2014–2019

Tree Canopy Assessment

Boston, MA

PREPARED BY:

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PREPARED FOR:

Boston Parks and Recreation Department

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Dear neighbors,

In recent years we have made Boston a national and global leader in sustainability and in parks access. We're taking significant measures to cut net emissions, and invest in healthy green spaces across all of our neighborhoods. An important part of this work is to assess and enhance Boston's tree canopy.

We know that tree cover improves livability; it increases shade which helps make neighborhoods more resilient to the severe heat associated with climate change; it has positive implications for residents' health; and it makes our entire city more beautiful. We're committed to growing our tree canopy in an equitable way.

Over the past year, we conducted a tree canopy assessment. This process provided us with valuable information about what areas have ample tree cover, and what areas have the most potential for increased tree cover. It also shows us what areas are "under-treed," and helps us design a path forward to increasing access to green space in these neighborhoods, as a part of our commitment to environmental justice.

Boston's tree canopy has remained relatively stable from 2014 to 2019. Our investments in the planting, care, and maintenance of street trees are paying off, as evidenced by the 23 acres of new tree canopy within the right-of-way.

More tree canopy was lost on residential land than any other land use type. Understanding where canopy loss is happening is the first step in addressing these issues through policy, including guidelines for tree canopy protection on public, private, and institutional property.

Our FY21 budget includes new funding for tree staff and operations as well as an Urban Forest Plan, which allows us to build on our strong stewardship record and manage our canopy in a more proactive way.

This assessment provides us with critical information that will allow us to move forward with our Urban Forest Plan. It also recommends action items relating to policy and planning efforts throughout the City.

I want to thank everyone who contributed to the execution of this assessment and the development of this report. I look forward to continuing to strengthen our city's tree canopy and all of our public green spaces in partnership with the community.

Sincerely,

Martin J. Walsh

Mayor of Boston

THE NEED FOR GREEN

Historically, trees have played an essential role in Boston as a way to balance the impacts of urbanization with green infrastructure. They are more important than ever as the City seeks to become more sustainable and equitable.

Trees provide essential ecosystem services. In Boston, they help mitigate many environmental challenges from stormwater runoff, to wind suppression, to reducing urban heat. Their canopies provide habitat for wildlife, transpiration reduces summer temperatures, and research shows that they can even improve social cohesion. A healthy and robust tree canopy is crucial to building a more livable city.

TREE CANOPY ASSESSMENT

For decades governments have mapped and monitored their infrastructure to support effective management of cities. That mapping has primarily focused on 'gray infrastructure,' built features such as roads and buildings. Tracking' green infrastructure' could also inform city planning and decision-making. The Urban Tree Canopy (UTC) assessment protocols we use were developed by the USDA Forest Service to help communities develop a better understanding of their green infrastructure through tree canopy mapping and analytics. Tree canopy is defined as the layer of leaves, branches, and stems that provide tree coverage of the ground when viewed from above. When integrated with other data, such as land use or demographic variables, a UTC assessment can provide vital information to help governments and residents chart a greener future. UTC assessments have been carried out for over 80 communities in North America. This study assessed tree canopy for the City of Boston over the 2014-2019 time period.

FINDINGS

Boston's tree canopy has remained relatively stable from 2014 to 2019, with losses slightly outpacing gains.

Tree canopy loss is not evenly distributed nor similar. It varies from backyard individual tree removal to the clearing of patches for new construction.

While tree canopy is relatively stable overall, the story is more nuanced. There were 909 acres of tree canopy gained, and 920 acres of tree canopy lost from 2014 to 2019.

Relative tree canopy percent loss was widespread in the southern and eastern neighborhoods.

More tree canopy was lost on Residential land than any other land use type.

Boston's investments in the planting, care, and maintenance of its street trees are paying off, as evidenced by the 23 acres of new tree canopy within the right-of-way.

Tree planting and preservation efforts are effective and pay greater dividends as trees mature.

Land use history, landowner decisions, and construction all play a role in influencing the current state of tree canopy in Boston.

RECOMMENDATIONS

Preserving existing tree canopy is the most effective means for securing future tree canopy, as loss is an event but gain is a process.

Planting new trees in areas where tree canopy is low or in locations where there has been tree canopy removed will also help the city recover its recent losses.

Having trees with a broad age distribution and a variety of species will ensure that a robust and healthy tree canopy is possible over time.

Supporting community groups and educational programming is crucial if tree canopy is to be maintained over time. Residents that are knowledgeable about the value and services trees provide will help the city stay green for years to come.

Integrate the tree canopy change assessment data into planning decisions at all levels of government.

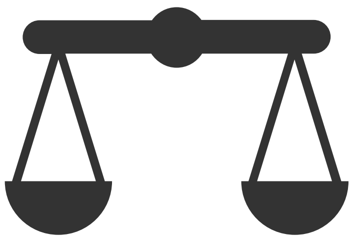
Reassess the tree canopy at 5 years intervals to monitor change.

Tree canopy assessments require high-quality, high-resolution data. Continue to invest in LiDAR and imagery to support these assessments and other mapping needs.

Field data collection efforts should be used to compliment this assessment as information on tree species, size, and health can only be obtained through on-the-ground inventories.

TREE CANOPY BY THE NUMBERS

OVER THE PAST FIVE YEARS



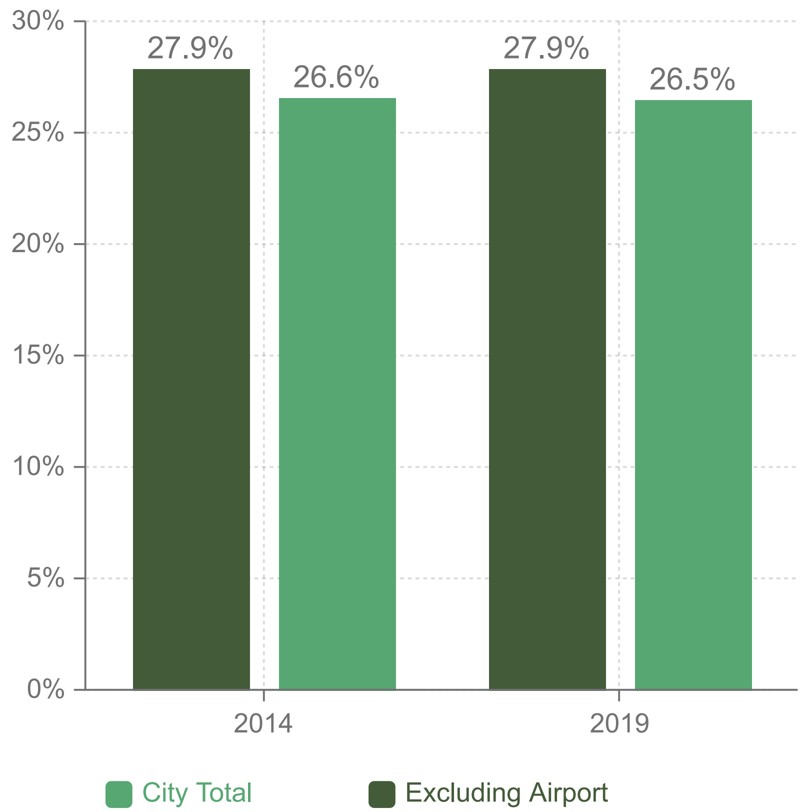
NO CHANGE IN OVERALL CANOPY COVERAGE FROM 2014-2019

Tree Canopy Acres

	2014	2019
City Total	8210	8199
Excluding Airport	8196	8181

26.5%

2019 TREE CANOPY



Tree canopy in Boston has remained relatively stable from 2014 to 2019, with losses in tree canopy only slightly outpacing gains, resulting in a decline from 8,210 acres of tree canopy in 2014 to 8,199 acres of tree canopy in 2019. Losses were associated with events, such as construction, whereas gains came from the growth of existing tree canopy or newly planted trees.

There are three ways of measuring tree canopy change:

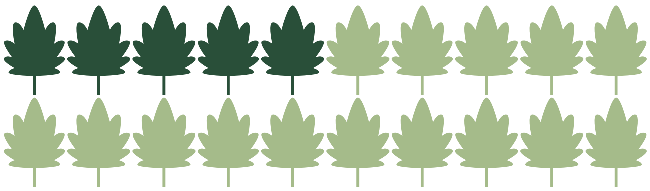
Area Change - the change in the area of tree canopy between the two time periods. The city tree canopy remained stable between 2014 and 2019 with a small loss of 11 acres .

Relative % Change - the relative change of tree canopy from 2014 to 2019 using 2014 as the base year. Relative to the 2014 amount of tree canopy, the city's tree canopy change was 0%.

Absolute % Change -the percentage point change between the two time periods was 0%

TREE CANOPY METRICS

27% of Boston's land is covered by tree canopy



Using Geographic Information Sytems (GIS) tree canopy was summarized at various geographical units of analysis, ranging from land use and property parcel to neighborhood boundaries. These tree canopy metrics provide information on the area of Existing and Possible Tree Canopy for each geographical unit.

Existing Tree Canopy

Boston, like many cities, has an uneven distribution of tree canopy. There are some 25-acre hexagons with less than 10% tree canopy and others with more than 95% tree canopy. This unequal distribution reflects everything from land use history to the location of natural features of the landscape. This distribution also has consequences, with those residents living and working in areas with more tree canopy benefiting disproportionately from the services that trees provide. Conversely, the densely urbanized regions, particularly those in the Downtown and surrounding neighborhoods like Newmarket and the Seaport, as well as the Charlestown and East Boston neighborhoods, have strikingly low amounts of tree canopy. These locations, therefore, receive fewer ecosystem services, resulting in disamenities such as an increase in the urban heat island effect. The Boston Logan International Airport is located in East Boston, contributing to the lack of trees on the south-eastern side. The south-western neighborhoods of Boston benefit the most from tree canopy. Open space and parks in Jamaica Plain and surrounding neighborhoods have the highest tree canopy. Some of this tree canopy is due to the early horticultural planning and establishment of trees within the Emerald Necklace Park System and surrounding residential areas. However, these neighborhoods have experienced canopy loss.

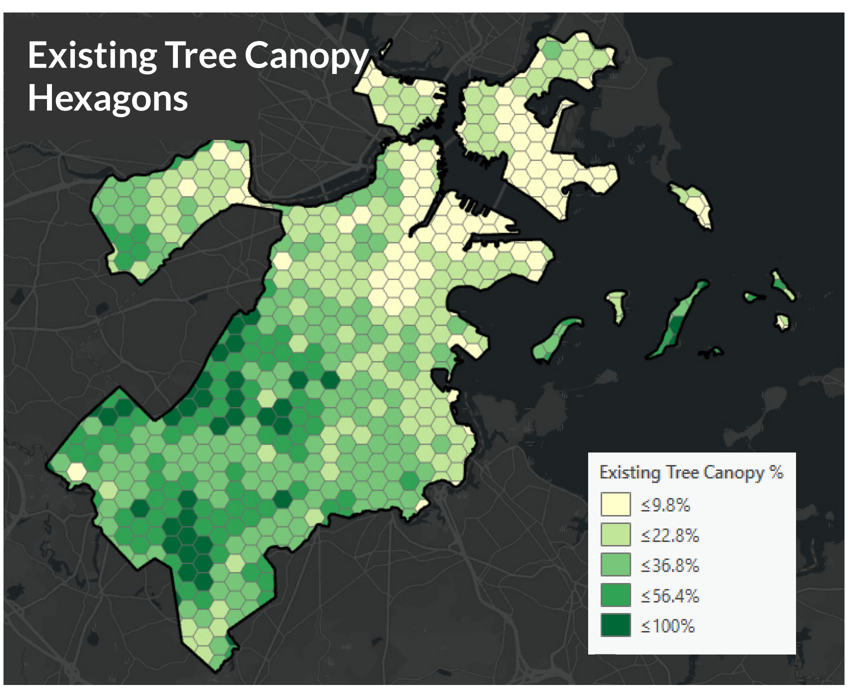


Figure 1. Existing tree canopy percentage for 2019 conditions summarized using 25-acre hexagons. For each of the hexagons, the percent tree canopy was calculated by dividing the amount of tree canopy by the land area, which excludes water. Using hexagons as the unit of analysis provides a standard mechanism for visualizing the distribution of tree canopy without the constraints of other geographies that have unequal area (e.g., zip codes)

City Change Distribution

The relative tree canopy change percentage shows the magnitude of change throughout the City of Boston over the 2014-2019 time period. The relative change is calculated by taking the tree canopy area in 2019, subtracting the tree canopy area in 2014, then dividing this number by the area of tree canopy in 2014. Areas with the greatest change indicate that the canopy is markedly different in 2019 as compared to 2014. In some of the densest urbanized areas with little tree canopy, the growth of street trees resulted in a sizeable relative gain. In other cases, large removals of tree canopy due to construction resulted in corresponding substantial relative reductions in tree canopy.

