

Deliverable 2 Report

Project: Sidewalks

Team: 1

Members:

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Deliverable Checklist : Status- Completed

- Make sure all tasks were completed from the checkpoint.
- Submit any new code since Deliverable 1 as a PR to your team's branch on github. (Add your PM and TE as reviewers!)
- Present Early Insights to Client
- Submit recording to gradescope (PMs will record the meeting)

Recording Link:

https://bostonu.zoom.us/rec/share/tUv4RMGW5qlNtSSSGCCLh5uCCHVyuMlI0bgIj3_o7XsjHhUxgCN8UGfzikUV9Gt4.tmoYJ2fRecwx-jy0

Analysis:

Ramps

The table shows the top five locations for the respective ramp conditions:

Note: The percentages are wrt the number of ramps within the regions.

Excellent Ramp		Fair Ramp		Poor Ramp	
Neighborhood	Count	Neighborhood	Count	Neighborhood	Count
Dorchester	1980 (55.38%)	Dorchester	932 (26.07%)	Dorchester	112 (3.13%)
Roxbury	1721	Roxbury	608	Roxbury	106

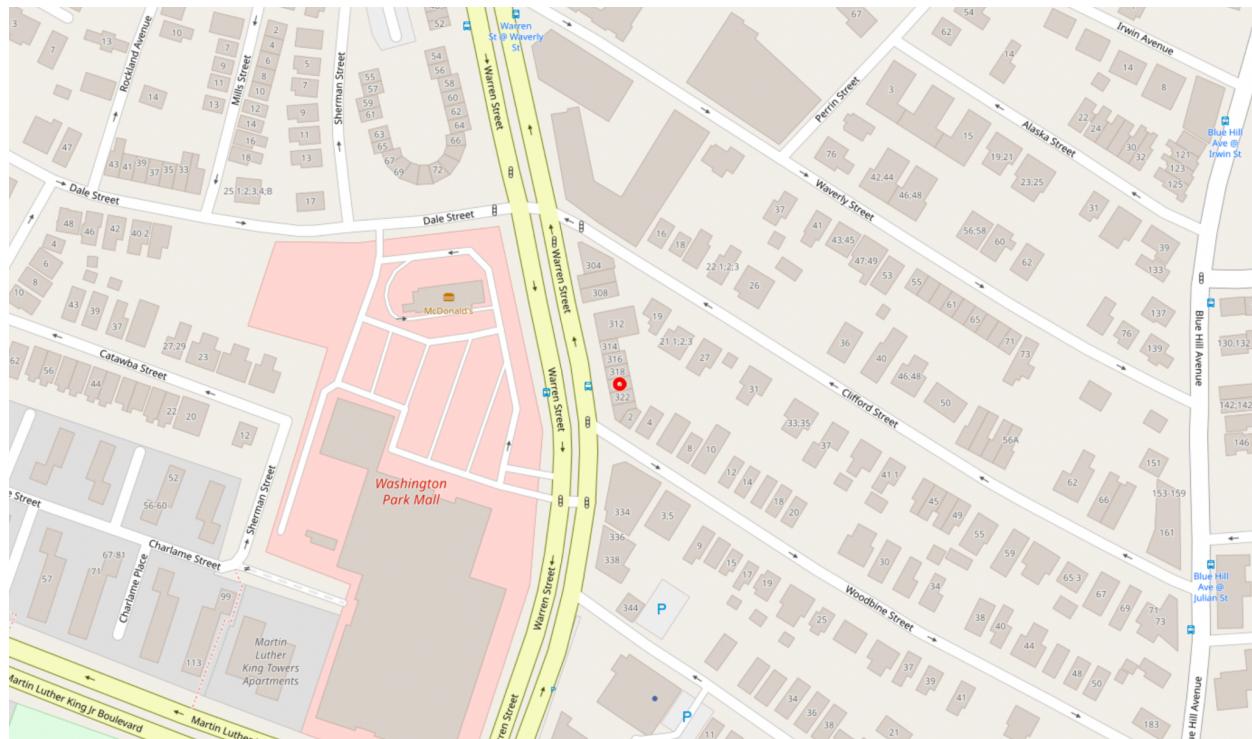
	(63.53%)		(22.44%)		(3.91%)
South Boston	1458 (63.95%)	Mattapan	522 (37.74%)	Hyde Park	79 (4.86%)
West Roxbury	1072 (56.84%)	South Boston	435 (19.08%)	Roslindale	56 (3.91%)
Brighton	897 (62.95%)	Hyde Park	407 (25.03%)	South Boston	47 (2.06%)

