Sidewalk Accessibility

Client
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Team 2 Members

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Goal

Create Accessibility Scores for sidewalks that can be used to determine areas in need of improvement. Also find best routes for people to walk to the public facilities

Background

The current system requires residents to call to report sidewalk issues/hazards. We are trying to see through the data how the current system is helping the various regions of boston and where the help may be lacking. Therefore, with the introduction of accessibility scores we will be able to determine the areas that are not receiving proper treatment of their sidewalks.

Data Analysis

So far we have done preliminary analyses on the data and are currently working on doing a more in depth analysis using the newly provided ramp scores, and sidewalk locations. We have plotted the data to a real map and we can have direct visions of them to find our research directions.

Data

So far we have analyzed all of the initial datasets. As for the new ones we have decided to focus more on the ramps data set with its new accessibility score and the sidewalks dataset to determine accessibility scores for entire sidewalks. We aim to make use of the ramp conditions to decide whether a sidewalk is good or not.

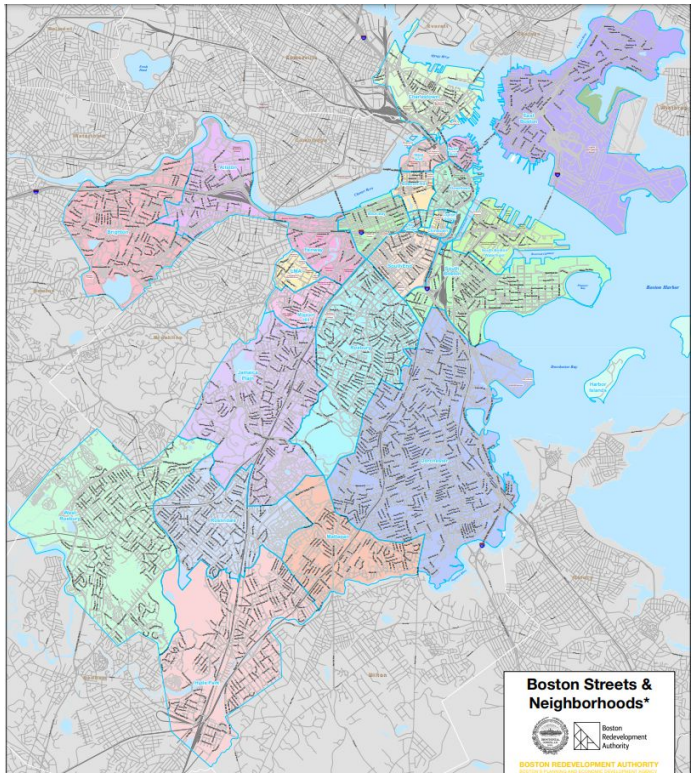
Early Observations

Using the sidewalk hazards dataset and pinpointing the locations of the fixed hazards we overlaid it with a map of the neighborhoods in boston which shows how many repairs each neighborhood is getting. Generally the hazards are gathering together.