In most cases, those areas with the highest amount of relative loss (negative values) were the result of widespread removal of individual and small patches of trees. In some cases the removal of even a few dozen trees could result in a stark relative change if there was a low amount of tree canopy in 2014. Conversely, new plantings in areas with low canopy would show a large relative change, which is apparent in the densely urbanized areas surrounding the Downtown.

Some notable areas of change:

- Rail ROW between Massachusetts Ave and Norfolk Ave- Loss due to clearing of tree canopy from 2014-2019 along rail line (Figure 2).
- U Mass Boston - the area in the vicinity of the UMass Harborwalk and Boston College Athletic Field, had dozens of trees removed along the coastline, but newly planted trees may offset this loss (Figure 3).
- A Street Park - Experienced high canopy gain due to new plantings that may have existed in 2014 with sparse canopies that were not detectable, but are now providing measurable tree cover in this park (Figure 4).
- Suffolk Downs Station - A mix of gains and losses in this area due to new plantings, natural growth and tree removals (Figure 5).
- South Boston / City Point Area - Loss due to an tree removals along East 1st Street corridor (Figure 6).
- Lewis Mall Development - Losses due to construction (Figure 7).
- Seaport Area - A mix of gains and losses from new street trees and removals from 2014-2019 (Figure 8).

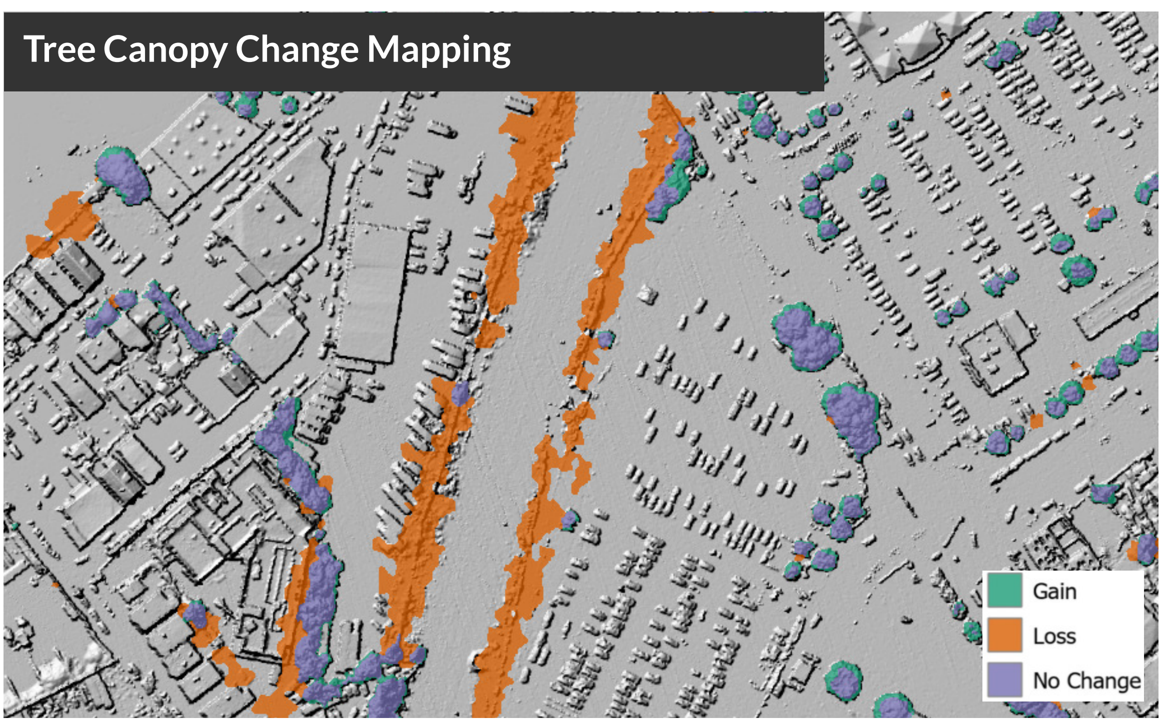


Figure 2: Tree canopy change mapping for the rail Rail ROW between Massachusetts Ave. and Norfolk Ave. This area experienced a high amount of tree canopy loss. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map.

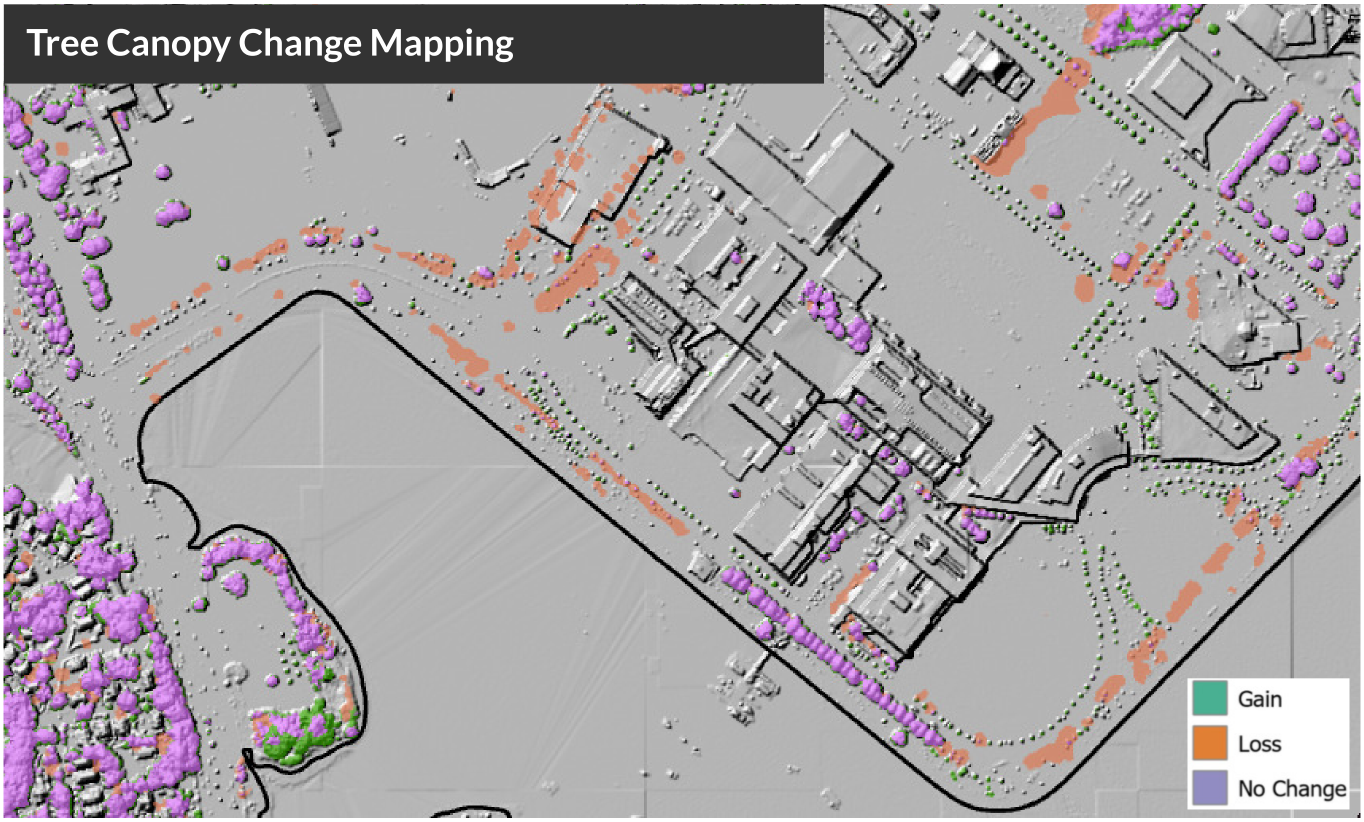


Figure3: Tree canopy change mapping for the area in the vicinity of the UMass Boston Harborwalk. This area experienced a high amount of relative tree canopy loss. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map. New plantings are quite small, but were captured by the 2019 LiDAR.

Figure 4: Tree canopy change mapping for the area in the vicinity of A Street Park. This area experienced amongst the highest relative tree canopy gain. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map.

Change Examples

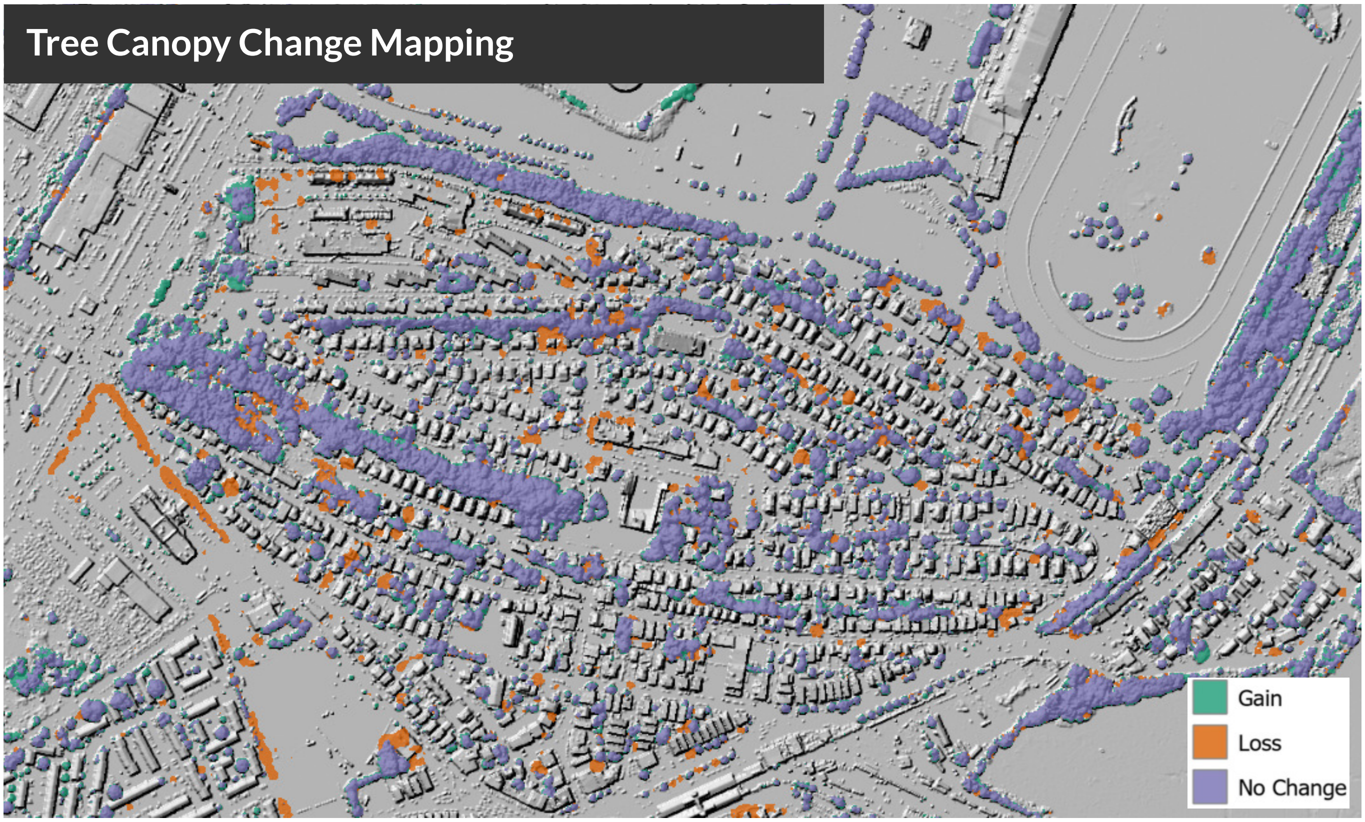


Figure 5: Tree canopy change mapping in the vicinity of Suffolk Downs Station. This area experienced a mix of gains and losses in due to new plantings, natural growth and tree removals. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map. New plantings are quite small, but were captured by the 2019 LiDAR.

