



# BOSTON URBAN FOREST PLAN

Open House  
March 14, 2022



City of Boston  
Parks and Recreation  
Mayor Michelle Wu



 **urbancanopy**  
works, LLC



# PROJECT TEAM

## Introductions



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*STOSS LANDSCAPE URBANISM*



**DAVÍ SCHOEN**

*STOSS LANDSCAPE URBANISM*



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*URBAN CANOPY WORKS*



**RACHEL COMTE**

*URBAN CANOPY WORKS*

# AGENDA

- INTRODUCTION
- WHAT IS AN URBAN FOREST PLAN?
- ABOUT THE FOREST
- GOALS + RECOMMENDATIONS
- Q&A

# WHAT IS THE URBAN FOREST PLAN?



A background image of a forest path with stairs and trees. The path is covered in fallen leaves, and the trees are mostly green with some yellowing, suggesting autumn. The image is slightly faded to allow text to be read clearly.

## INTRODUCTION

# BOSTON URBAN FOREST PLAN

What is an urban forest plan?

**A plan to expand the urban forest both today  
and 20 years from now.**



# BOSTON URBAN FOREST PLAN

What is an urban forest plan?

## What is an urban forest?

*All the trees in Boston*

## What does it mean to expand the forest?

*Growing the canopy. Preservation and routine care are some of the most important things we can do. Planting will also be important.*



# BOSTON URBAN FOREST PLAN

Healthy Places: planning for heat, trees, and open space



HEAT RESILIENCY STUDY



OPEN SPACE AND RECREATION PLAN



URBAN FOREST PLAN



## INTRODUCTION

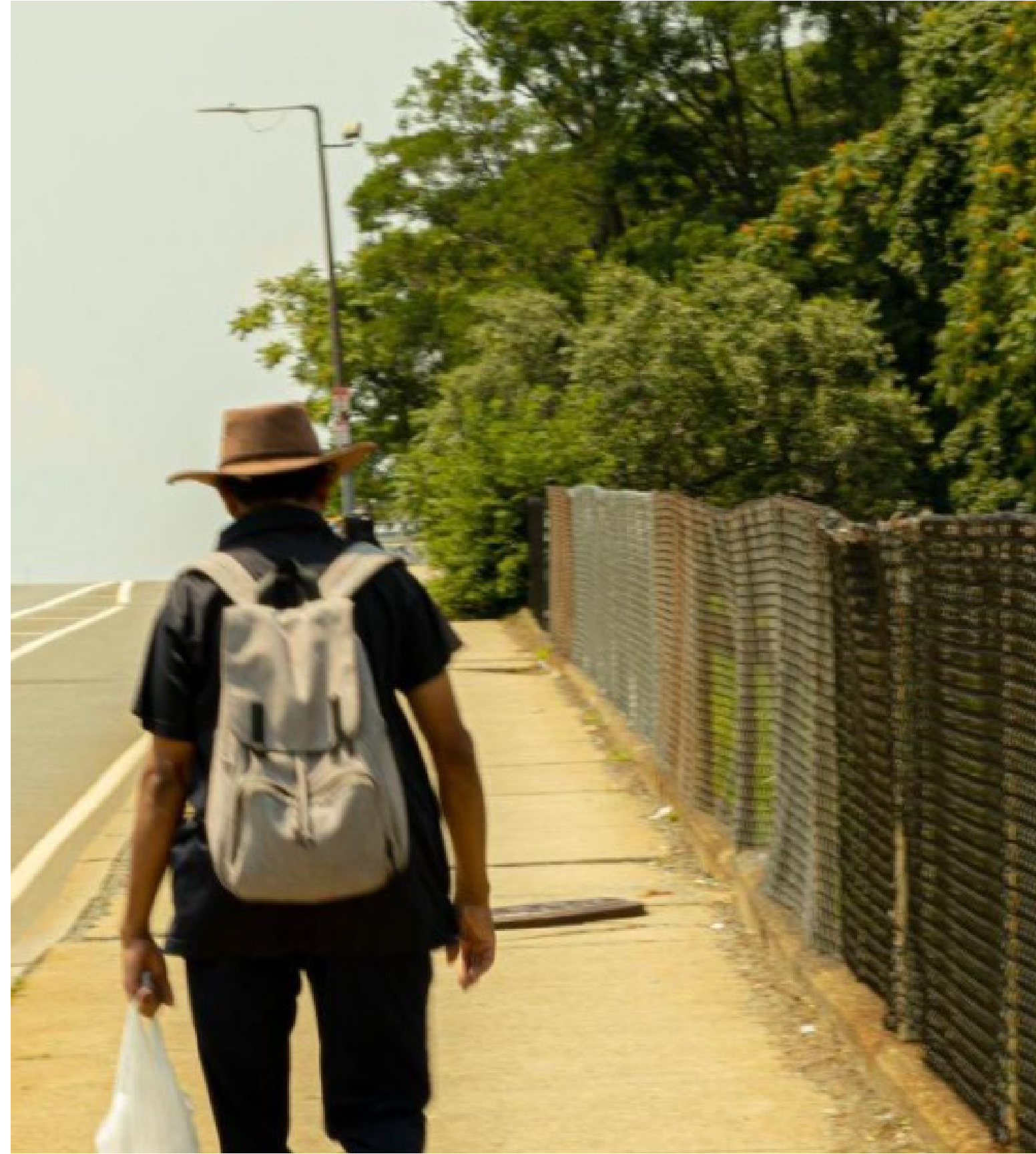
# BOSTON URBAN FOREST PLAN

What is the value of a tree?

### **PUBLIC HEALTH:**

- Cultural value
- Lowered heat
- Better air quality from lower temperatures
- Stormwater capture
- Wildlife habitat

*Trees need to grow older to provide many of these benefits.*





INTRODUCTION

# BOSTON URBAN FOREST PLAN

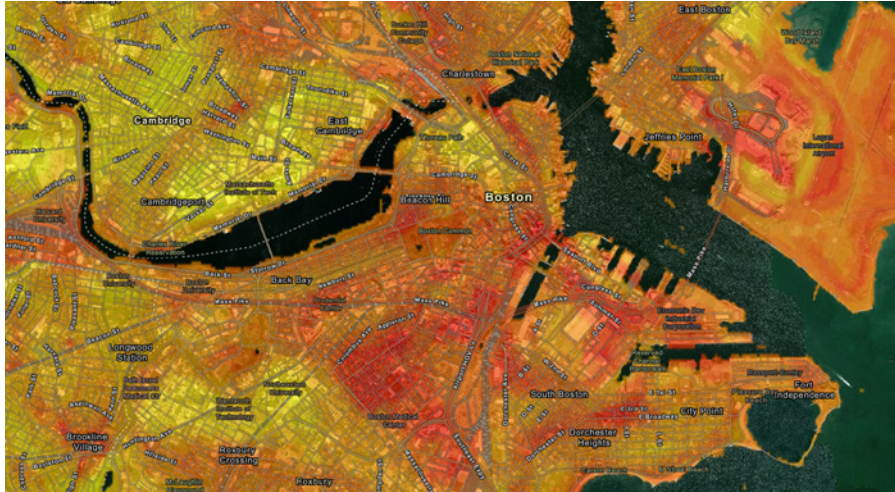
Why an urban forest plan? Why now?