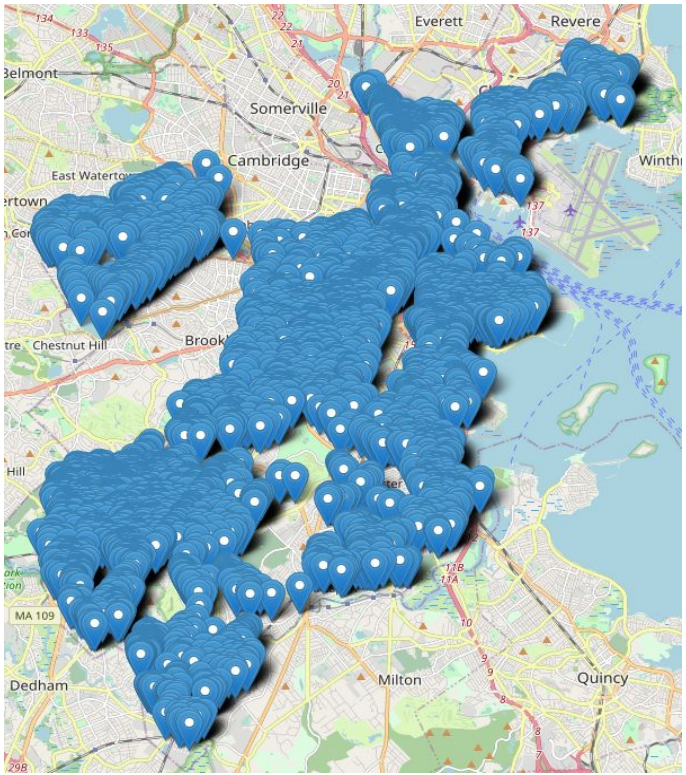
Early Challenges With The Data

Early on we had several problems the main being a lack of documentation to aid in the interpretation of the datasets. Another challenge came from issues with displaying the data from sidewalks in a meaningful way since they were large areas and not singular points with a latitude and longitude.