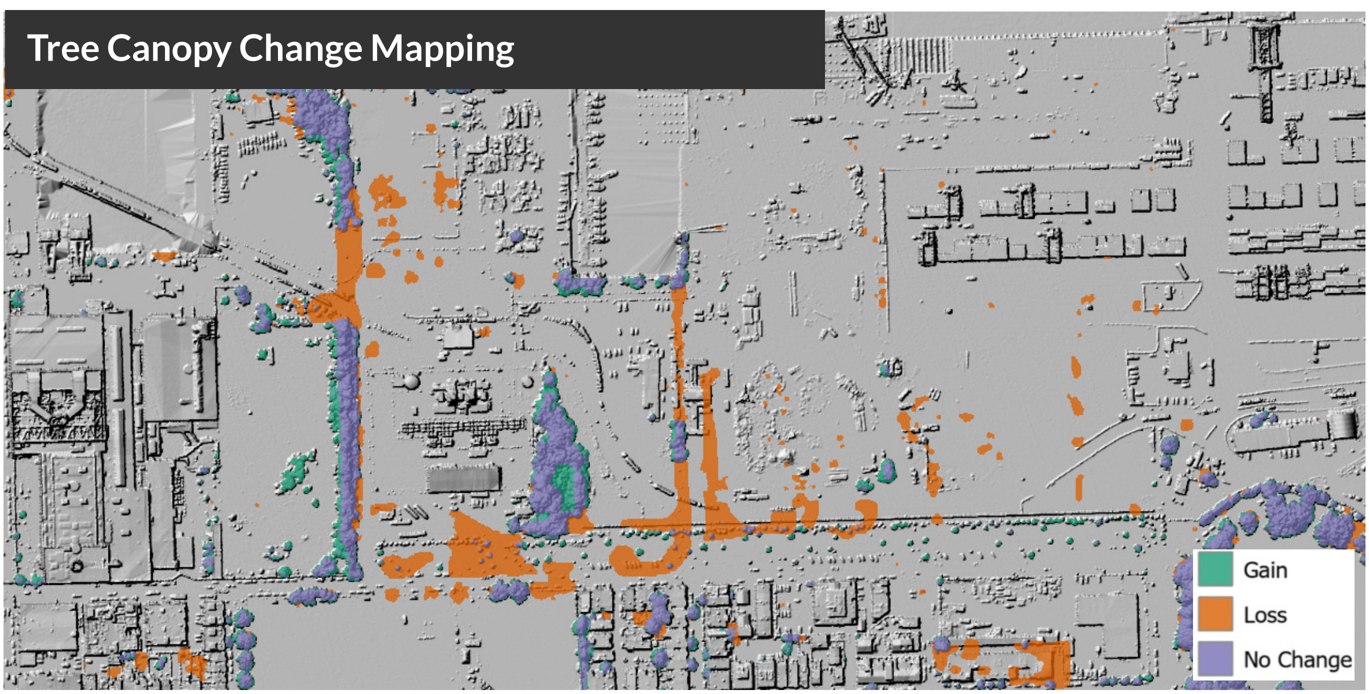


Figure 6: Tree canopy change mapping for the South Boston/City point area. This area experienced loss due to tree removals along East 1st Street corridor. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map.

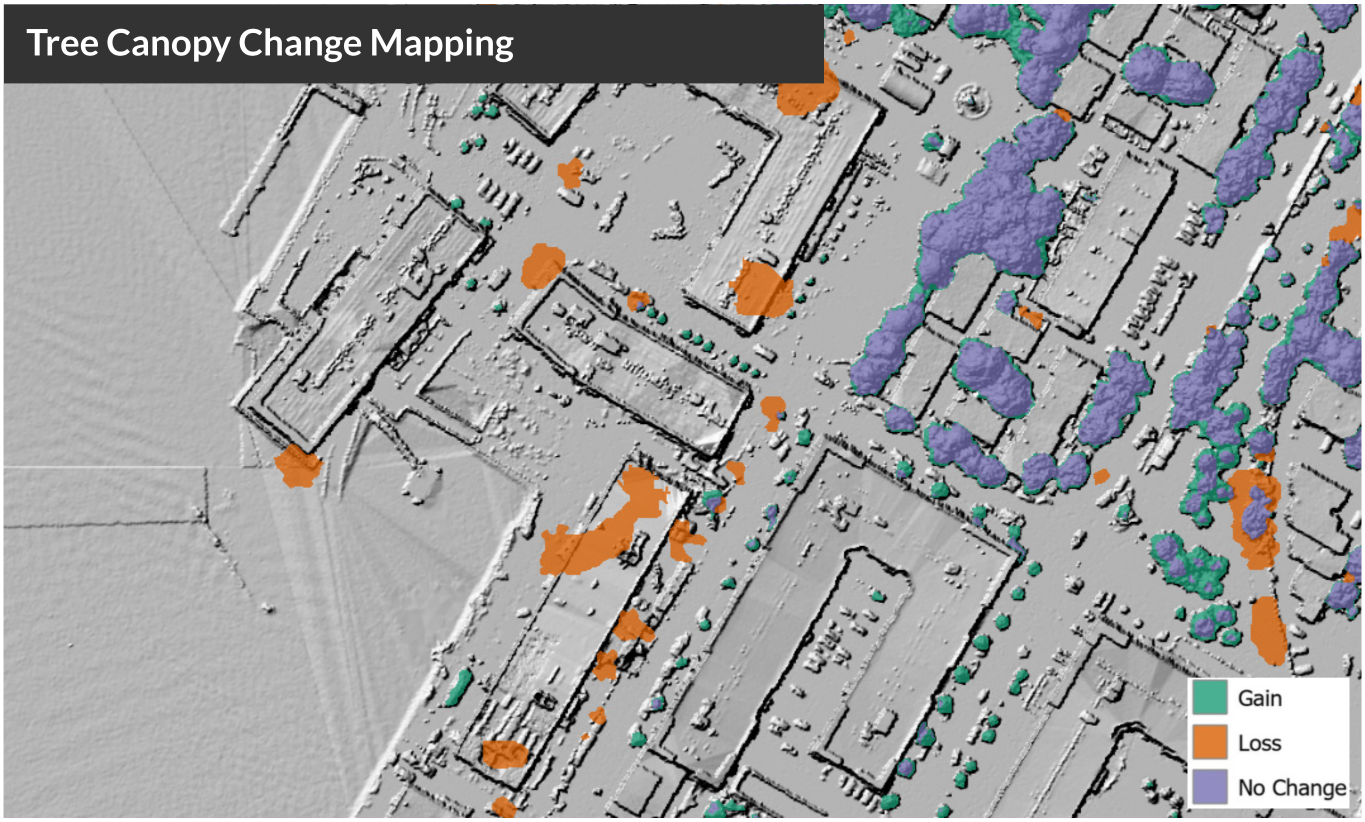


Figure 7. Tree canopy change mapping in the vicinity of Suffolk Downs Station. This area experienced loss due to construction. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map. New plantings are quite small, but were captured by the 2019 LiDAR.

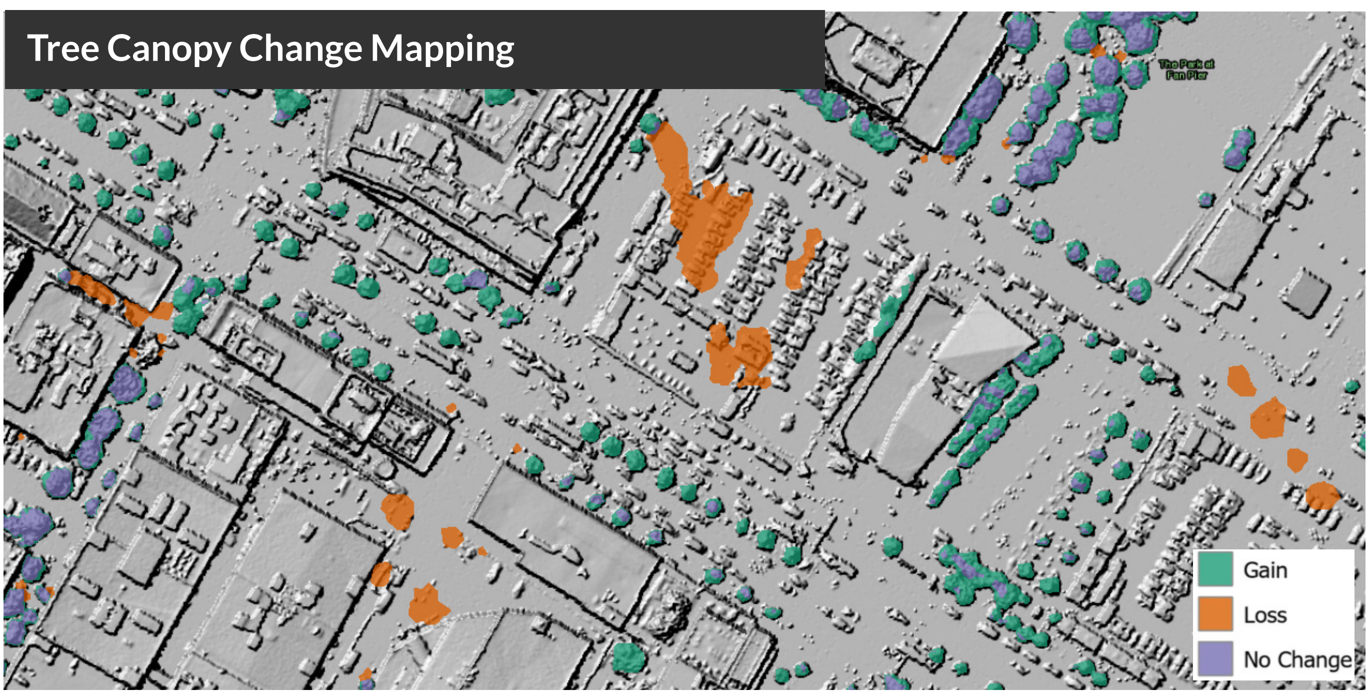


Figure 8: Tree canopy change mapping for the Seaport Area. This area experienced a mix of gains and loss from new street trees and tree removals in the construction of a parking lot from 2014-2019. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map.

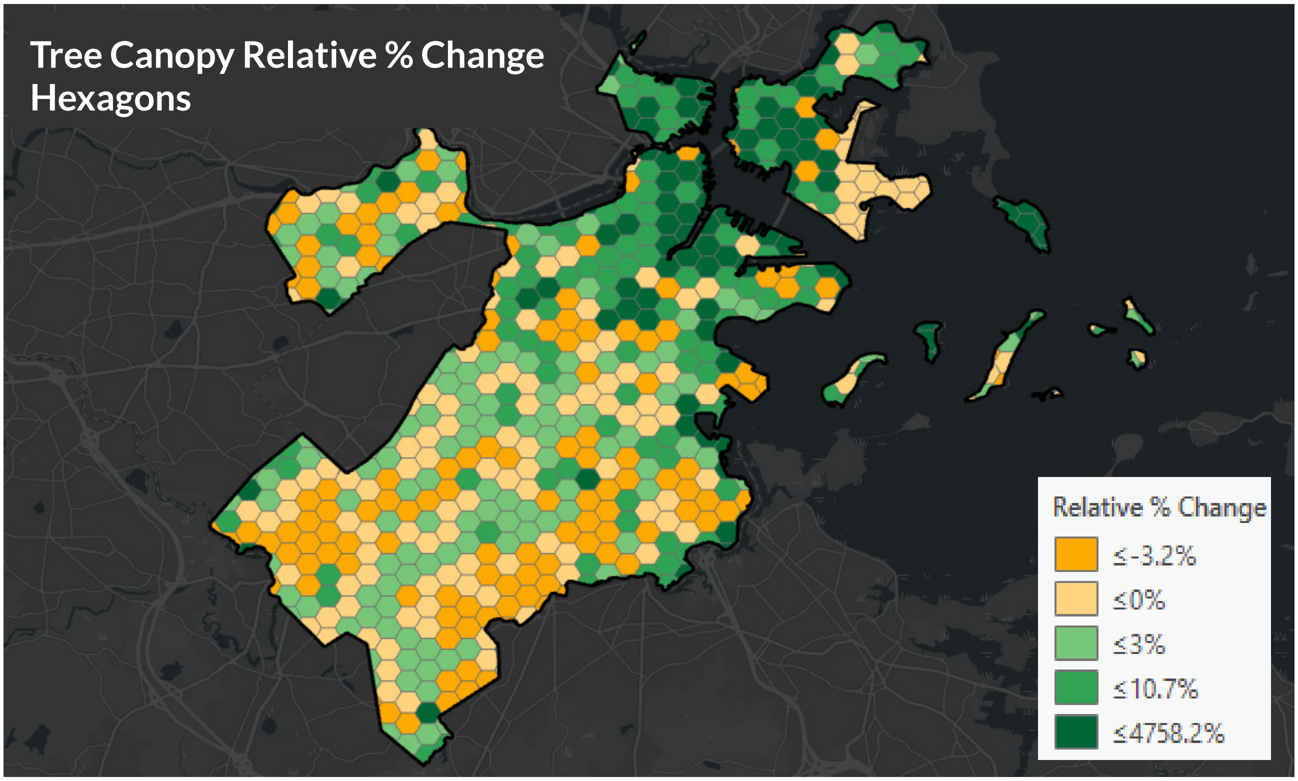


Figure 9: Tree canopy change metrics summarized by 25-acre hexagons. Relative change for each hexagon is calculated by using the formula (2019 canopy - 2014 canopy)/(2014 canopy). Negative values (darker orange color) indicate loss and positive values (green color) indicate gain, relative to other hexagons.