- We have just considered the neighborhood that has the maximum ramps count based on the condition.
 - We are not taking into account the total count of ramps and then derive the top neighborhood that has Excellent, Fair, and Poor ramps because a neighborhood ‘X’ might have only one ramp and that will eventually lead to 100%. In those cases, we don’t think it will be of any interest to us.

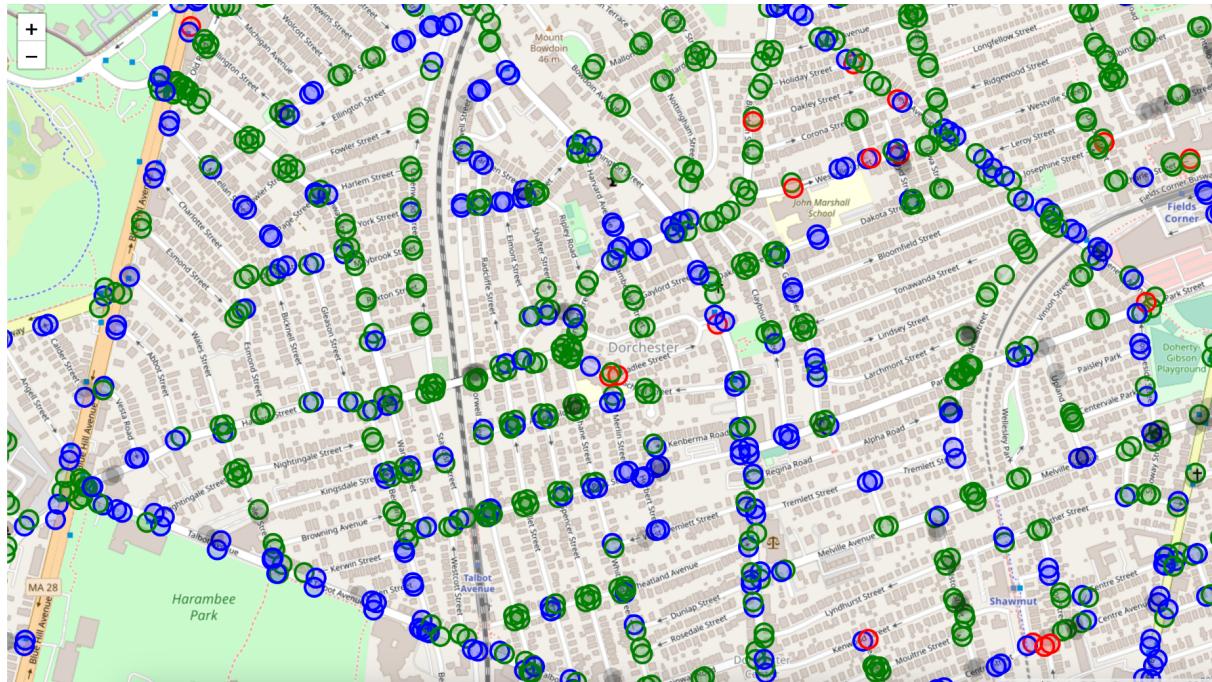
Public Works Active Work Zones Data

This is a public dataset which shows the active work zones in Boston. As this dataset gets updated everyday, the data is pulled directly from the site and used to generate the report.

