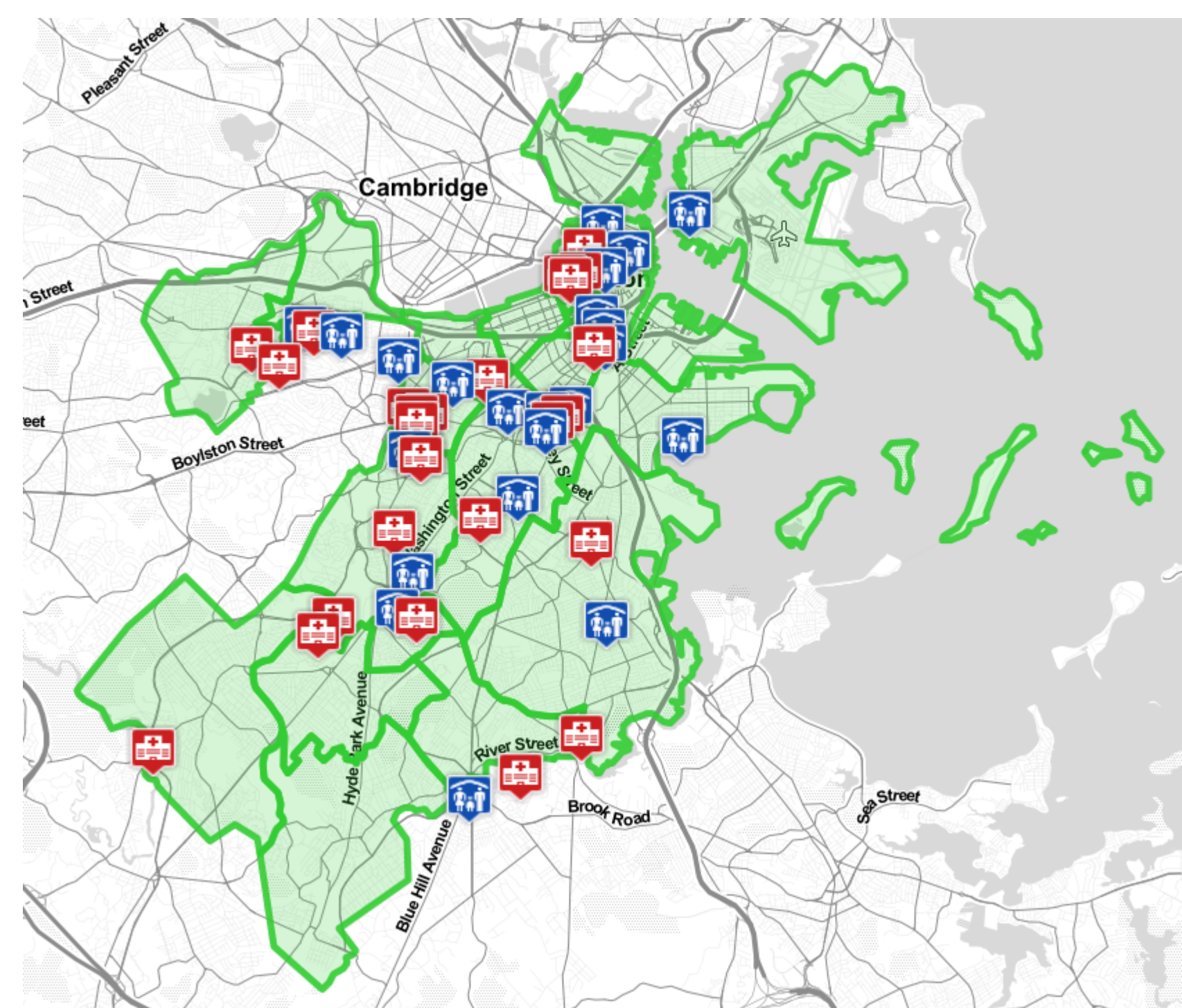


Figure 2. A map showing a selection of the locations of interest used in this project, namely hospitals (in red) and community centers providing senior services (in blue), in the City of Boston.