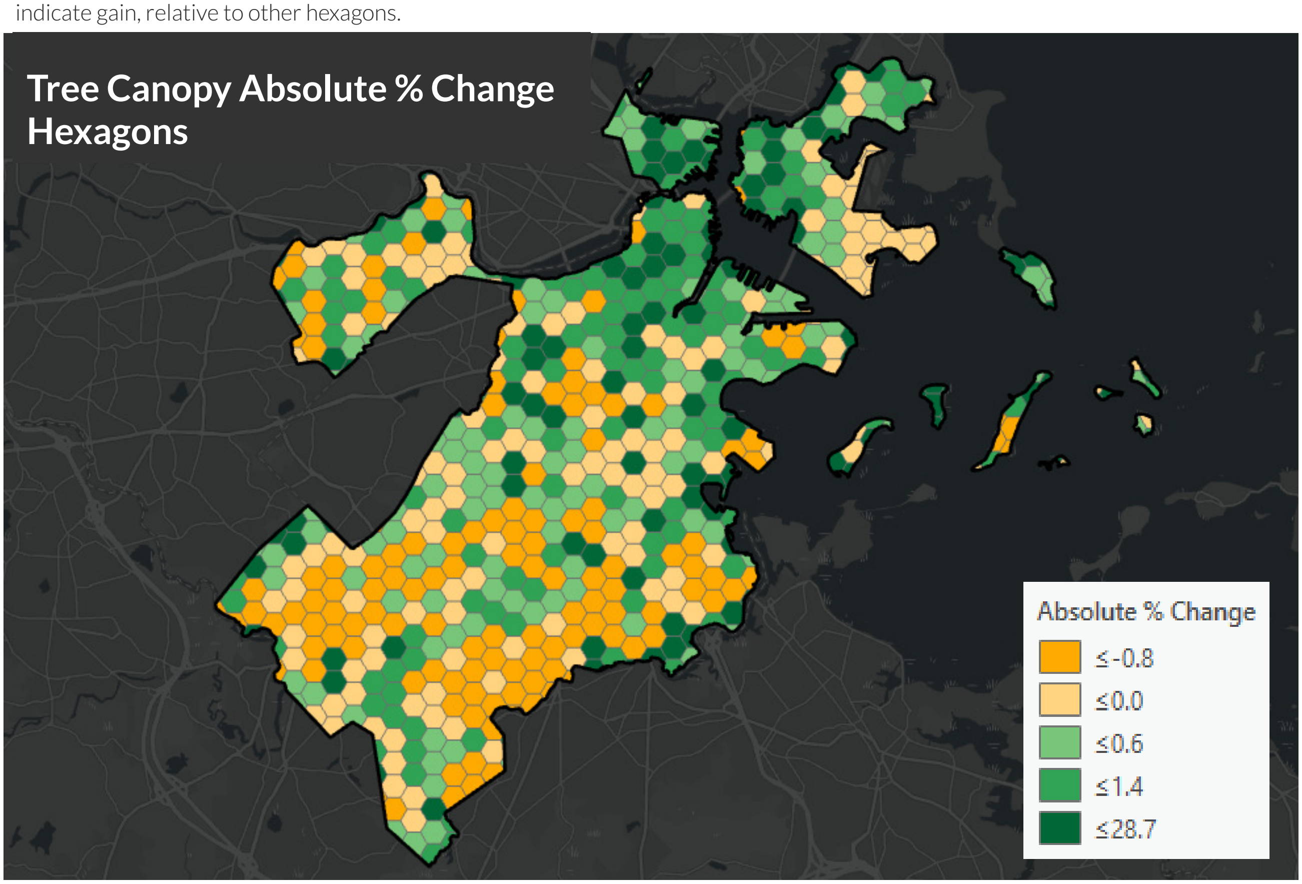


Figure 10: Tree canopy change metrics summarized by 25-acre hexagons. Absolute change for each hexagon is calculated by using the formula (2019 canopy %)- (2014 canopy %). Negative values (darker orange color) indicate loss, and positive values (green colors) indicate gain, independent of other hexagons.

Land Use

Land use is different from land cover. Land cover refers to the physical features on the landscape, such as the trees, buildings, and other classes mapped as part of this study. Land use is how we, as humans, make use of the land. Residential land use can contain tree, building, impervious, grass, and other land cover features. Land use can significantly influence the amount of tree canopy and the room available to establish new tree canopy. This study made use of Boston's generalized land use data to summarize tree canopy metrics and change metrics.

Boston has the greatest area of tree canopy on Public Open Space, followed by Residential and rights-of-way (ROW), as shown in Figure 11. Even small changes in the percent of tree canopy on these land uses will influence the city's overall tree canopy. Net losses in tree canopy only happened on Commercial and Residential land uses. Across all the measures of change, Residential land use had the greatest decrease by absolute percentage, relative percentage, and total area of tree canopy loss. Had it not been for the losses on Residential land use, Boston would have experienced a sizable net increase in tree canopy. Public Open Space land use had the highest increase in tree canopy based on absolute percent change and total area change, somewhat offsetting the losses on Residential land use. Industrial land use had the greatest relative percent change, but as so little tree canopy exists on Industrial land use, this has a minor impact on the city's total tree canopy change.

Tree Canopy Change

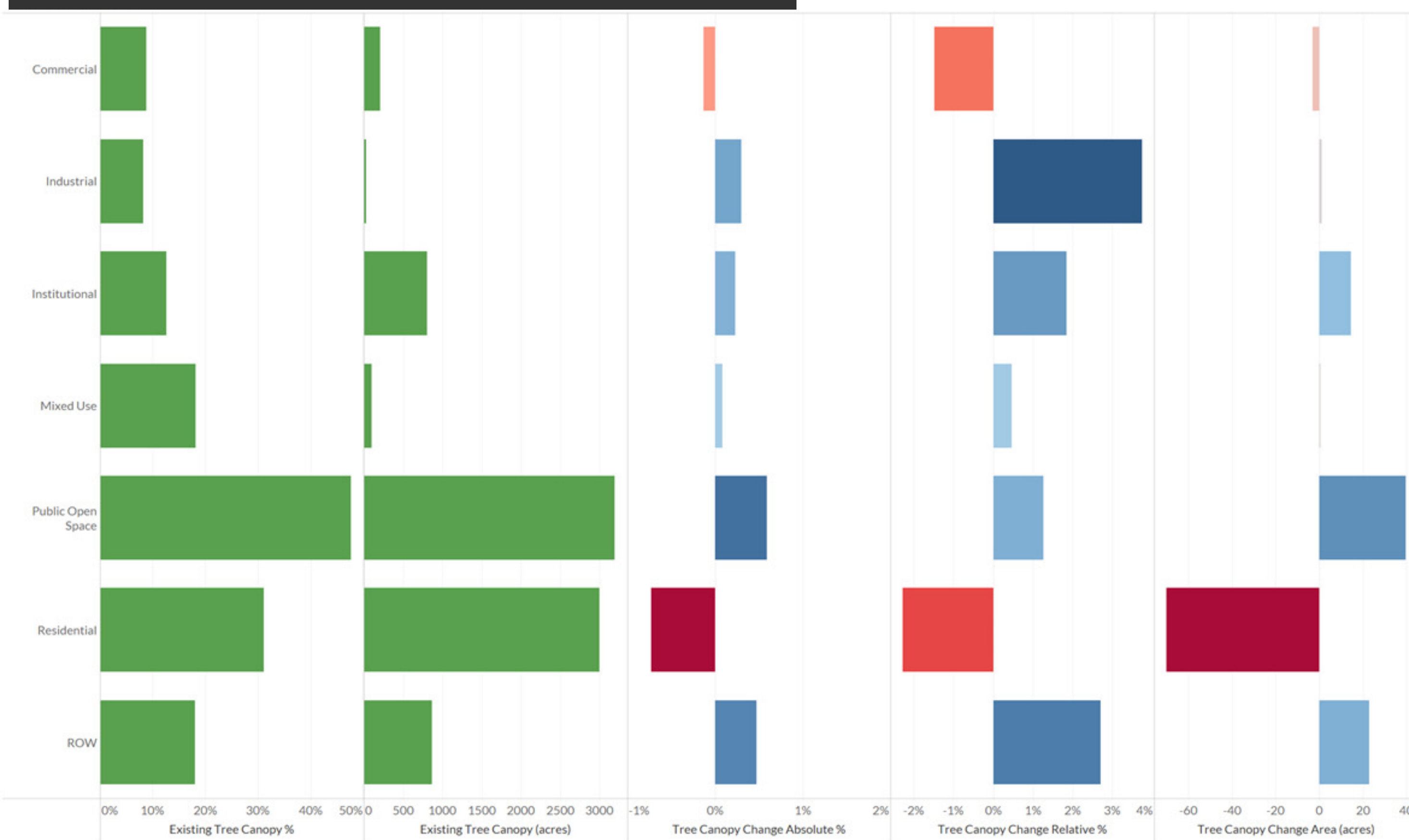


Figure 11: Existing tree canopy %, Exiting tree canopy area, Absolute percent change, Relative percent change and Tree canopy area by land use category from 2014 to 2019. Darker reds represent greater losses and darker blues represent greater gain.

Land Use (continued)

All land use categories had a mix of tree canopy losses and gains. In the case of Institutional and Public Open Space land uses, the gains exceeded the losses, resulting in a net increase in tree canopy. Within the Residential land use class, the losses were higher than the gains.

The net gain within the ROW is a sign that Boston's investments in street tree plantings and maintenance pay dividends. The ROW is inherently unfriendly to trees making this increase even more remarkable.

As Residential land is the largest single land use category, by land area, within the City of Boston, this pattern is concerning as continued losses on the Residential lands could undo the gains made on government and institutional properties. Increased outreach and education of the city's residents as to the important role their properties play in keeping the city green may be necessary.