Last fetched: 3/21/2023



- 320, WARREN ST is a red zone as the Sidewalk_Plates_In_Use = 1.(As of)



The above map shows the various ramp conditions in Dorchester. Green indicates excellent, blue indicates fair, and red indicates poor.

Ramp Scores

The landing condition of a ramp in sidewalks refers to the level surface at the top and bottom of the ramp, where it connects to the sidewalk or other surfaces. The landing should be designed to ensure accessibility and safety for all users, including those with mobility impairments or using wheelchairs, scooters, or other assistive devices. The below table indicates the landing conditions of the ramps.

Landing Condition of the Ramps	Count
Excellent (Like new)	14770
Fair (Minor/Hairline damage with no impact to accessibility)	4897
Poor (Panel is damaged and affecting	

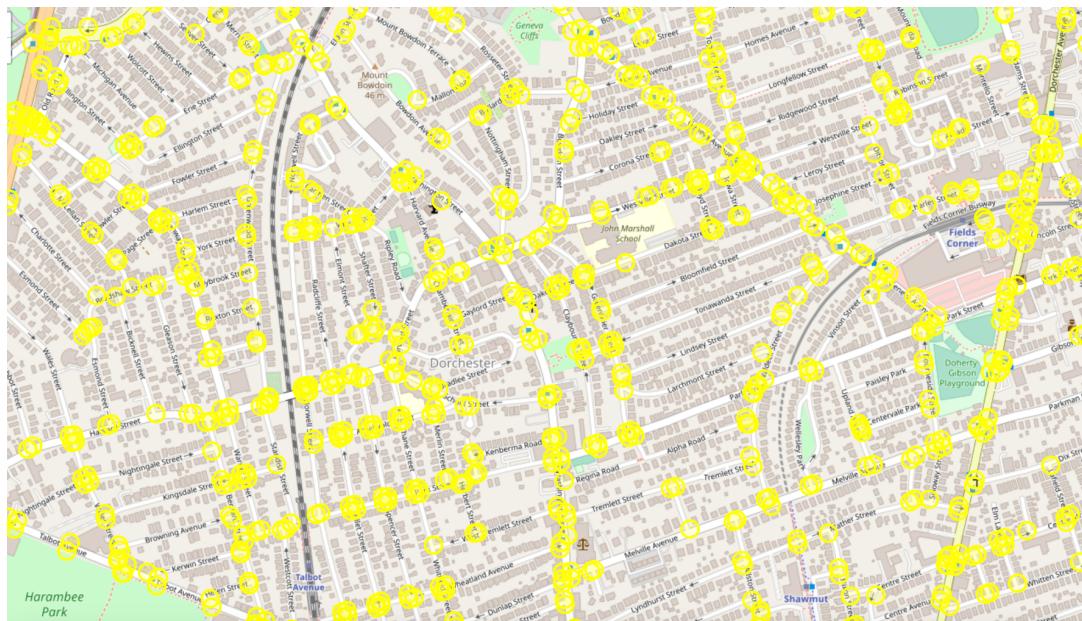
functionality- to be replaced)	375
Un-identified	6170

Roxbury has the most poor ramp landing conditions with around 16% of the total poor landing conditions.

ADA Compliance of the ramps:

This checks the accessibility for people with disabilities.