**BECAUSE BOSTON IS GROWING  
AND CHANGING**



**TO ADDRESS EQUITY AND  
ENVIRONMENTAL JUSTICE ISSUES**



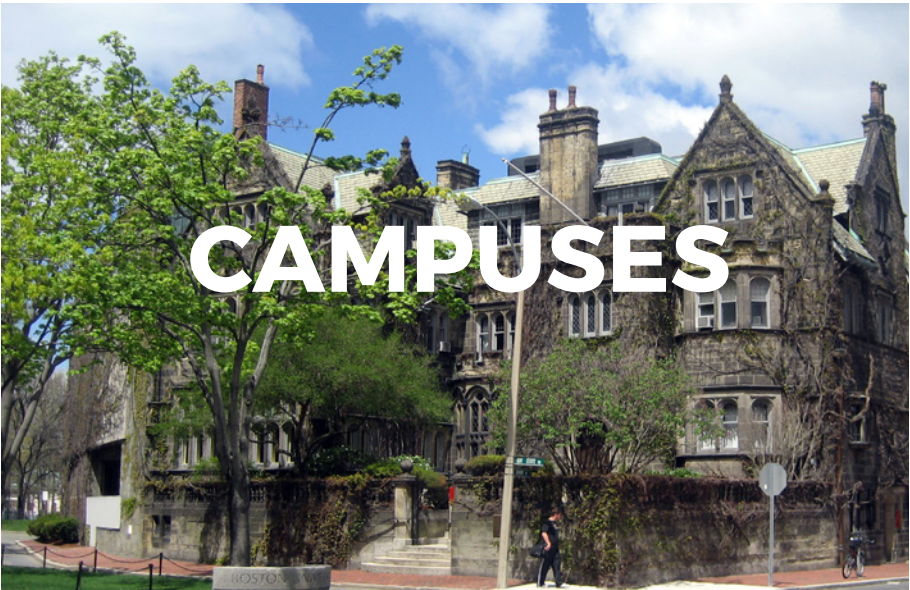
**TO MITIGATE CLIMATE  
CHANGE IMPACTS**



INTRODUCTION

BOSTON URBAN FOREST PLAN

What is the urban forest plan?





# CARE & MANAGEMENT

Caring for the urban forest takes a community. There are many caretakers and owners.



## GOVERNMENT

- City of Boston (ex. Parks Department)
- State (ex. DCR)
- Federal (ex. NPS)



## COMMUNITY GROUPS + INDIVIDUALS

- You
- Non-profits
- Community Groups
- Neighborhood Associations
- Developers
- Businesses



## INSTITUTIONS

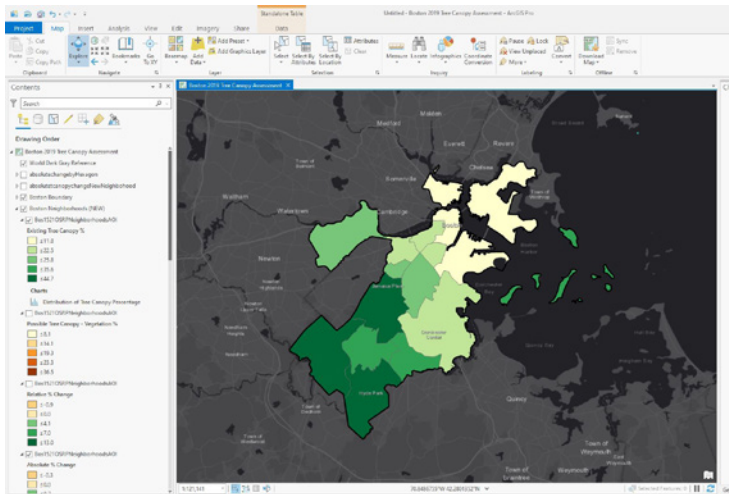
- Universities (ex. Northeastern)
- Massport (ex. Logan Airport)



# DATA + DISCOVERY



# KEY DATA SOURCES



CITY GIS DATA

**Boston Urban Forest Plan - Equity Council Meeting Follow Up**

Name/Nombre

Your answer

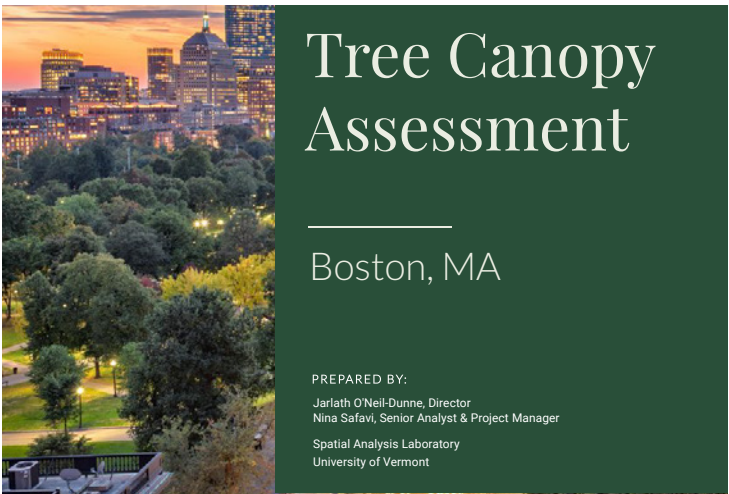
One thing you hope to get out of this process/ Una cosa que se espera obtener de este proceso

Your answer

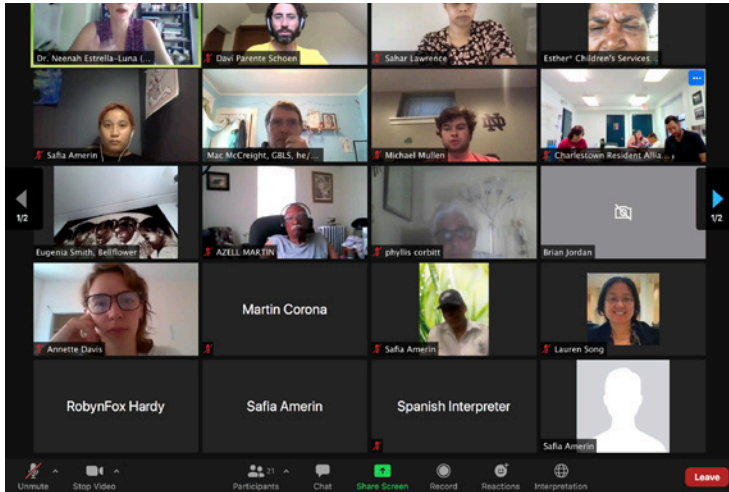
Tell us a story // Cuéntanos una historia

If you did not have a chance to share your full story at our first meeting or you have more to say now that

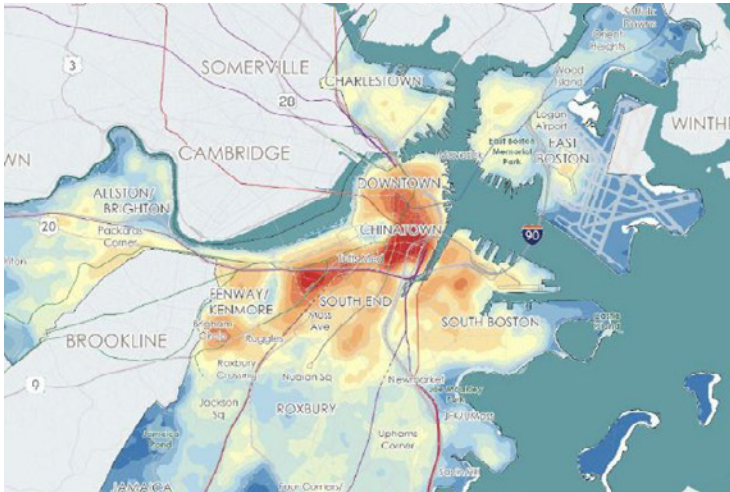
SURVEYS



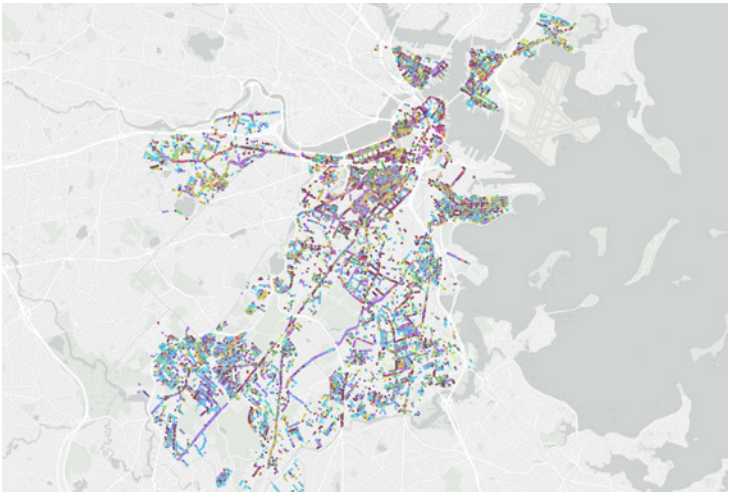
TREE CANOPY ASSESSMENT (2019)