Tree Canopy Gain & Loss by Land Use

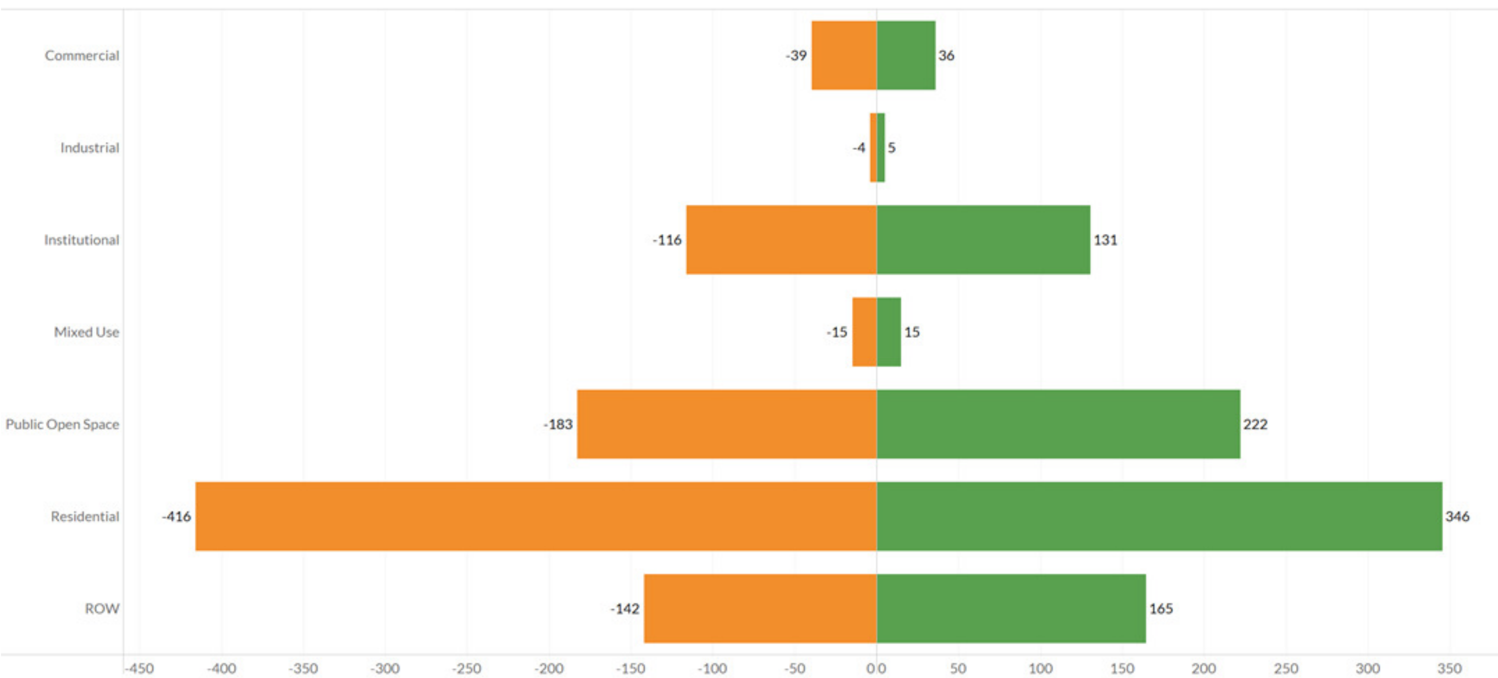


Figure 12: Tree canopy change, in acres, from 2014 to 2019 by land use class. Gains are shown in green and losses are shown in orange. Residential tree canopy had the greatest losses and the greatest gains.

Land Use for an Area of Dorchester, Boston

Figure 13: Land use in an area of the Dorchester neighborhood. Residential use is the second largest land use category (cream color).

Neighborhoods

All neighborhoods experienced gain and loss within their boundaries as shown in Figure 15. The difference between the gain and loss bars gives us the relative change within each neighborhood (Figure 14 map).

Relative tree canopy loss was widespread in the south and eastern neighborhoods of Boston. Hyde Park experienced the highest relative loss while the South Boston Waterfront neighborhood experienced the highest relative gain.

The large neighborhoods of Dorchester and West Roxbury both added and lost the most acres of tree canopy, followed by Hyde Park and Jamaica Plain. The Leather District is small in area, and changes in tree canopy were negligible. Overall the acres of canopy gained and lost were balanced across Boston, amounting to no overall change in canopy from 2014-2019.

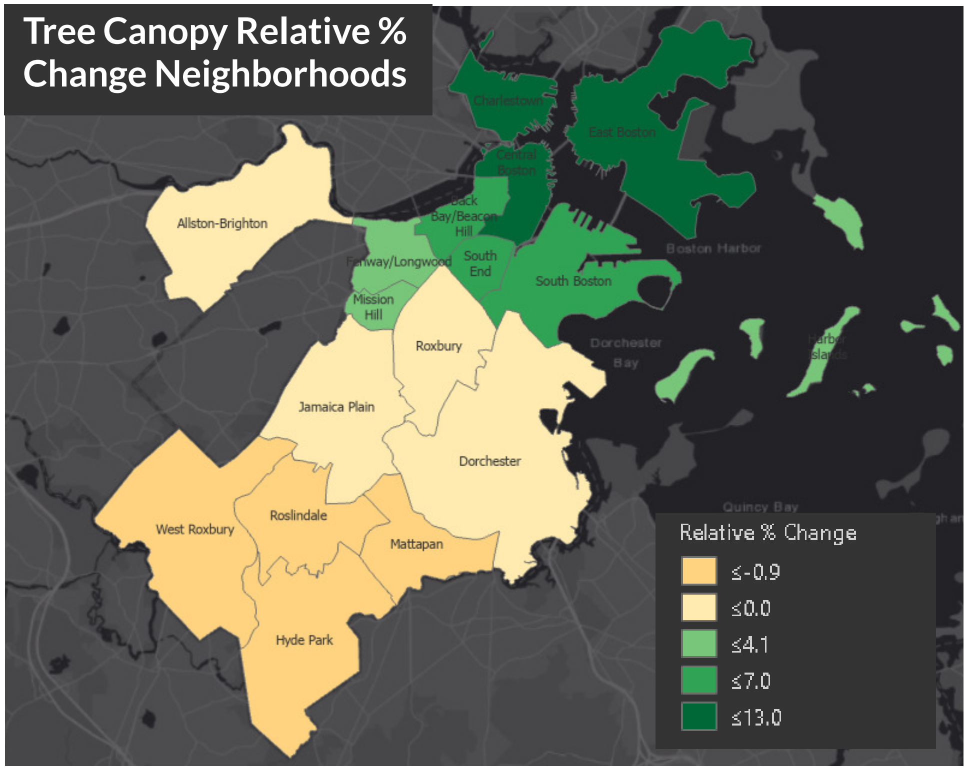


Figure 14: Tree canopy change metrics summarized by neighborhoods. Relative tree canopy is calculated by using the formula (2018-2014)/2014. Darker orange colors indicate greater amounts of loss.

Tree Canopy Gain & Loss by Neighborhood

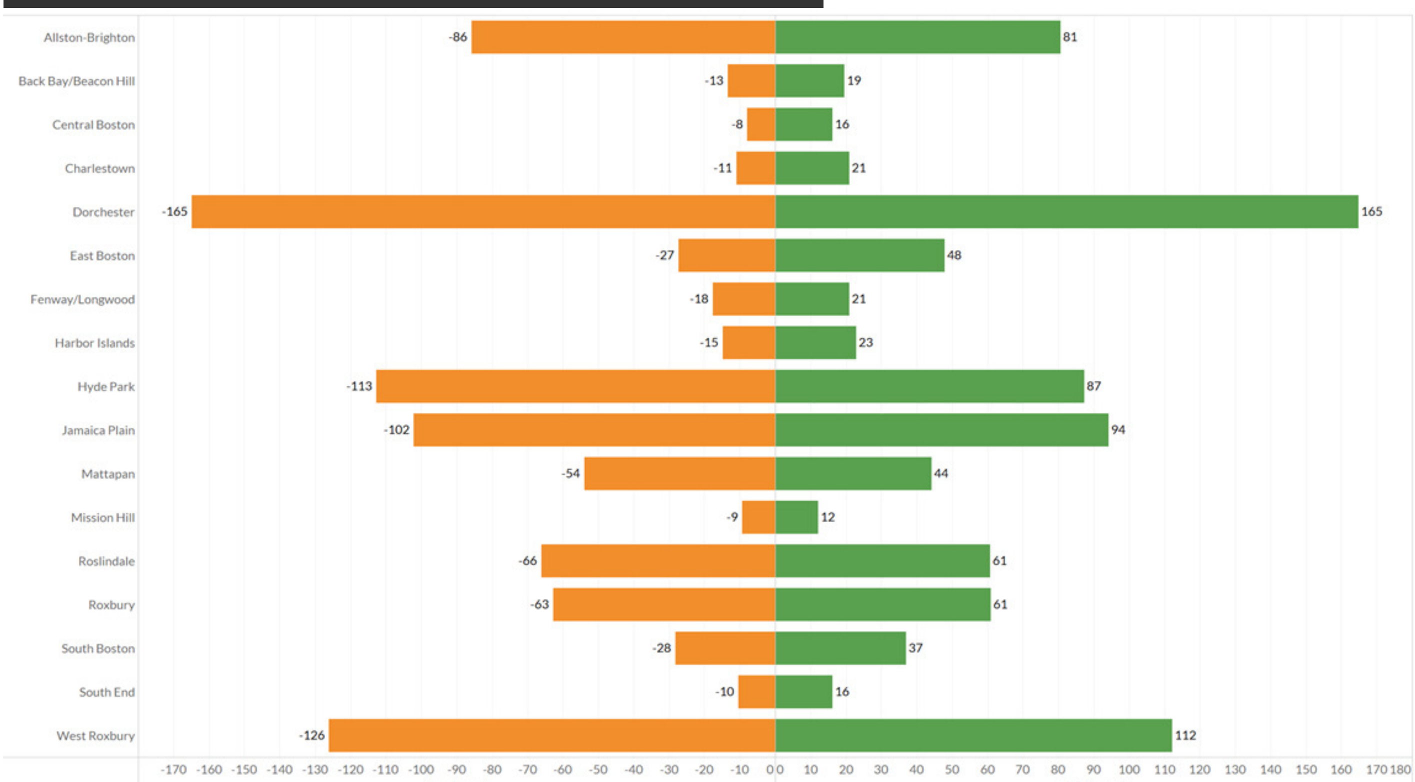


Figure 15: The area of tree canopy gain and loss in each neighborhood in Boston including the Logan International Airport.

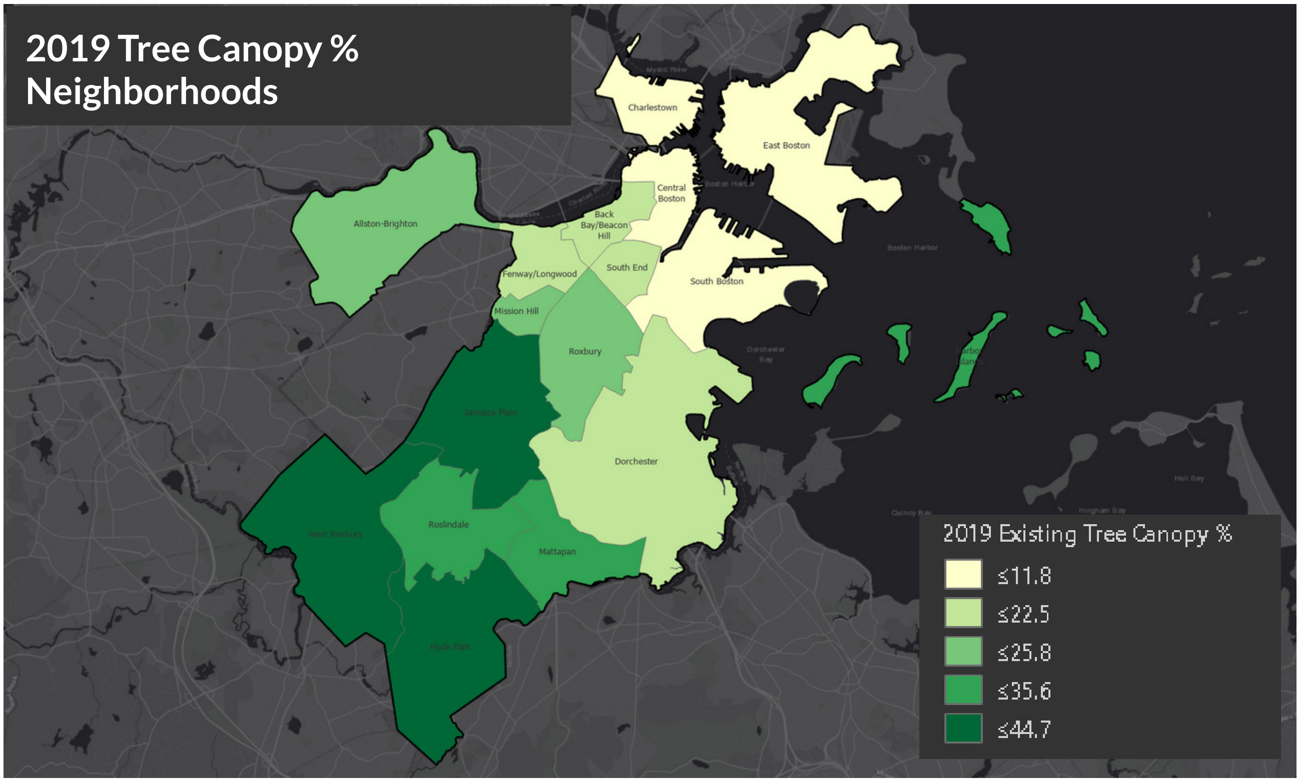


Figure 16: 2019 tree canopy cover percent summarized by neighborhood.