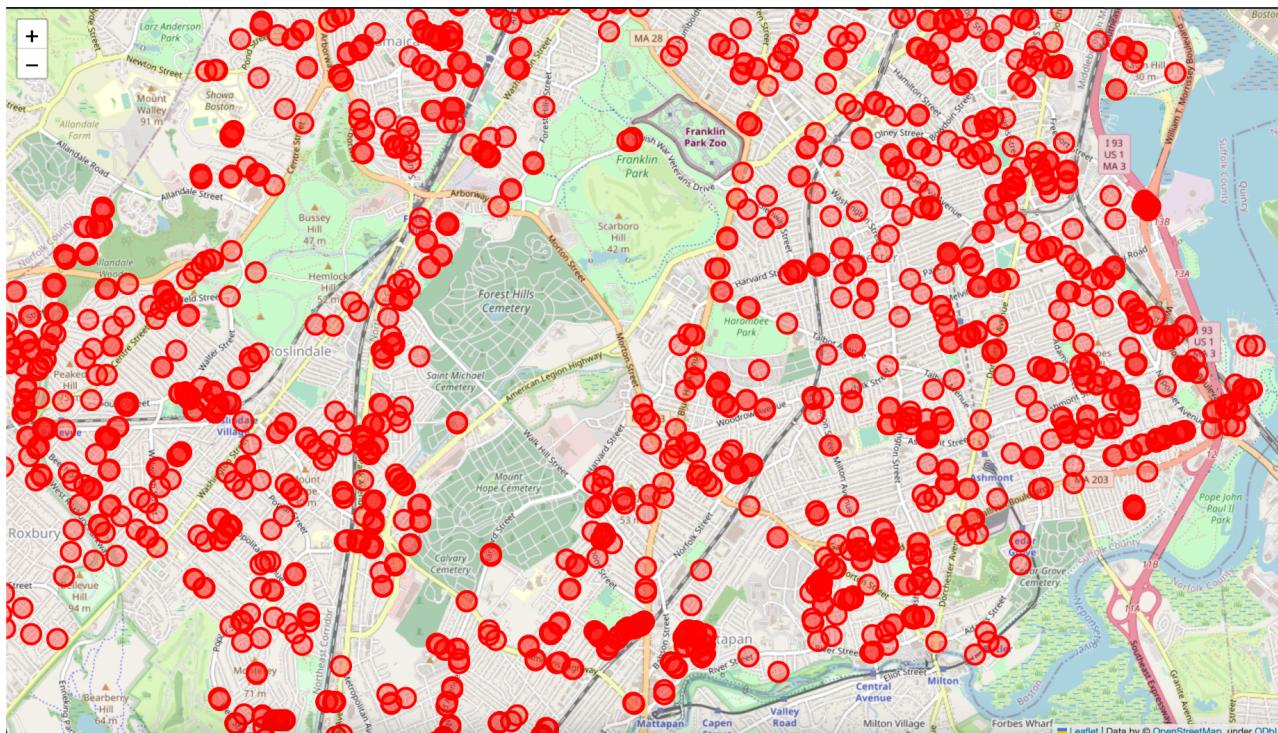
Compliance	Status
Compliant	3289
Not Compliant	20809
Not Compliant - Missing	2061
Un-identified	53



The yellow circles mark the non-compliant ramps in the Dorchester region which is ranked with the most number of non-compliant ramps.