INTERVIEWS



HEAT STUDY



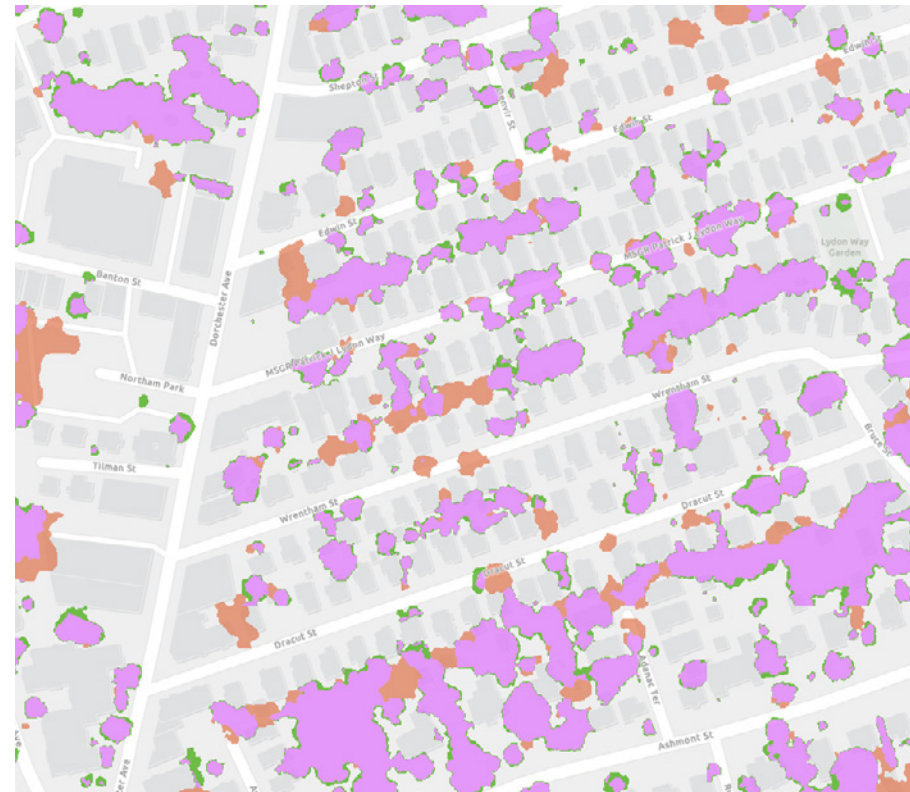
TREE INVENTORY (2021)



# MISSING / INCONCLUSIVE / MESSY DATA

## EXAMPLES:

- Canopy loss assessment data does not identify causes
- There is no private land inventory data
- There is a lack of granular data on development + canopy impact



*Canopy Loss Assessment Data*



*Was loss caused by disease, drought, development or damage?*



DATA AND DISCOVERY:

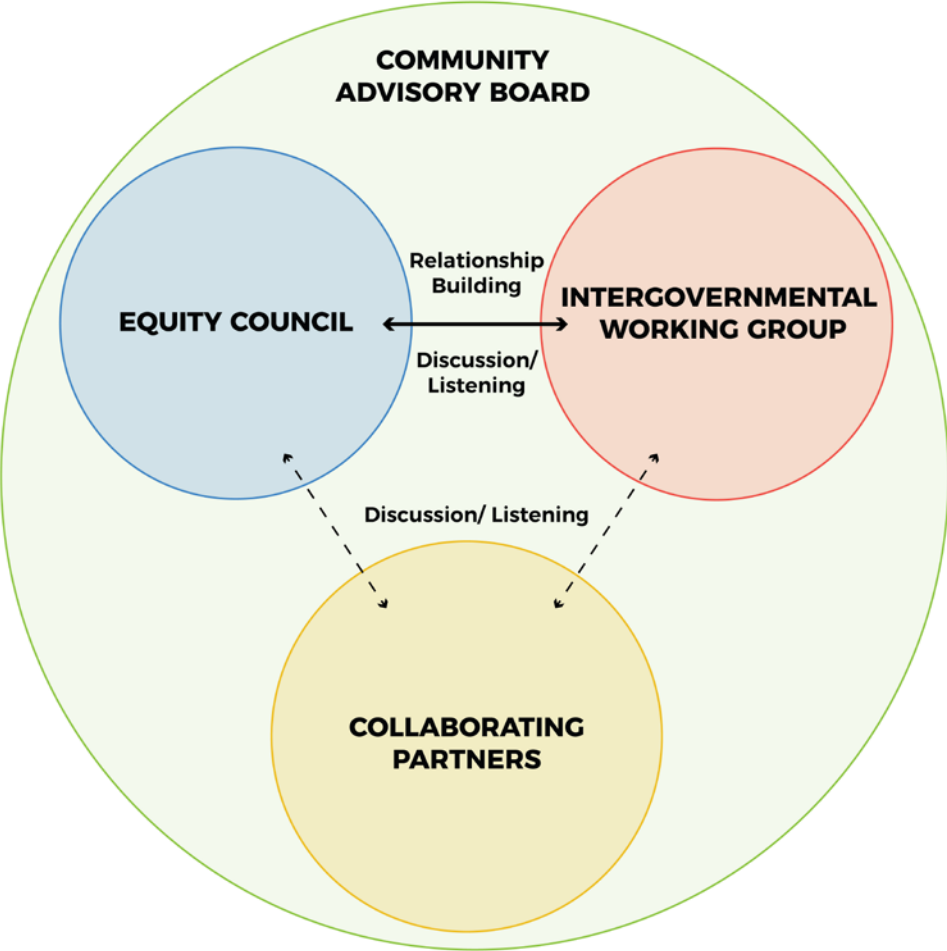
# TREE INVENTORY

38,273 street trees identified...