Visuals

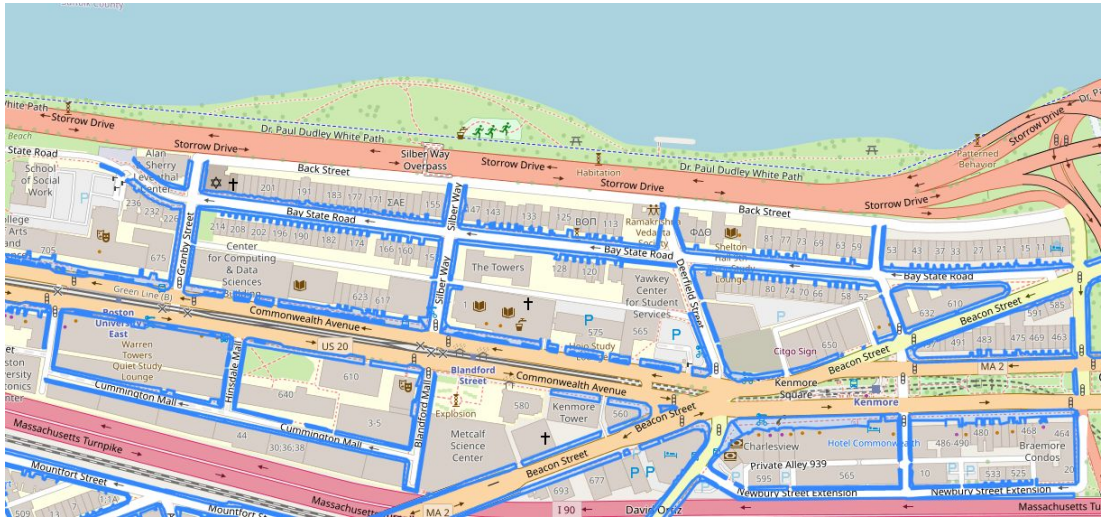


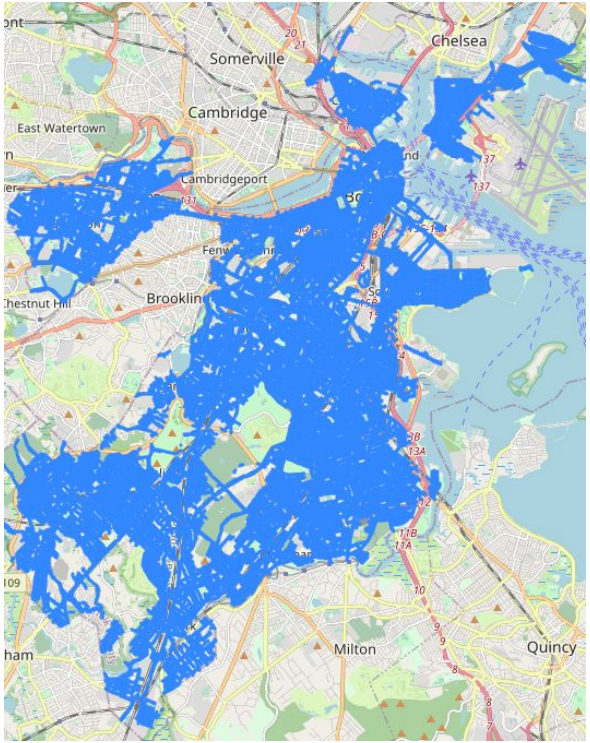
Boston Neighborhoods



Hazard Pinpoints

Sidewalk Shape

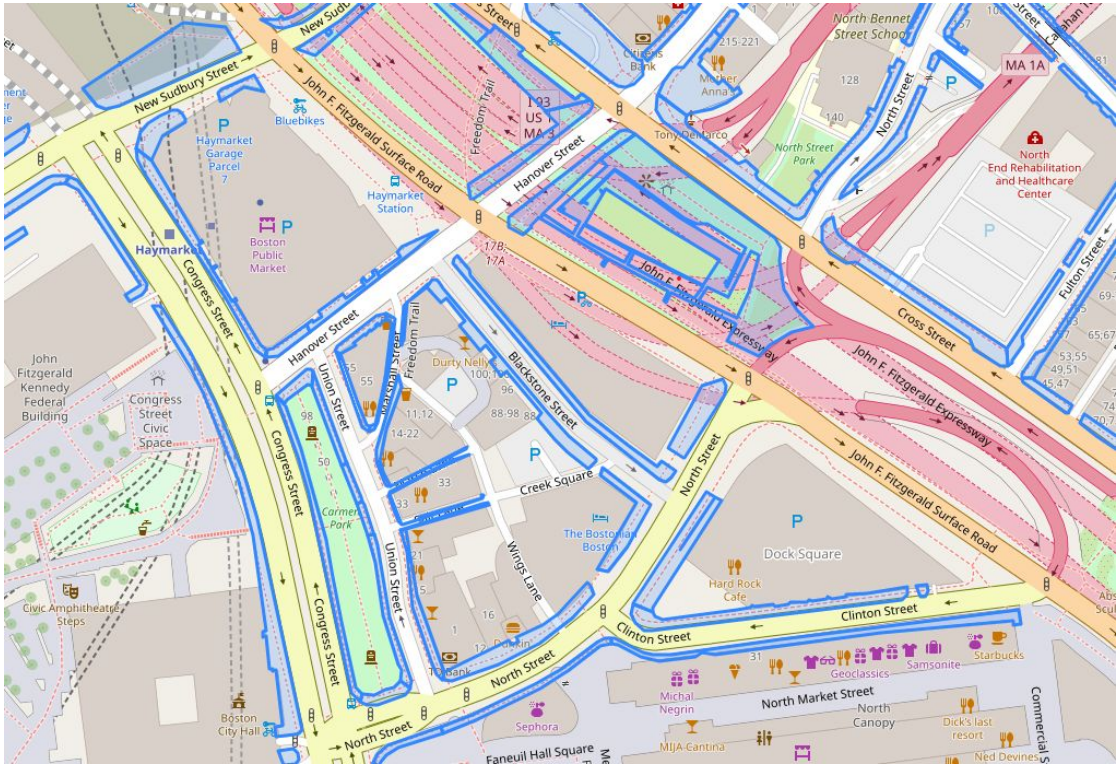




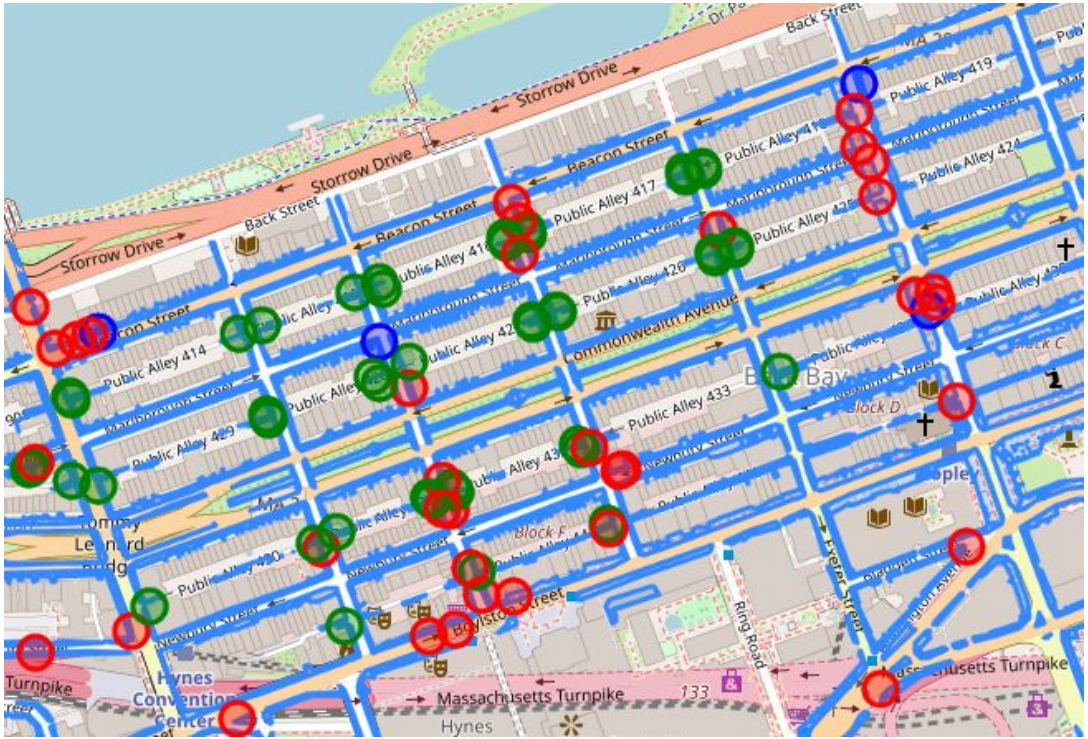
Sidewalk shape

We draw sidewalk shapes using data we gathered and we make marker on the sidewalk which with school near by and other public area.

We met some problems on dealing with the noise points in the data, but we fixed them.



Hazards on sidewalks



Then we added the places where hazards happened so that we can have a concept of hazards on these sidewalks