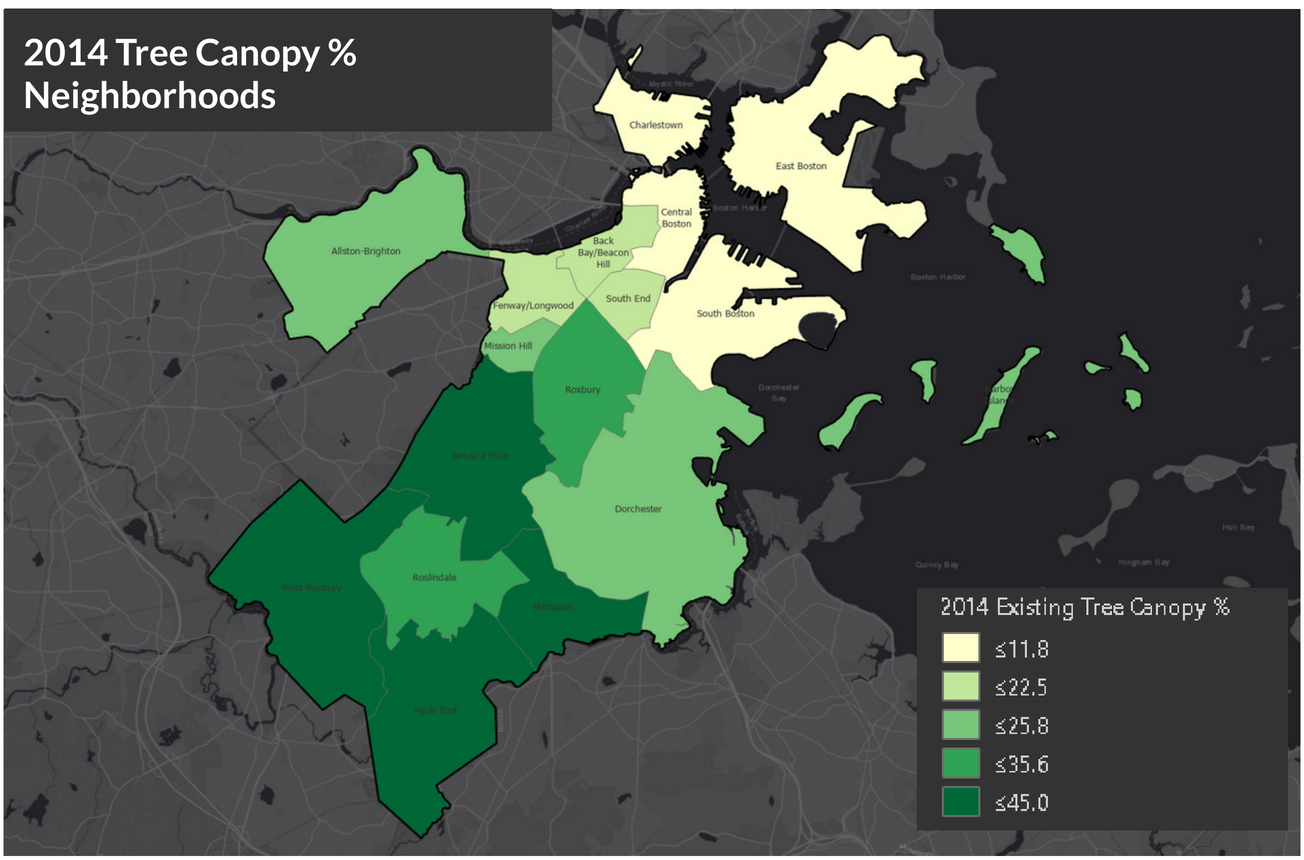


Figure 17: 2014 tree canopy cover percent summarized by neighborhood.

Further insights into what might be driving the change in each neighborhood can be obtained by examining the net change per neighborhood by land use (Figure 18). Dorchester's tree canopy gains and losses have balanced each other out. Although the neighborhood experienced no net change, the type of change varied greatly by land use. Tree canopy increased on all land uses within Dorchester aside from Residential land use class, which exhibited a net loss. This pattern of net losses on residential land was also found in Hyde Park, Jamaica Plain, Mattapan, Roslindale, Roxbury, South Boston, and West Roxbury. Given that Residential land has the second largest total area of tree canopy by land use, losses on residential land, if continued, will have a substantial effect on Boston's overall tree canopy. If there were no net losses of tree canopy on residential land, all neighborhoods would have experienced a net increase in tree canopy.

Tree canopy increased within the ROW in all but three of Boston's neighborhoods. This is an encouraging sign that investments in maintaining and growing the City's street trees are having a positive effect. Street trees not only make roads more aesthetically pleasing, but they also play an important role in reducing stormwater runoff and decreasing the urban heat island effect.

Hyde Park is notable because the net area of tree canopy decreased in all land uses. Jamaica Plain suffered net losses of tree canopy in all land uses aside from the ROW. West Roxbury had a similar pattern, with the exception that tree canopy increased within Public Open Space. Net losses on Institutional land occurred in Aliston-Brighton, Jamaica Plain, Roslindale, Roxbury, and West Roxbury.

Tree Canopy Change per Neighborhood by Land Use

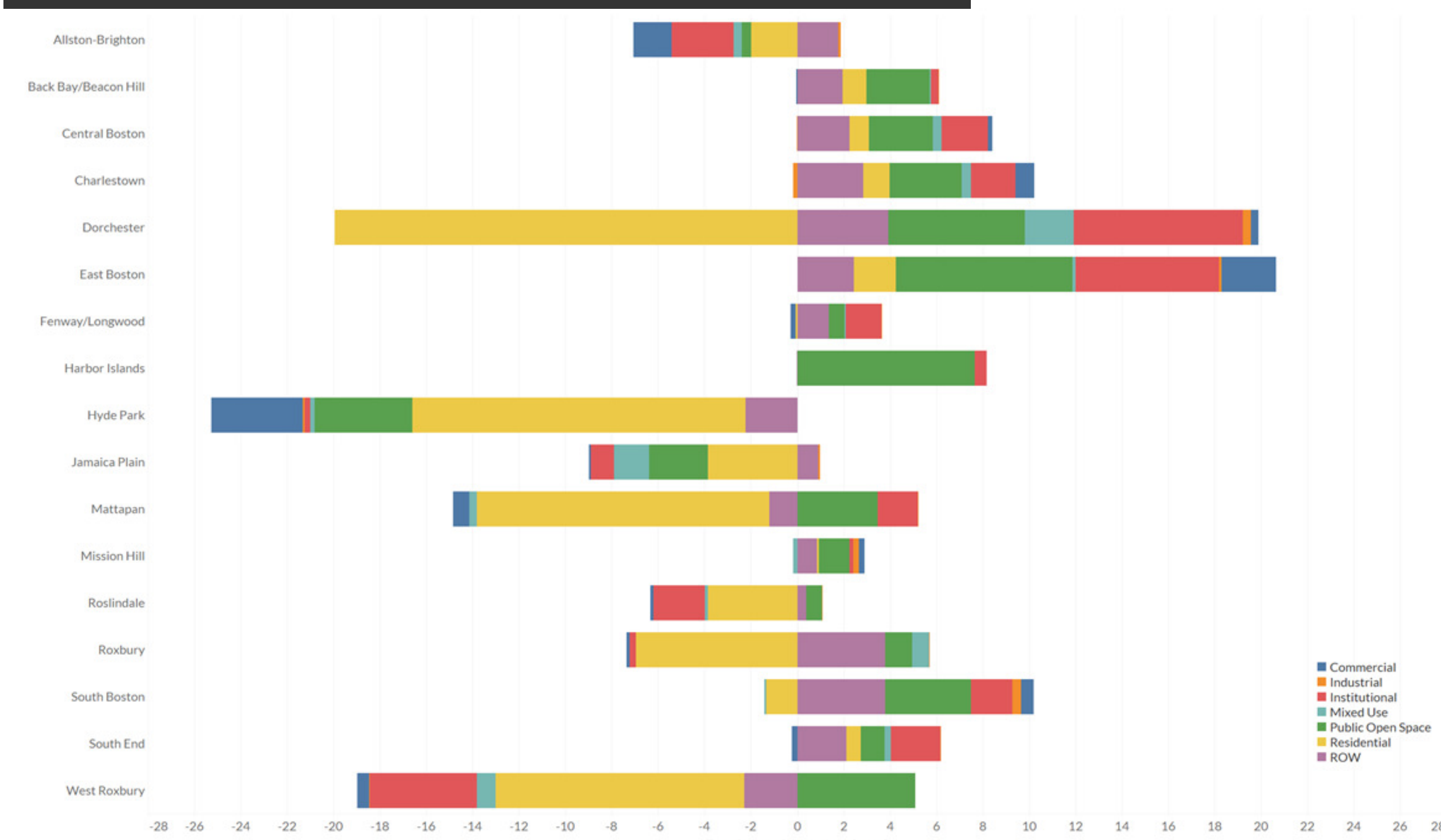


Figure 18: The area, in acres, of tree canopy change in each neighborhood of Boston broken down by land use categories.

Open Space

Tree canopy on protected open space rose 1.7% in relative change, and 0.8% in absolute change, resulting in a net gain of 38 acres of tree canopy across the City. The open space within the parcel boundary of the Boston Nature Visitor Center had a relative percentage gain of over 70% due to natural canopy growth.

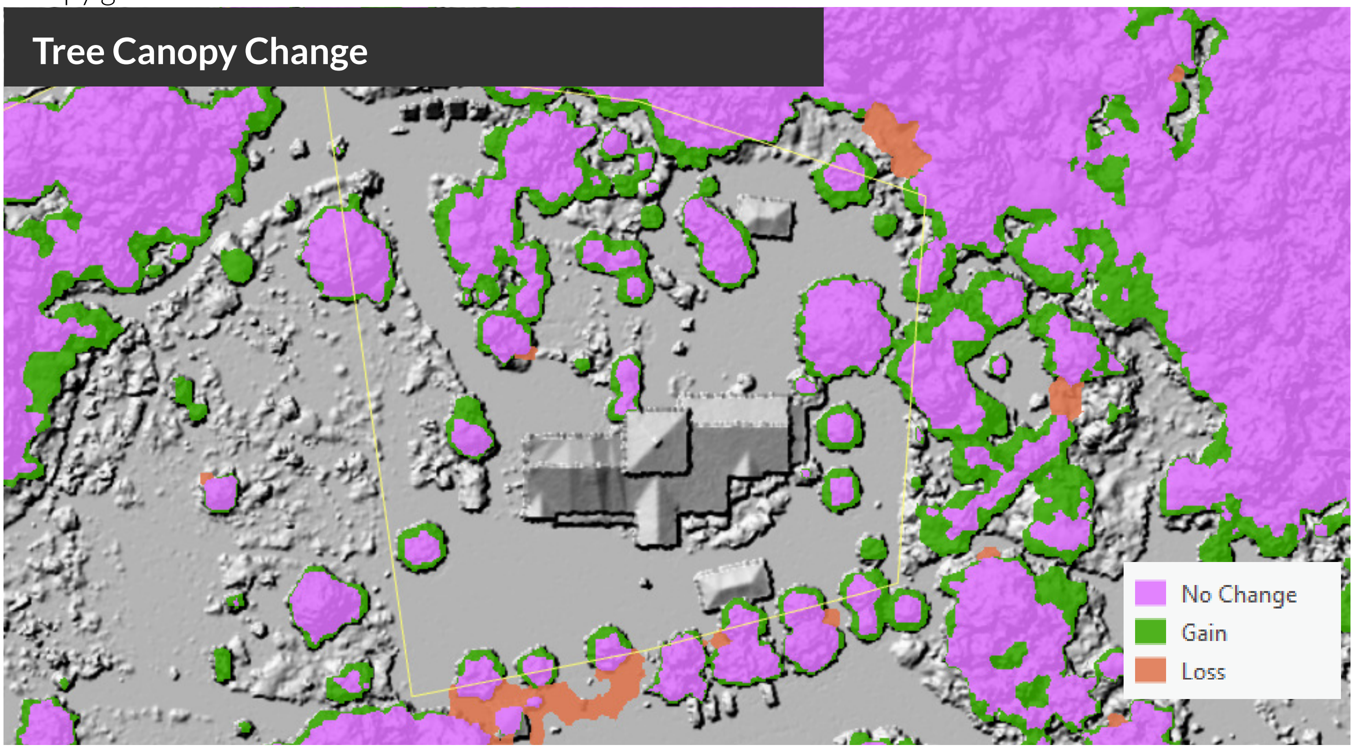


Figure 19: Tree canopy change mapping for the Boston Nature Vistor Center. The natural growth of existing tree canopy contributed to an overall gain in this location. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2018 LiDAR hillshade map.