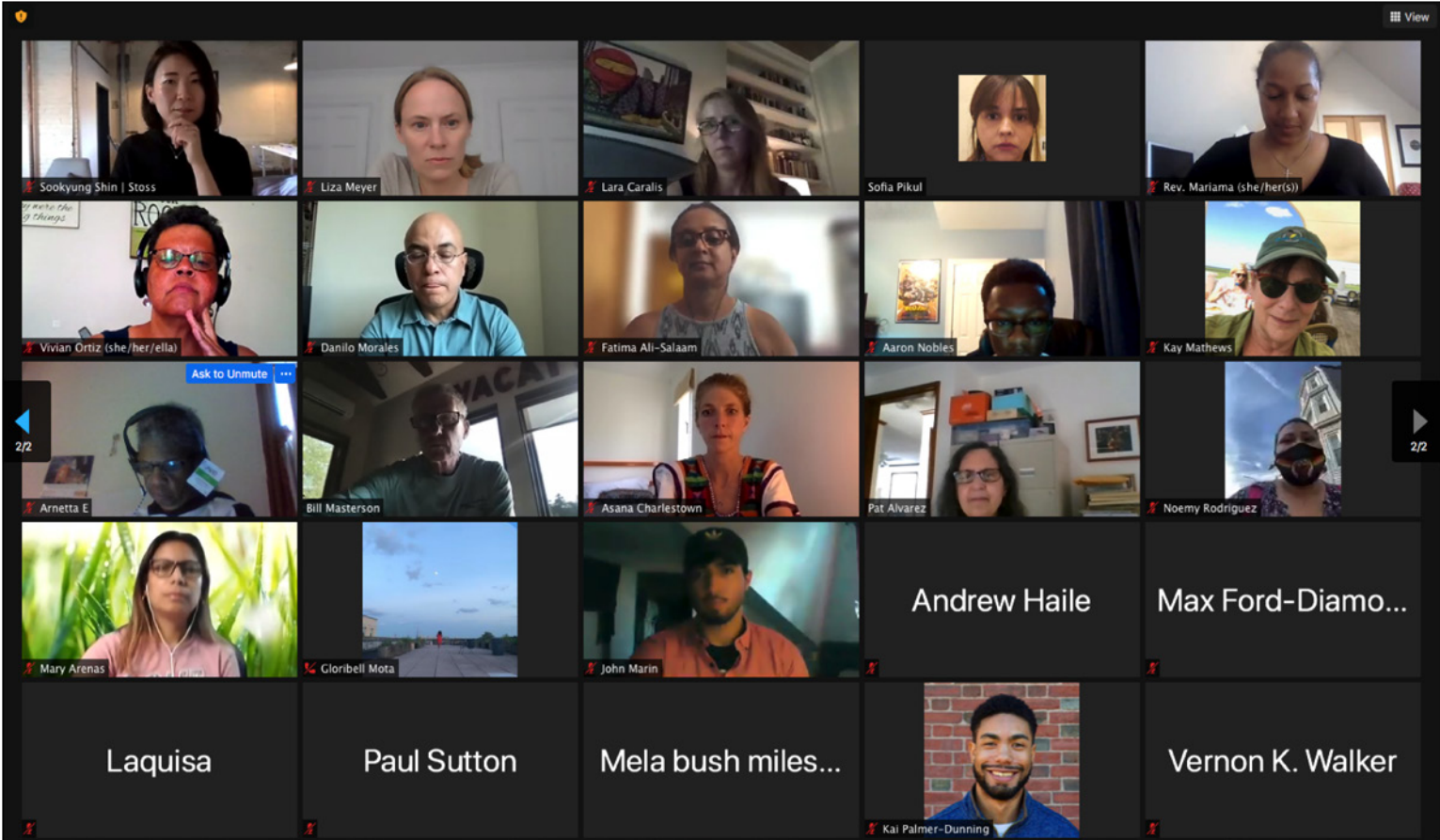




# EQUITY-CENTERED CAB PROCESS



CAB STRUCTURE



CAB MEETING

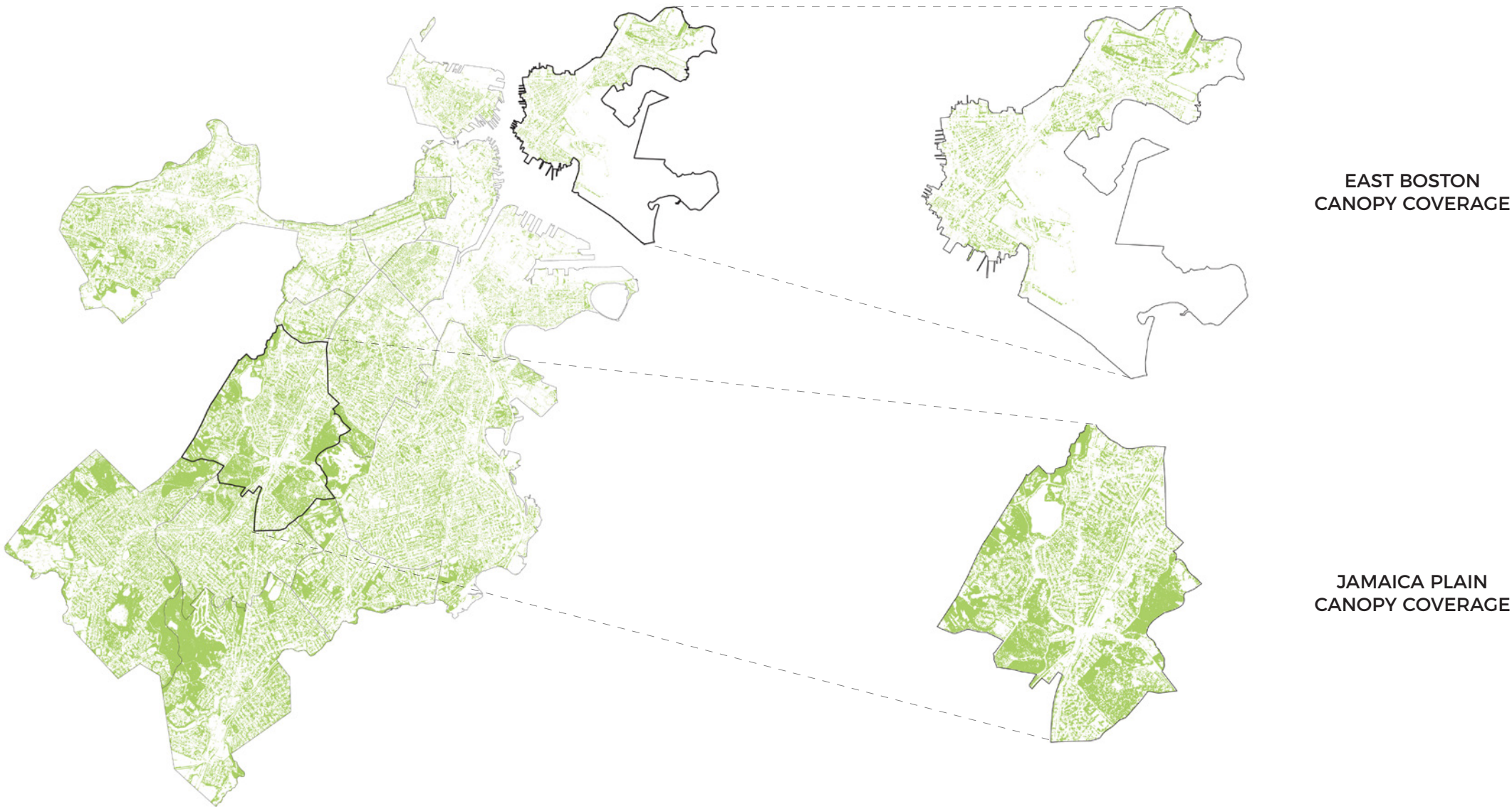


# CANOPY COVERAGE



# CANOPY COVERAGE

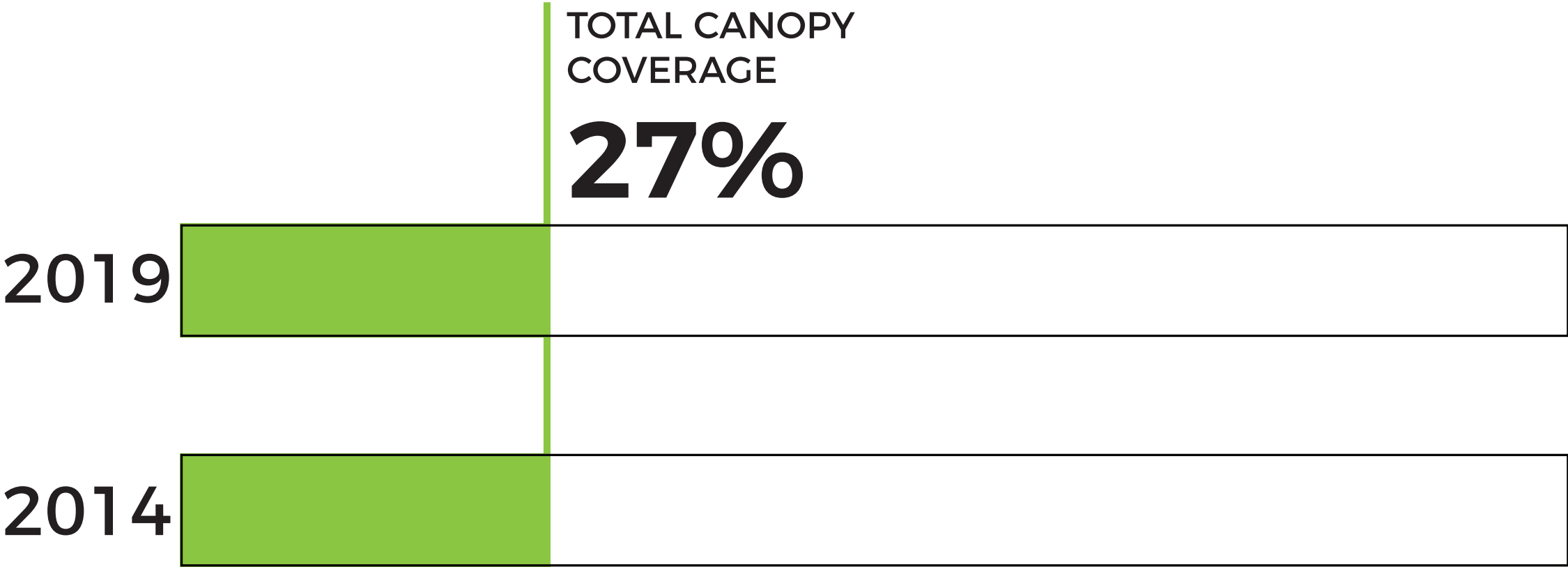
Canopy coverage = area covered by branches and leaves, as seen from above