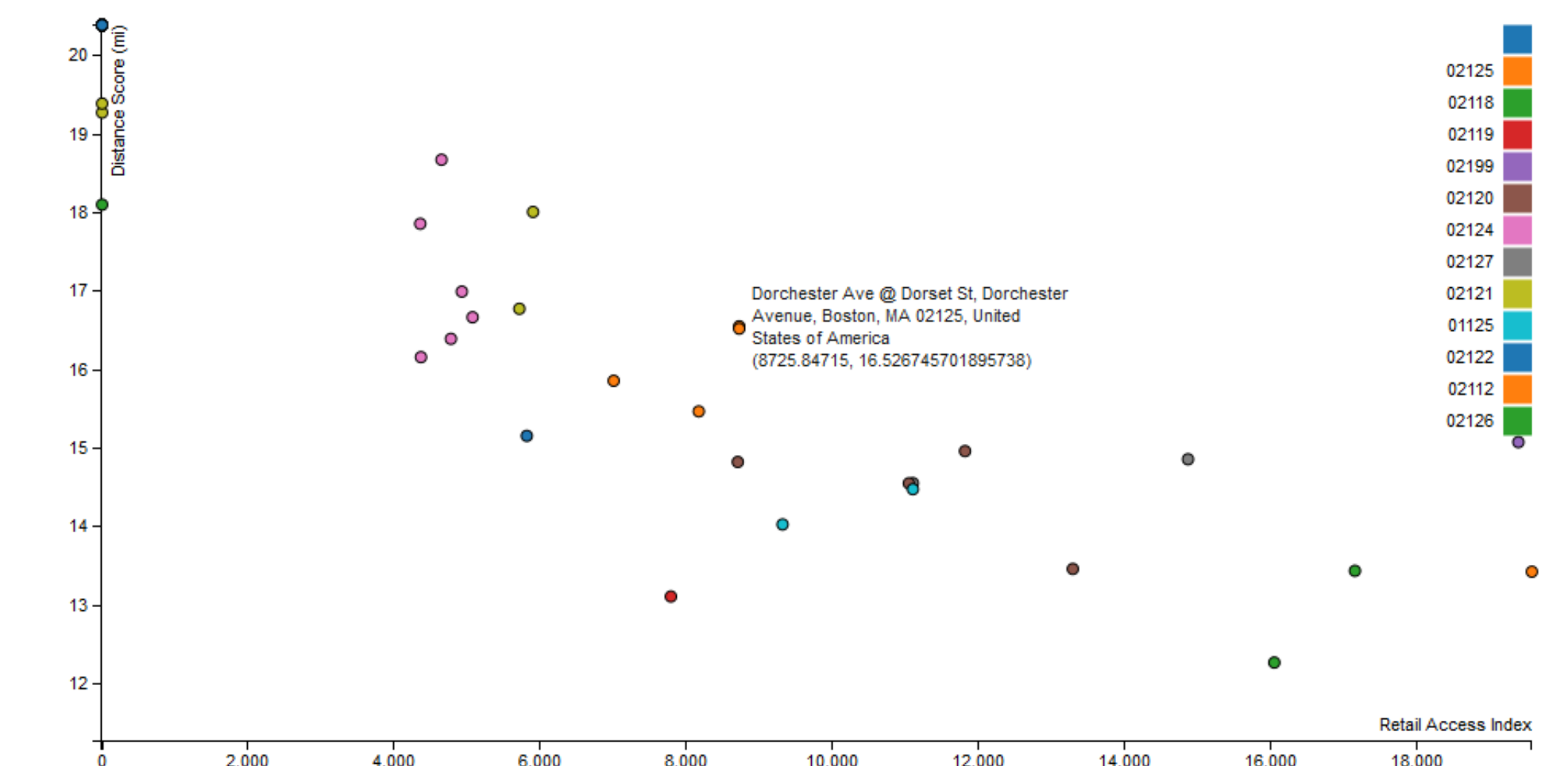


Figure 3. Interactive plot comparing weighted distance score against Retail Access Index from the Housing Affordability Index .

Visualizations

Two visualizations are produced in relation to this project:

- Scored locations, along with certain categories of sites, are mapped using Leaflet to qualitatively show the distribution of sites in different neighborhoods of Boston (Figure 2).
- For a given location, its score is plotted against information from the Housing and Urban Development and Department of Transportation's Housing Affordability Index for the location's Census Block Group (Figure 3).

Conclusion

This project presents a basic weighted distance scoring system to measure accessibility to major resources; this scoring could be made more sophisticated with measures such as taking into account inpatient bed count at each hospital, etc., incorporating more statistical methods, and using less arbitrary weights.

This scoring system could be used to randomly select points in a particular neighborhood and calculate an average score for the region. Point selection could occur by using geojson polygon data. The scores by neighborhood/region could then be compared to the current distribution of adults age 60 and older throughout different neighborhoods in Boston.

Selected References

- https://www.cityofboston.gov/images_documents/4-14%20UMASS%20Aging%20Report_tcm3-44127.pdf
- <https://www.ncoa.org/news/usoa-survey/2015-results/>
- <https://www.fcc.gov/general/census-block-conversions-api>
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