Red- Trip hazards not due to tree roots

Blue- Trip hazards due to tree roots

Green - Fixed pinch point <36” sidewalk width

Hazards on sidewalks

For example, this street is full of blue points. There are so many hazards due to tree roots.

We can then guess the species of trees are special here. Or the nearby park is influencing this street.

Ramps

We made an initial ramp dots on the map. We can see ramps are always a circle of area.

We can use the KNN method to cluster these points to together a circle.

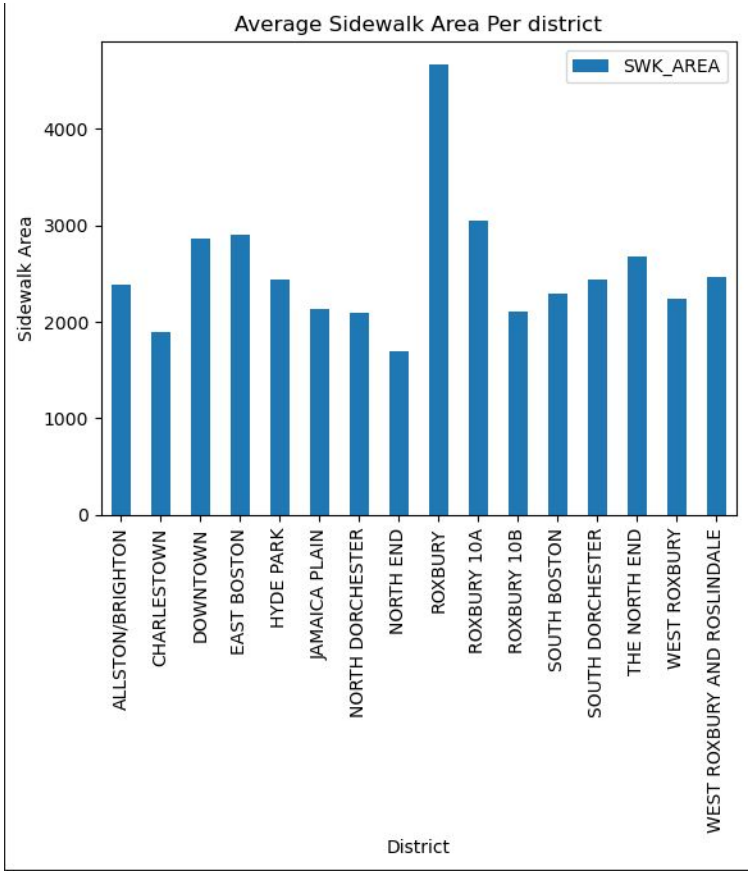
About children

We truly care about children who are the most common user of sidewalks.