# CANOPY CHANGE

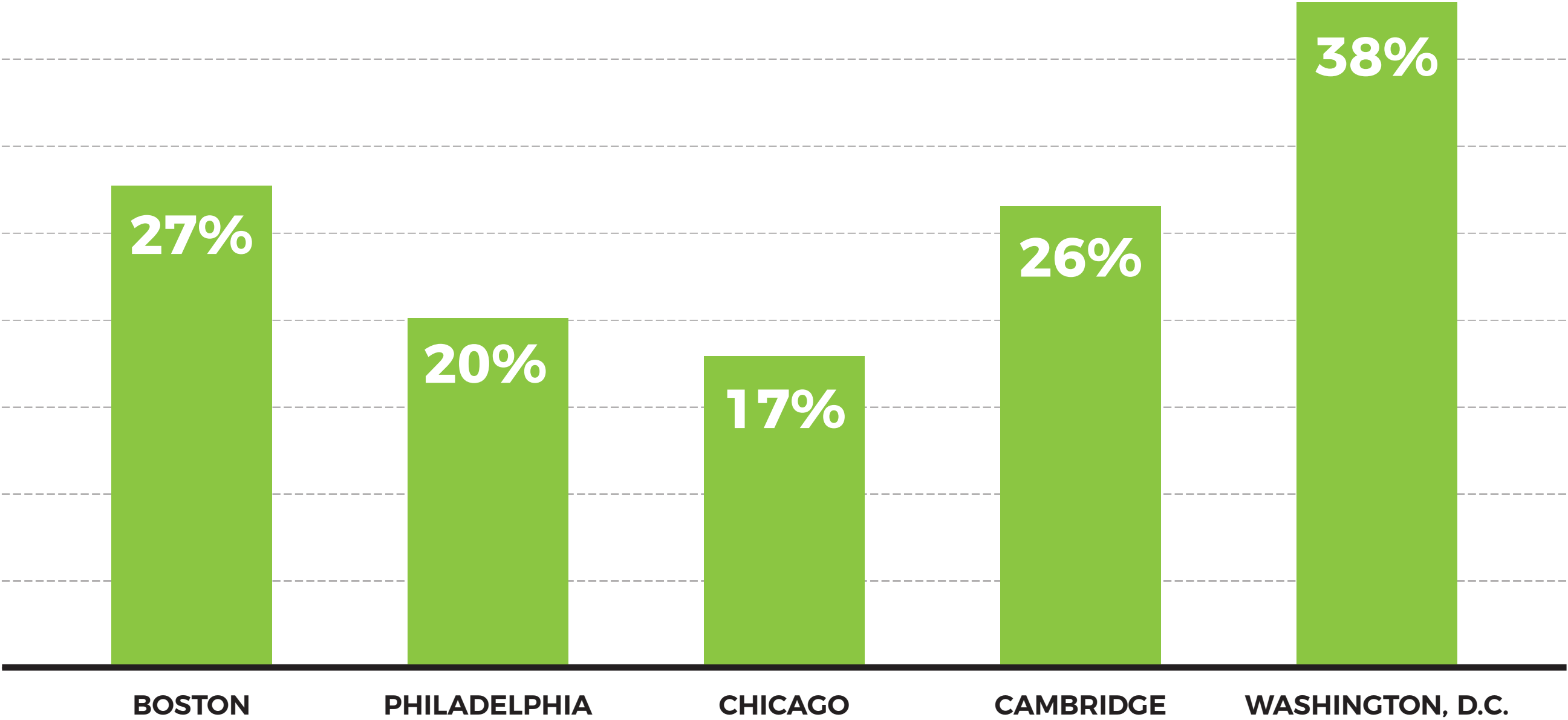
Between 2014-2019 overall canopy remained steady...





# CANOPY COVERAGE

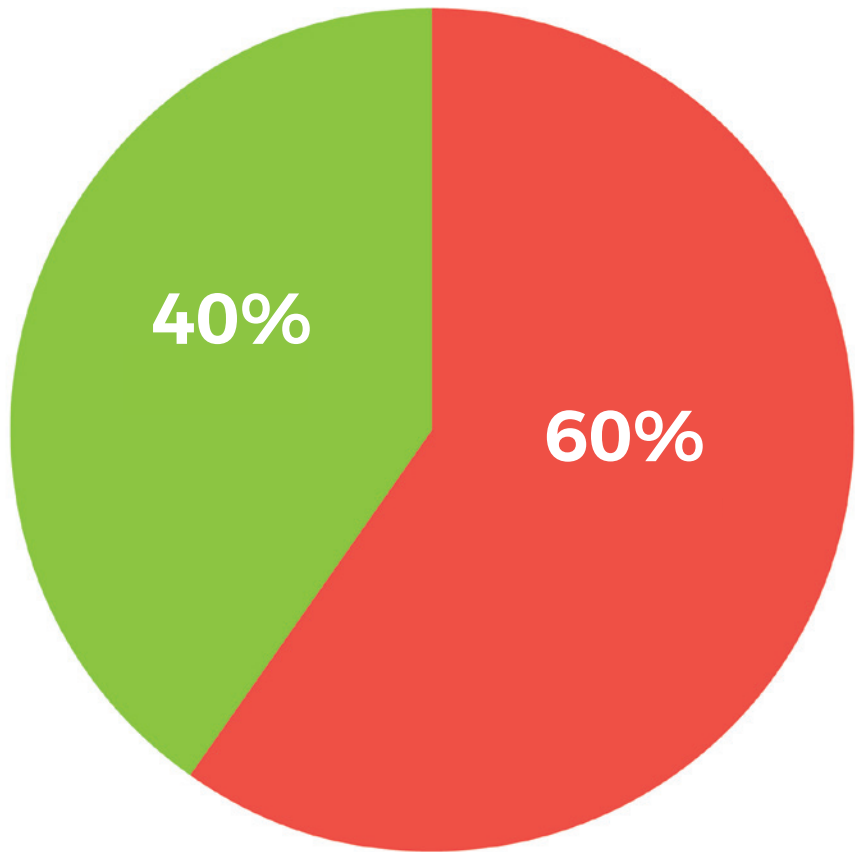
How does this compare?