Rights-of-Way

Nearly 23 acres of tree canopy were gained within the ROW in Boston, equating to a 2.7% relative gain. This gain is a sign that Boston's investments in the planting, care, and maintenance of its street trees is paying dividends. For example, street trees in the ROW near City Hall Plaza planted between 2014 and 2019 are showing strong gains.

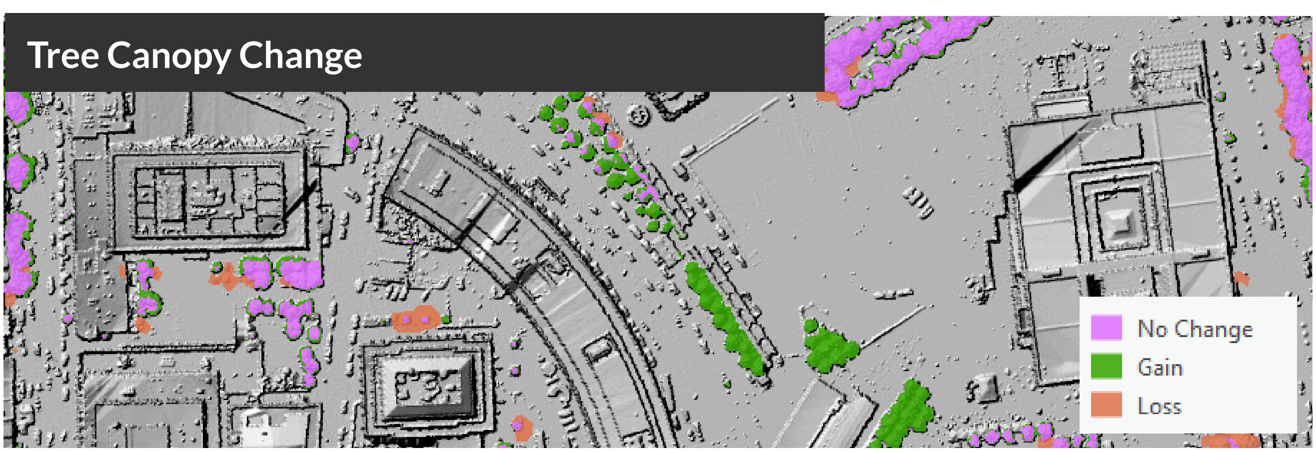


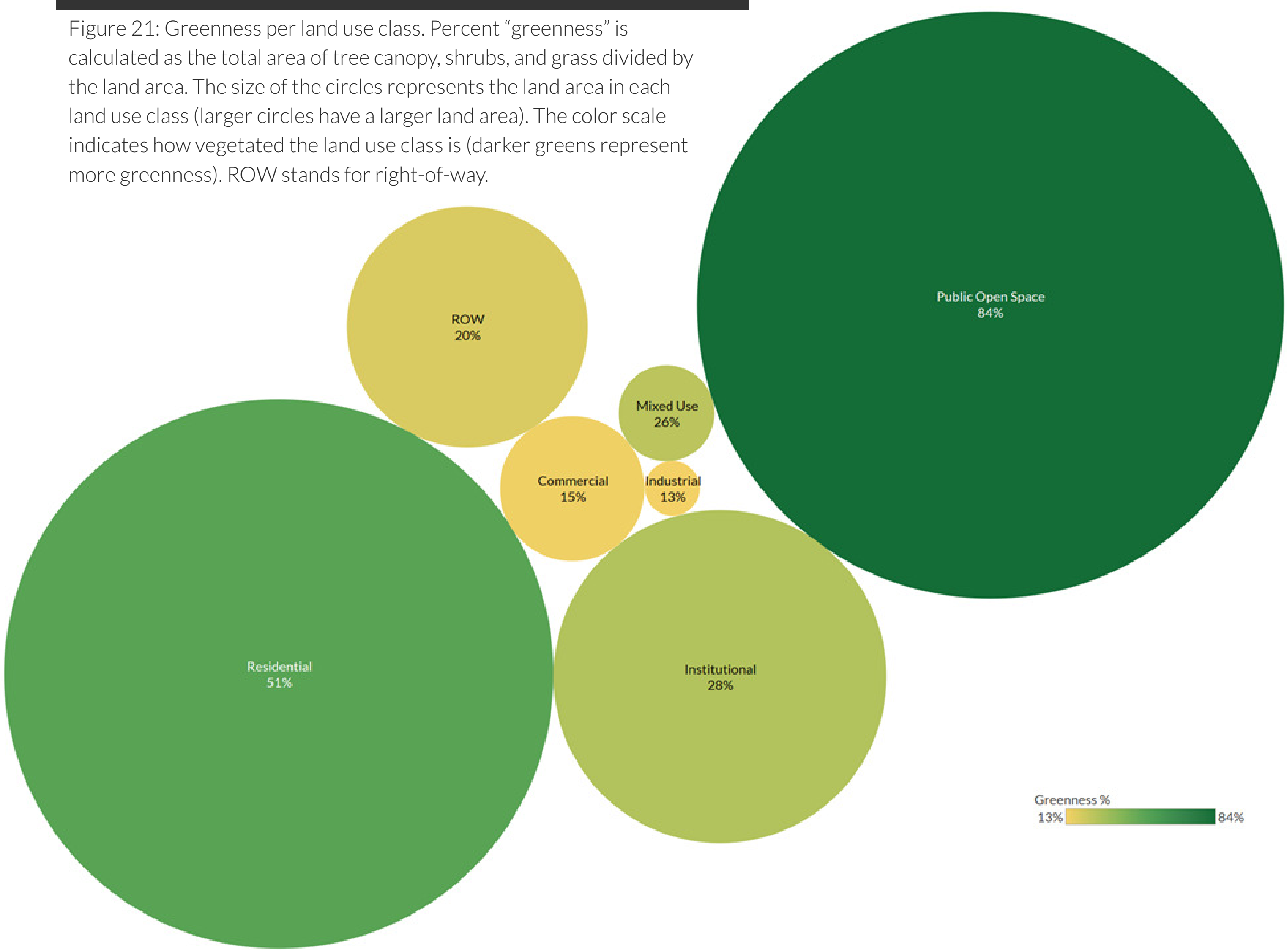
Figure 20: Tree canopy change mapping for the area in the vicinity of Cambridge St. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade.

MEASURING "GREENNESS"

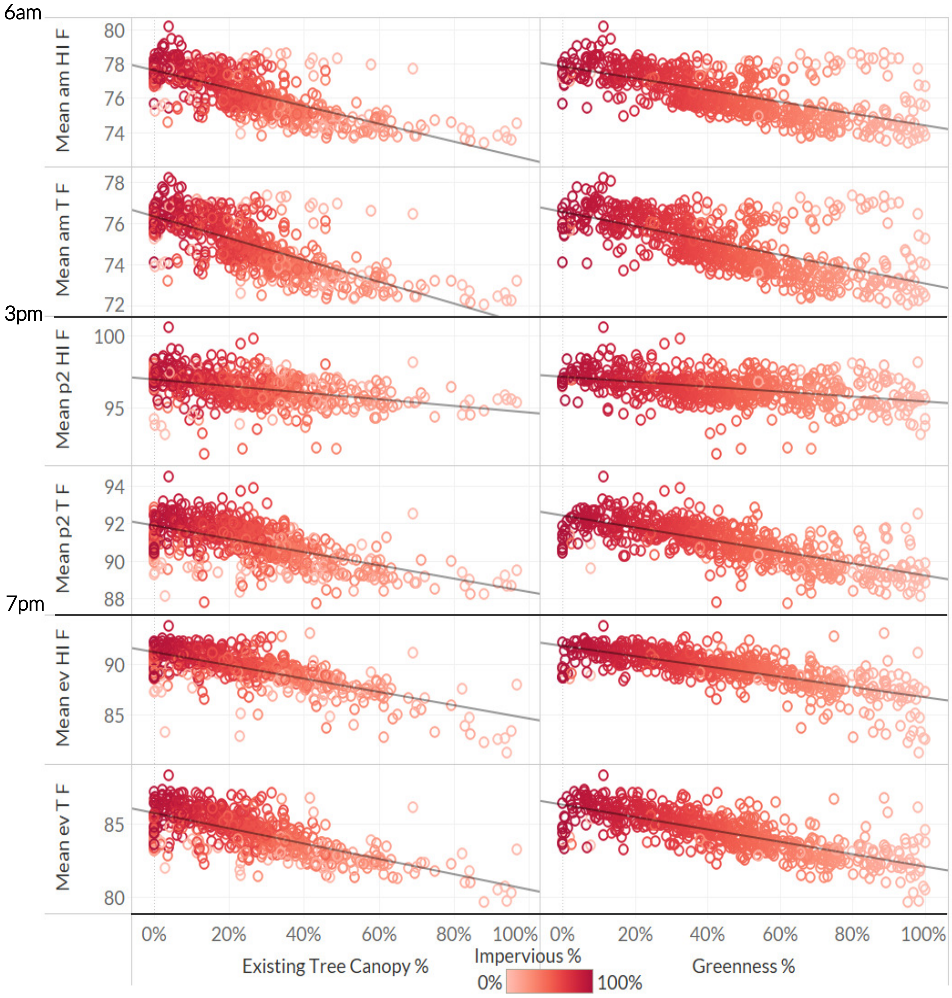
"Greenness" is a measure of how much land is covered by vegetation (tree canopy, shrubs, and grass) compared to other land cover classes, excluding water. Greenness is associated with reduced stormwater runoff, reduced surface temperatures, an improved sense of well-being, and other environmental benefits. This graphic below depicts Boston's greenness for the major land use classes. Public Open Space has both the most acres of vegetated land shown as the darkest green and the highest percentage of its land covered by vegetation at 84%. Land use in the Residential class has the next highest total amount of vegetation with 51% greenness. It also has the second highest amount of land area covered by vegetation, illustrated by the second darkest shade of green. Not surprisingly, those lands under Commercial and Industrial use have the lowest total vegetated area and are less green. With Public Open Space and Residential land uses accounting for the majority of Boston's green space, a collaboration between the city government and individual landowners is necessary for the city to maintain the essential ecosystem services that vegetation provides.

Greenness

Figure 21: Greenness per land use class. Percent "greenness" is calculated as the total area of tree canopy, shrubs, and grass divided by the land area. The size of the circles represents the land area in each land use class (larger circles have a larger land area). The color scale indicates how vegetated the land use class is (darker greens represent more greenness). ROW stands for right-of-way.



Heat Island Effect



Tree canopy can help mitigate the heat island effect, particularly in densely urbanized and industrialized areas. In Boston, there is a statistically significant negative relationship between tree canopy, "Greenness," and air temperature, indicating that areas with higher tree canopy and "Greenness" help reduce the urban heat island effect, as shown in Figure 22. The red color ramp corresponds to the percent impervious. Darker reds indicate higher amounts of impervious. The urban core and north-eastern parts of Boston, where there is low tree canopy, experience have the greatest urban heat island effect.

Figure 22: Relationship between the 2019 Existing Tree Canopy percentage (left), Greenness percentage (right) and mean air temperature (T) in Fahrenheit and Heat Index (HI). Temperature data is from the Wicked Hot Boston Project, researchers at the Museum of Science, Boston and the Helmuth Lab at Northeastern University. Temperature data was collected during hour long periods at 6am, 3pm and 7pm on 7/30/19 for East Boston and 7/29/19 for the rest of Boston.