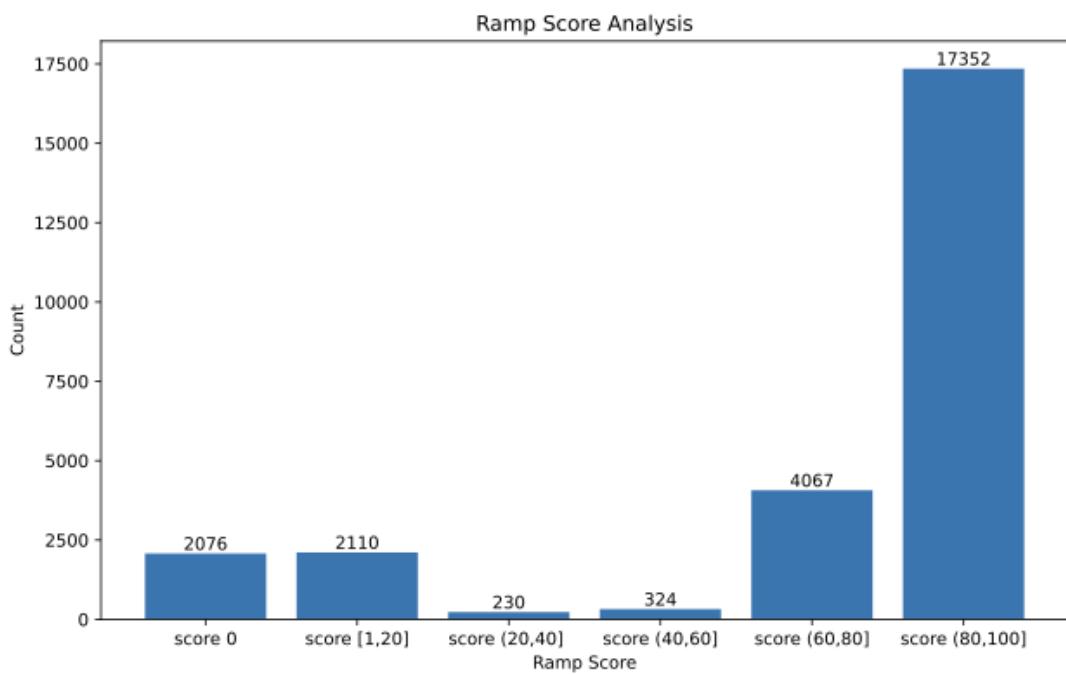
Neighborhood	Count	Percentage(wrt all non compliant regions)
Dorchester	2784	13.3%
Roxbury	2280	10.9%
South Boston	1874	9%
West Roxbury	1427	6.8%
Hyde Park	1223	5.8%

Below are the low ramp score regions plotted on the map which shows the regions around Dorchester and Mattapan:



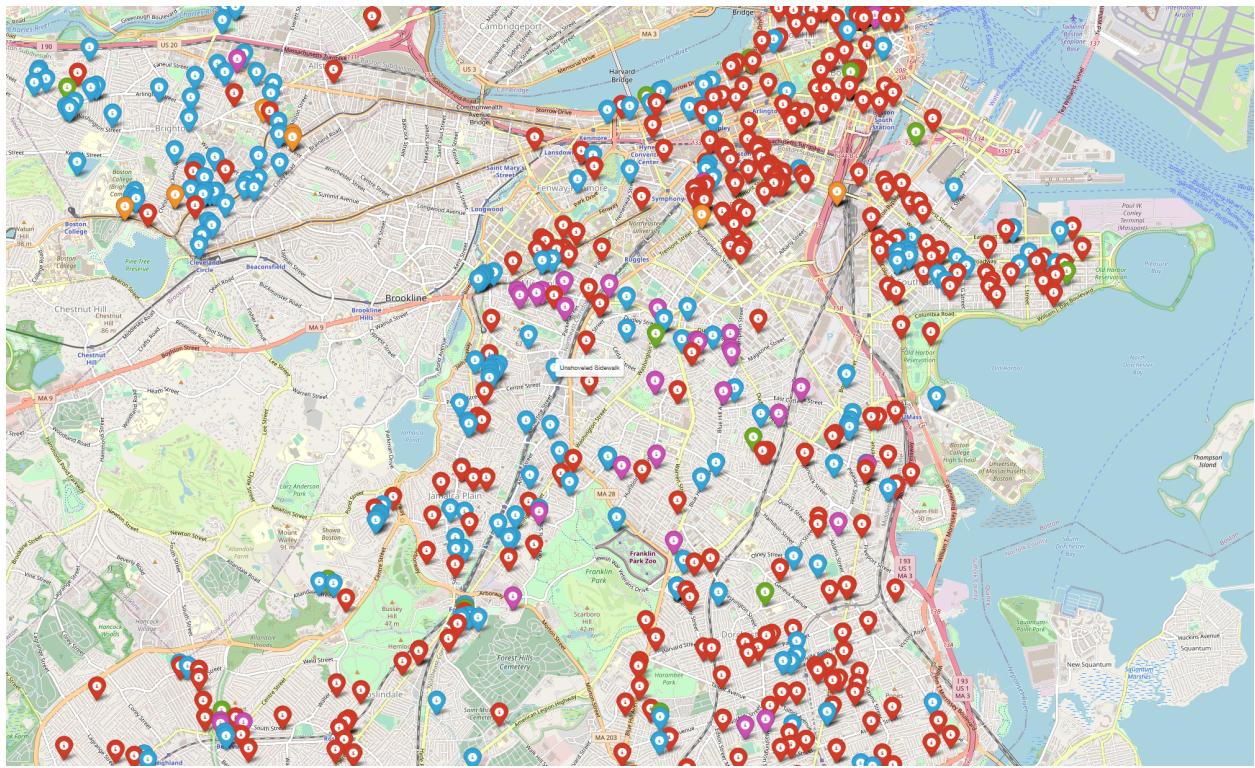
The bar graph below indicates the various ramp scores and their counts.