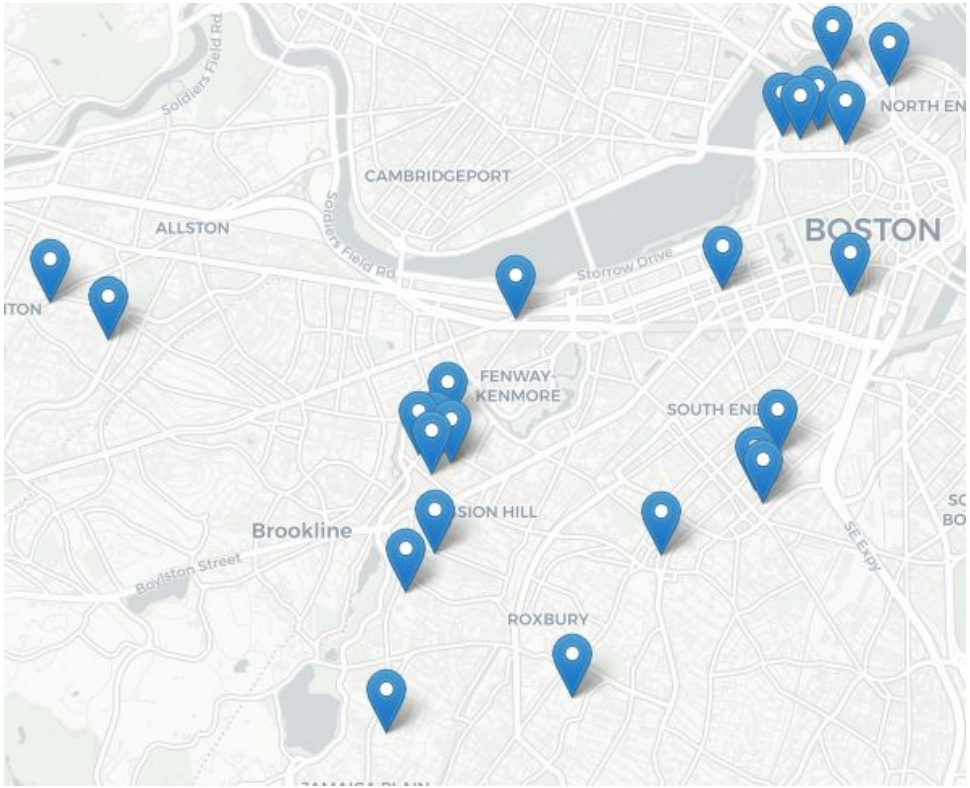
Right? They walk on them after schools, they play with their friends on them, they walk their dogs on them and the way to school is the most important one.

Adult can drive, but children can not.

I think we should pay greater attention to them.



About the hospital



We record the places of the hospitals and we can make use of the sidewalk ramp_scores to figure out how the sidewalks' conditions for the patients inside to take their time walking around. You can't expect a patient to walk through the harsh ramps or hazards.

Limitations

Some limitations we have come across is a lack of current/ongoing data. While this limitation was somewhat bypassed by the recently provided ramp scores this still only allows for a limited view of sidewalk issues. One thing that would be beneficial would be to have more up to date data in the sidewalk hazards so that we can see how the city has fixed the issues over the years and not just in 2020.

Expected Next Steps

Once we complete the scores for each sidewalk we want to see what types of relationships the sidewalks with lower scores have with their respective income. After we determine whether there is/isn't any correlation we will look to refine our sidewalk scores by including data from the other datasets such as the sidewalk hazards which shows us fixed hazards

Also we want to add more public facilities to our map. Try to apply a smart path navigation for people from different neighborhoods.