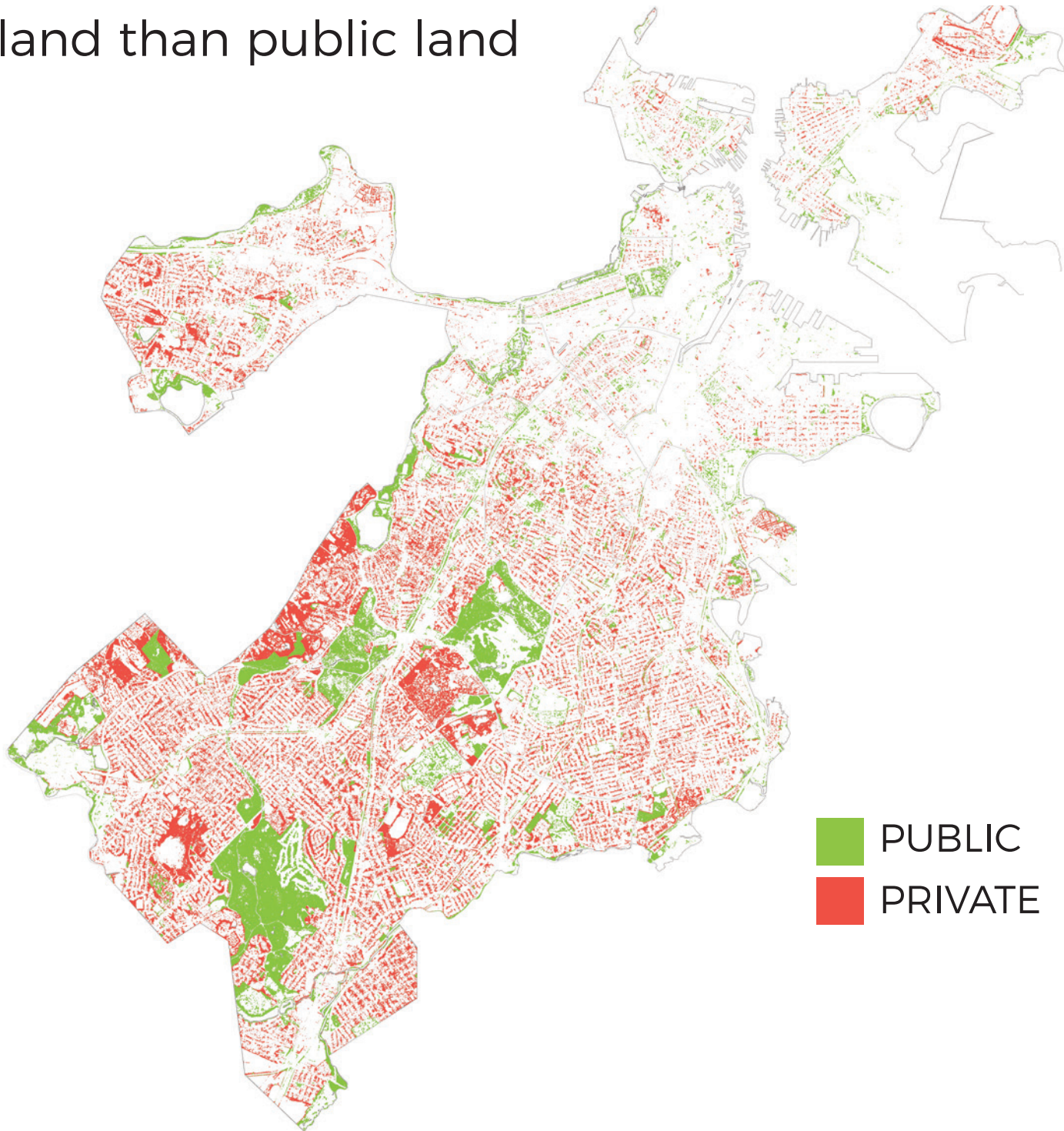


# CANOPY DISTRIBUTION + LAND USE

There is more canopy coverage on private land than public land



PERCENTAGE OF CANOPY COVER ON PUBLIC LAND VS. CANOPY COVER ON PRIVATE LAND



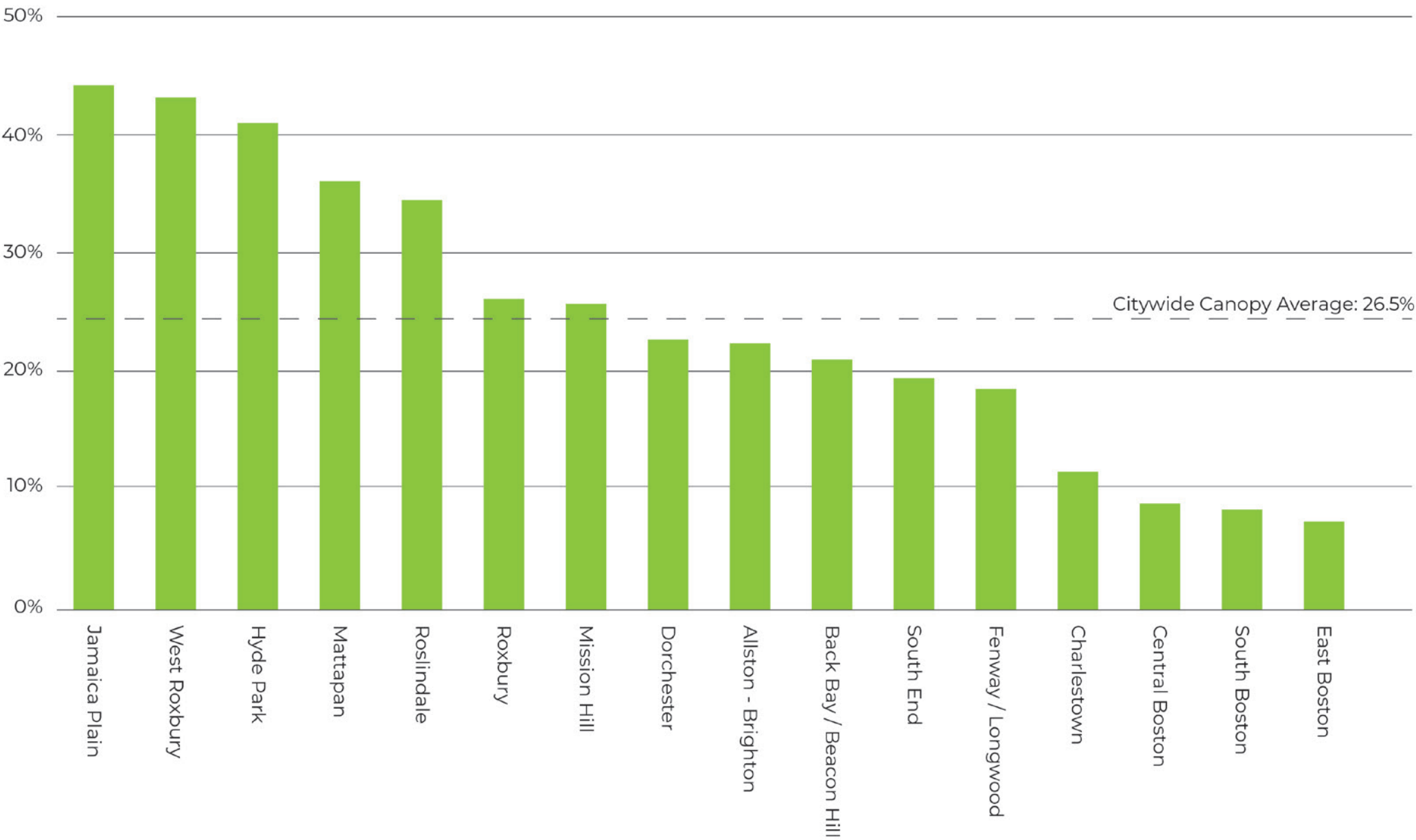


# CANOPY DISTRIBUTION

Going beyond “equal coverage”