This is a scoring system for the accessibility of the ramp where 0 = missing ramp, biggest barrier
1-20 = very poor condition ramp/inaccessible- still considered barrier
21-55 = existing but not very accessible
56-80 = fairly accessible
81-100 = accessible

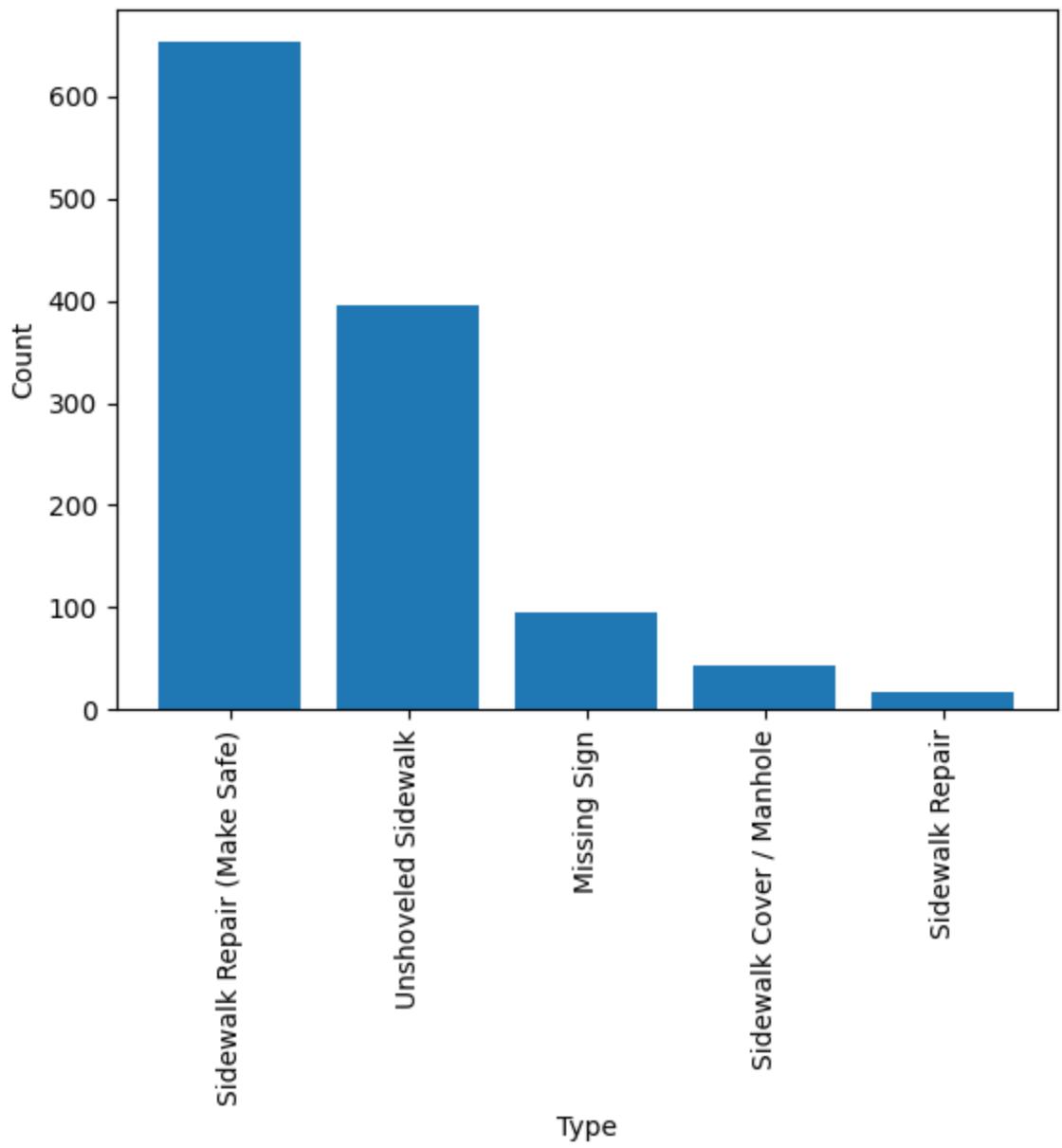


311 Requests

311 is a non-emergency phone number that people can call in many cities to find information about services, make complaints, or report problems like graffiti or road damage. From the 311 datasets, we have filtered out 515 open requests related to sidewalk issues and repair requests and mapped them. Since the dataset is very recent, we might be able to utilize this data in addition to what we already have to calculate the latest accessibility scores for the sidewalks.



Legend	
Sidewalk Repair (Make Safe)	Red
Unshoveled Sidewalk	Blue
Sidewalk Cover / Manhole	Green
Missing Sign	Purple
Sidewalk Repair	Orange



Combined Metrics [Hazards, Ramps with score less than 20, Non ADA Compliant Ramps, Ramps in poor condition]

Legend:

Circles : [Sidewalks Hazards]

- Red : Fixed Pinch Point Hazard
- Green : Trip Hazards due to tree roots
- Blue : Trip Hazards not due to tree roots

Blue Icon with Cross : Ramps that are not ADA Compliant

Red Icon with Exclamation : Ramps score less than 20

Purple Icon with ban circle : Poor ramp conditions



Key Questions:

- 1) Can we use the results of this score to identify regions of the City that are the most accessible vs. least accessible?

We have been able to identify these regions based on the new data received from the client. As seen from the report above, we have identified Dorchester to be the least accessible region. In order to identify the most accessible region, it is quite tricky as some regions have relatively fewer ramps and this could lead to a higher percentage of accessibility. We may have to come up with a different way to get an accurate measure for this, which will be focused on the next sprint.