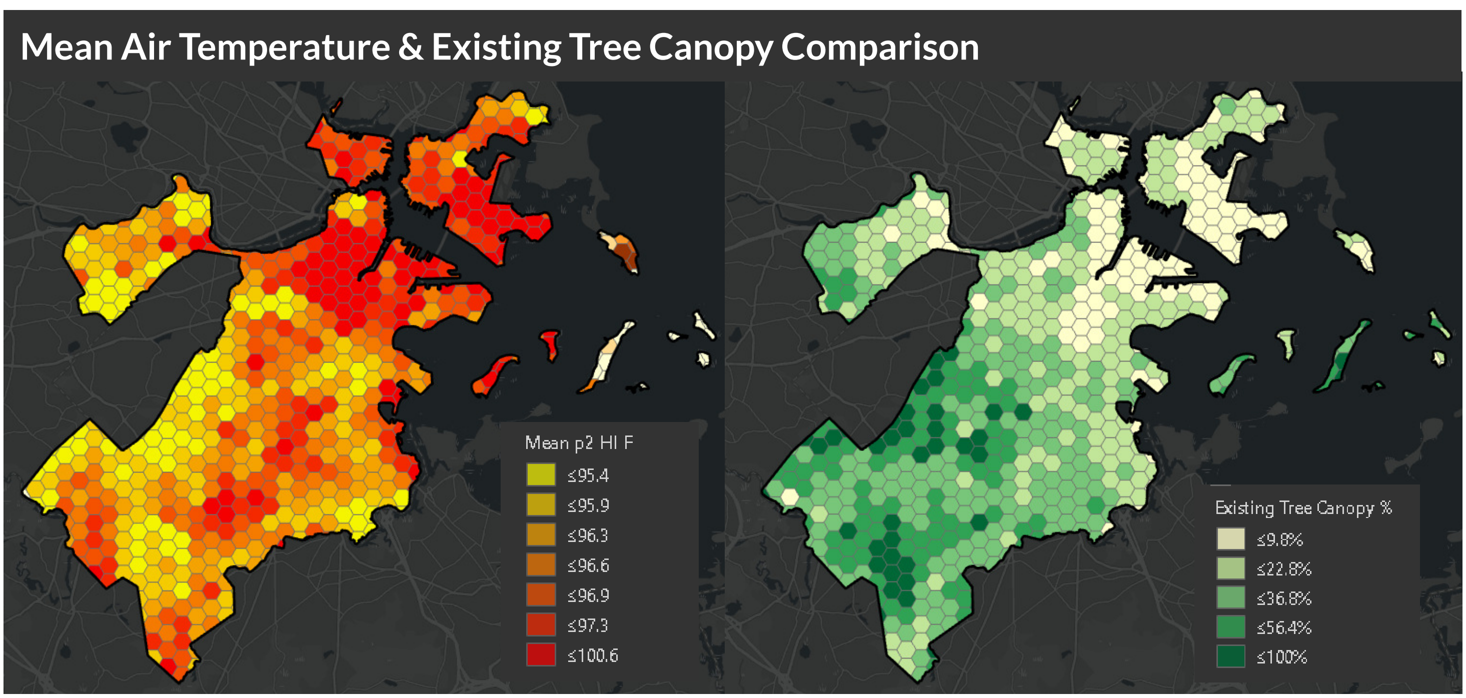


Figure 23: Heat Island metrics are summarized by 25-acre hexagons. 2019 Existing Tree Canopy (right) and Mean heat Index measured in Fahrenheit (left) for 3pm show that areas with low tree canopy experience increased heat.

THE TREE CANOPY ASSESSMENT PROCESS

This project employed the USDA Forest Service's Urban Tree Canopy assessment protocols and made use of federal, state, and local investments in geospatial data.

Remotely sensed data forms the foundation of the tree canopy assessment. We use high-resolution aerial imagery and LiDAR, provided by the City of Boston, to map tree canopy and other land cover features.

The land cover data consist of tree canopy, grass/shrub, bare soil, water, buildings, roads/railroads, and other impervious features.

The land cover data are summarized by various geographical units, ranging from the property parcel to the watershed to the municipal boundary.

These summaries, in the form of tree canopy metrics, are an exhaustive geospatial database that enables the Existing and Possible Tree Canopy to be analyzed.

The tree canopy metrics data analytics provide basic summary statistics in addition to inferences on the relationship between tree canopy and other variables.

The report (this document) summarizes the project methods, results, and findings.

Present the status, data and analysis of Boston's tree canopy assessment.

Existing Tree Canopy

The tree canopy that you currently have, consisting of the leaves, branches, and stems when viewed from above.

Possible New Tree Canopy

Land where it is biophysically feasible to establish new tree canopy (excludes buildings and roads). It is easier to establish tree canopy on vegetated areas as opposed to impervious surfaces.

MAPPING THE TREE CANOPY FROM ABOVE

Tree canopy assessments rely on remotely sensed data in the form of aerial imagery and light detection and ranging (LiDAR) data. These datasets, which have been acquired by various governmental agencies in the region, are the foundational information for tree canopy mapping. Imagery provides information that enables features to be distinguished by their spectral (color) properties. As trees and shrubs can appear spectrally similar, or obscured by shadow, LiDAR, which consists of 3D height information, enhances the accuracy of the mapping. Tree canopy mapping is performed using a scientifically rigorous process that integrates cutting-edge automated feature extraction technologies with detailed manual reviews and editing. This combination of sensor and mapping technologies enabled the city's tree canopy to be mapped in greater detail and with better accuracy than ever before. From a shade tree in the Boston Gardens to a core forest patch on the banks of the Charles River in Brighton, every tree in the city was accounted for.

Tree Canopy Mapping

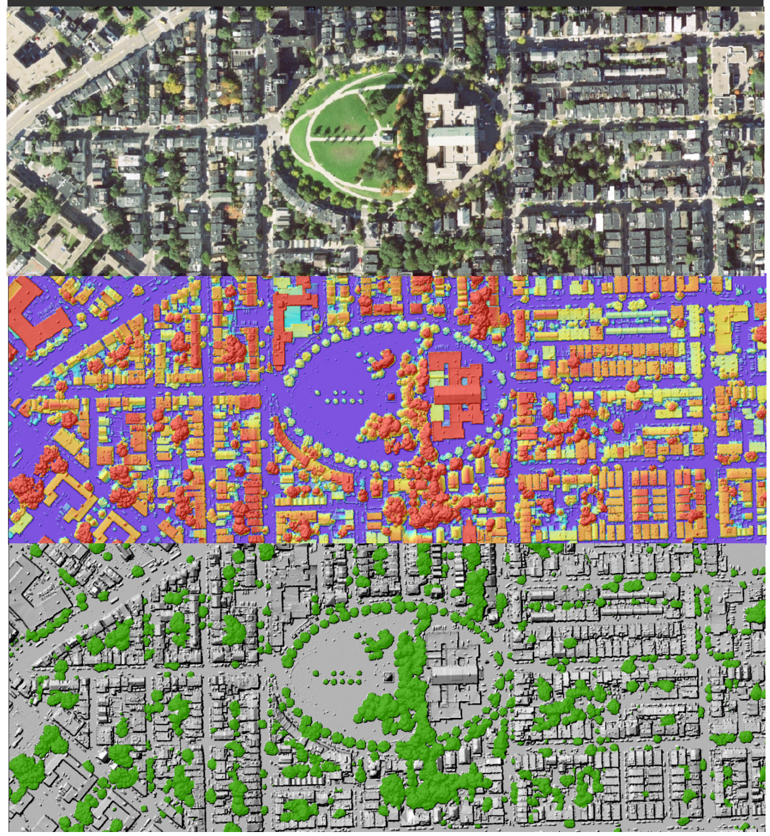


Figure 24: Imagery (top), LiDAR surface model (middle), and high-resolution tree canopy (bottom). By combining these datasets the land cover mapping process capitalizes on their strengths and minimizes their weaknesses. The land cover dataset is the most detailed, accurate, and current for the City of Boston.

The high-resolution land cover that forms the foundation of this project was generated from the most recent LiDAR, which was acquired in 2019. Compared to national tree canopy datasets, which map at a resolution of 30-meters, this project generated maps that were over 1,000 times more detailed and better account for all of the city's tree canopy.

Land Cover Mapping

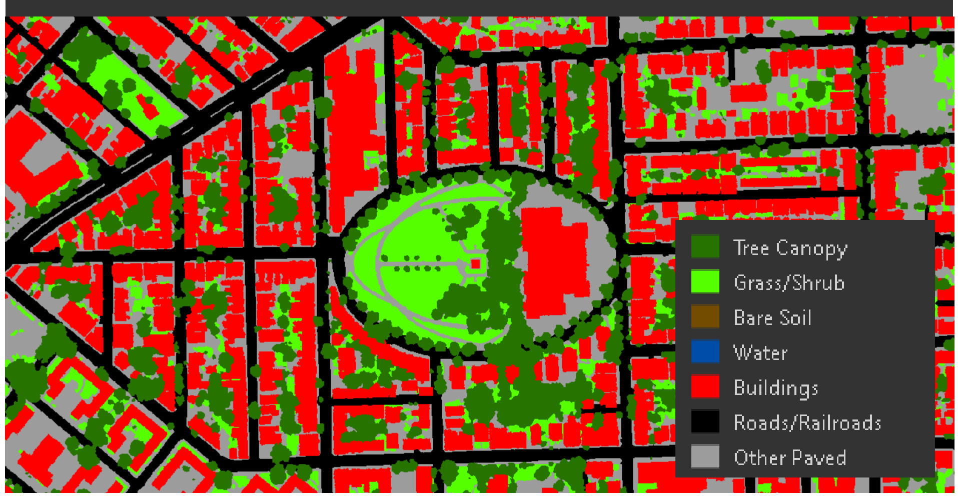


Figure 25: High-resolution land cover developed for this project.

MAPPING TREE CANOPY CHANGE

This study made use of aerial imagery and LiDAR data acquired in 2014 and 2019. LiDAR is positionally more accurate and thus served as the primary data source for determining change. The imagery was used to confirm the change detected using the LiDAR. Both LiDAR datasets were acquired under leaf-off conditions and thus tend to underestimate tree canopy slightly. The two LiDAR and imagery datasets are not directly comparable due to differences in the sensor, time of acquisition, and processing techniques employed. This study went to great efforts to reduce the errors associated with differences in the datasets to come up with the most accurate estimate of tree canopy change possible. Losses are generally easier to detect than gains as losses tend to be due to a large event, such as tree removal, whereas gains are incremental growth or new tree plantings, both of which are smaller in size.

Tree Canopy Change Mapping

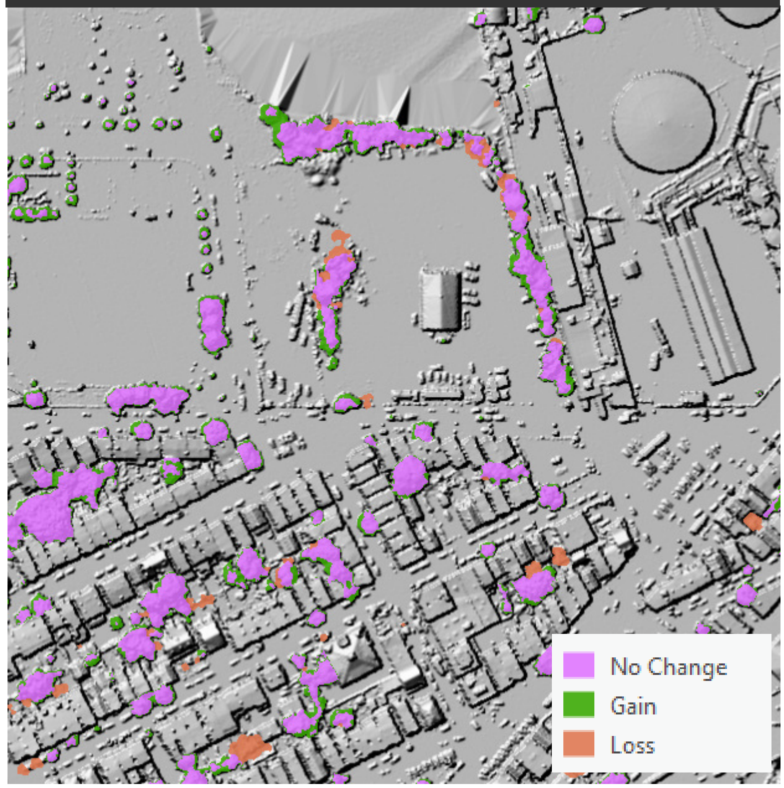


Figure 26: Tree canopy change mapping for the area in the vicinity of the American Legion Playground in East Boston. Tree canopy change was mapped for the 2014-2019 time period and is overlaid on the 2019 LiDAR hillshade map.

Comparisons to Past Studies

A vital component of the Tree Canopy Assessment Protocols is ensuring that changes in tree canopy are attributed to actual gains and losses in tree canopy as opposed to differences in the source data. The first Tree Canopy Assessment was carried out by the same University of Vermont team, using data from 2014 and was acquired with different specifications. Great care was put into resolving the differences in the data to ensure that tree canopy change reflected an actual change in the canopy as opposed to differences in the source data. This study made minor changes to the 2014 canopy estimates that were published in 2016. This assessment utilized 2017 land use data, which was the most up to date and complete land use dataset available by the City of Boston.

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