Existing  
Canopy (2019)  
Neighborhoods

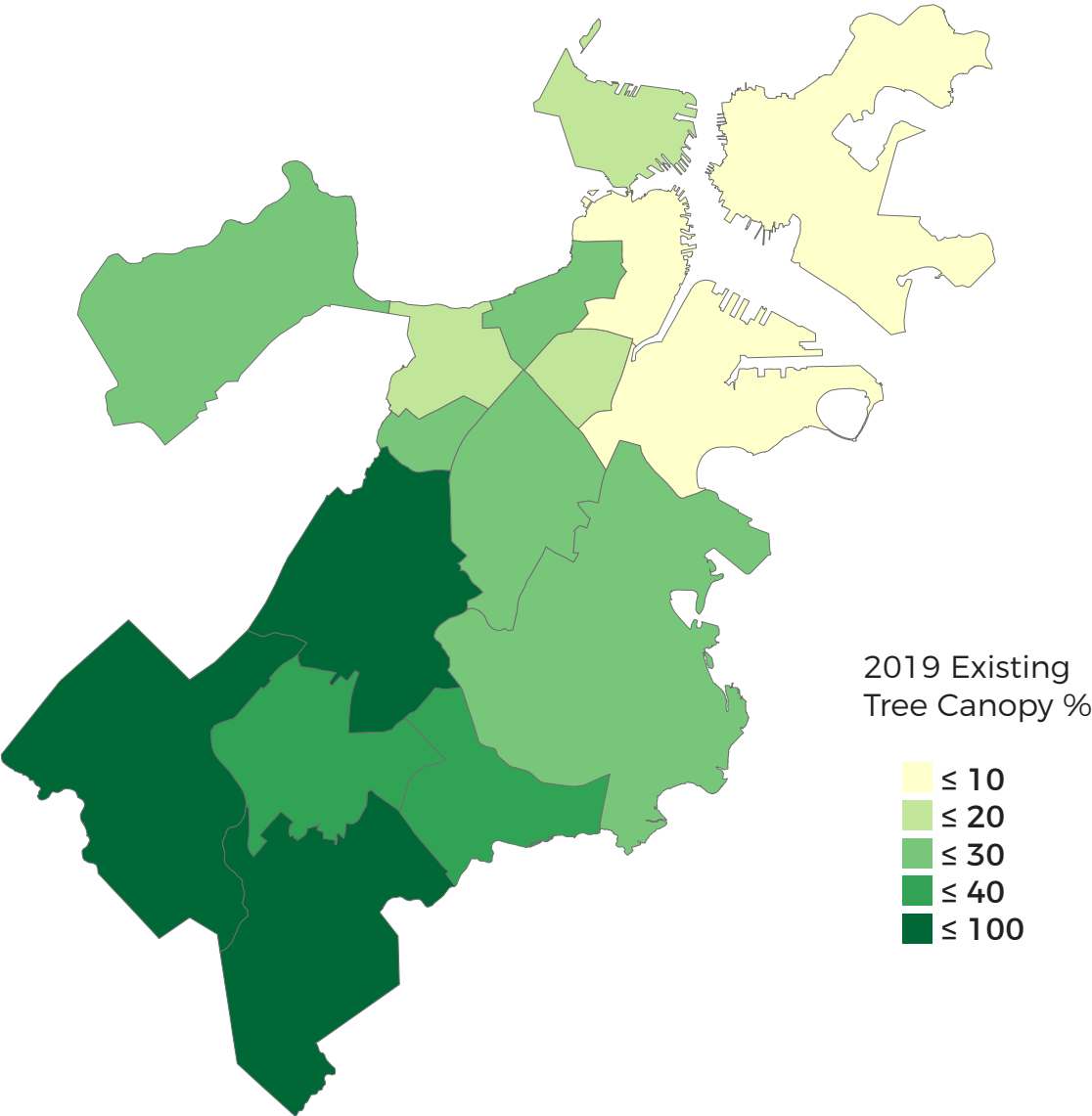
(UVM Canopy  
Assessment Data  
excluding the  
Harbor Islands)