- 2) Can we also compare these results with different elements of social vulnerability to see how equitable/inequitable accessibility is?

We are currently doing the demographic analysis in this scrum. As of now, the data provided is not region specific. We need alternative datasets that give us more comprehensive data that is specific to regions to have a better understanding of the social vulnerability.

- 3) Can we create routes from residential parcels to the nearest important pedestrian destinations (transit stops/ commercial zones/ parks/ schools/ etc.) to see how many residents can get to these destinations without coming across any inaccessible features? How do these routes differ for citizens that live in different parts of the City?

Although the demographic data available is not clear, it is possible to use parcel datasets and latitude/longitude coordinates to create routes from residential parcels to significant pedestrian destinations. We can find the shortest route between the starting and ending points while also taking into account any obstacles such as sidewalks hazards or inaccessible features (Using sidewalk hazards, and ramp score). With region-based census data estimation of the number of residents who can access these destinations without encountering any hazards or issues is possible.

- 4) Based on all the findings above, how should the City re-strategize its sidewalk repair strategy to be most impactful? Can we optimize repairs which would help the most people get to important destinations?

Based on the findings mentioned above, it would be beneficial for the city to determine which hazards are both time-consuming and frequent. The time required to address each hazard can depend on various factors such as population density and proximity to

significant locations like schools and transit stops. Additionally, clustering regions could be an effective approach to identifying and addressing hazards by focusing on a specific postal code region and completing repairs in that area.