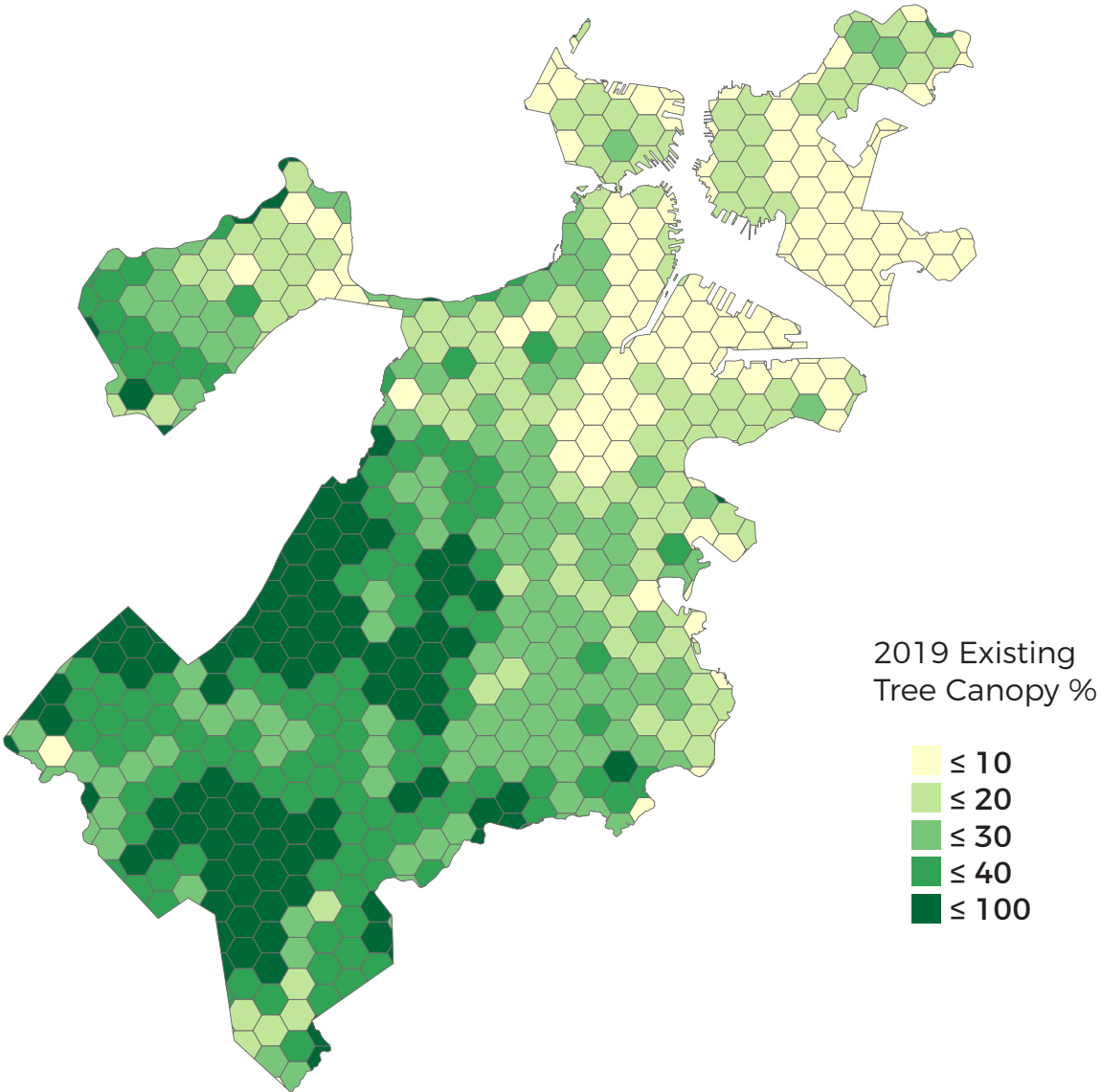


# CANOPY DISTRIBUTION

North-South and East-West pattern in canopy coverage



EXISTING CANOPY BY NEIGHBORHOOD

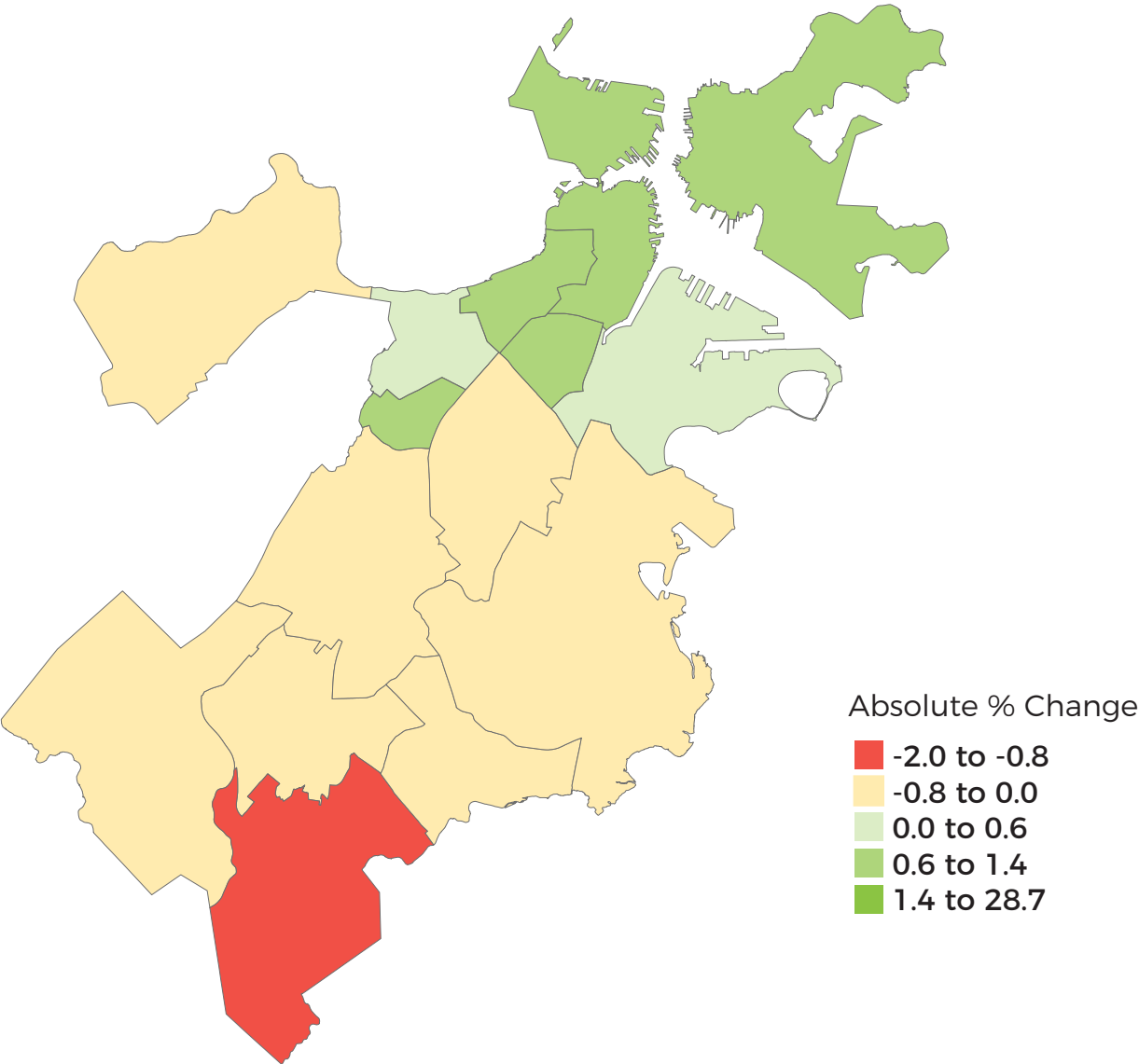


EXISTING CANOPY FURTHER BROKEN DOWN

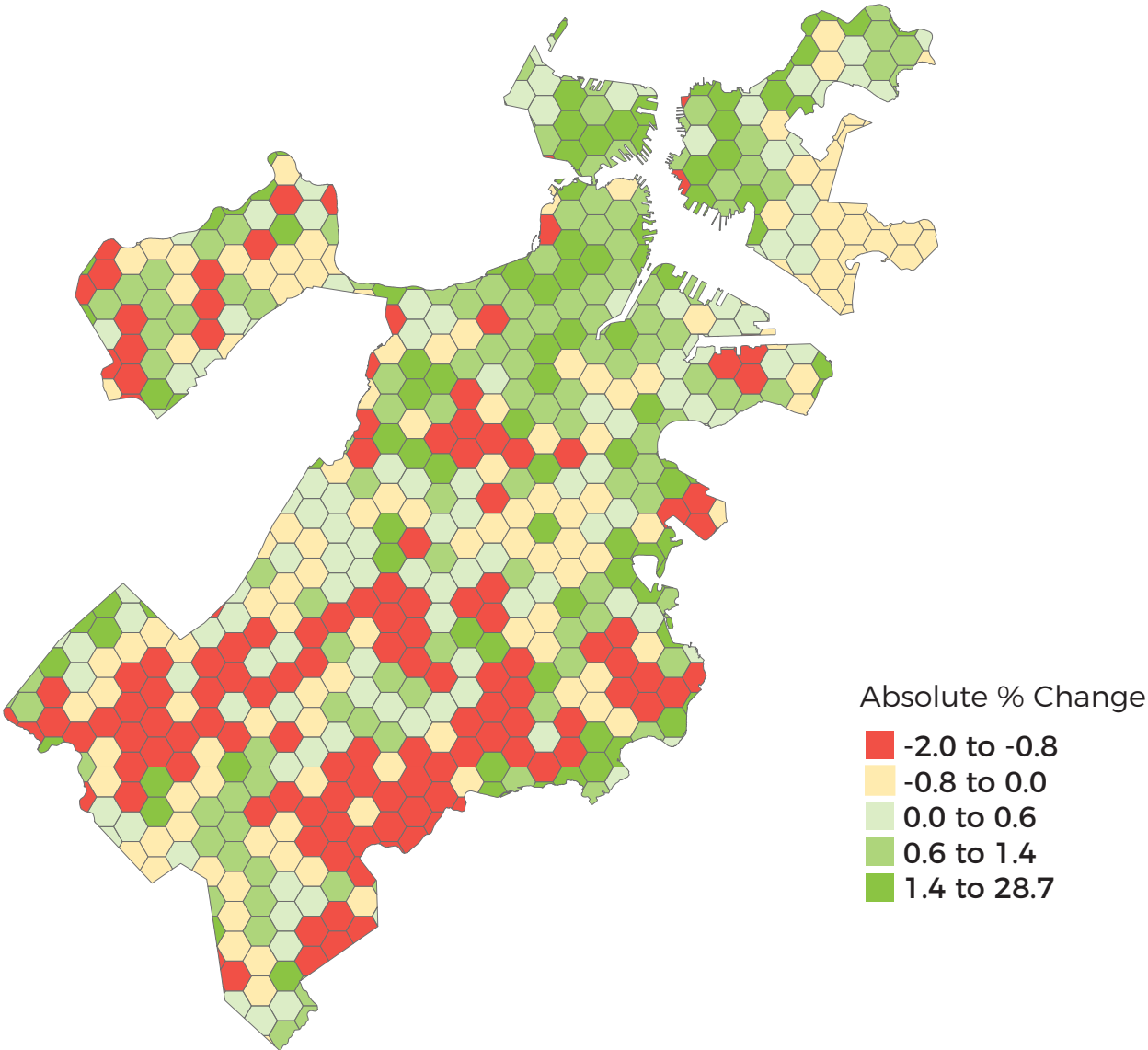


# CANOPY CHANGE

Losses were largely concentrated in areas of high existing canopy, and gains occurred in many areas with low existing canopy



ABSOLUTE CANOPY CHANGE 2014-2019 BY NEIGHBORHOOD

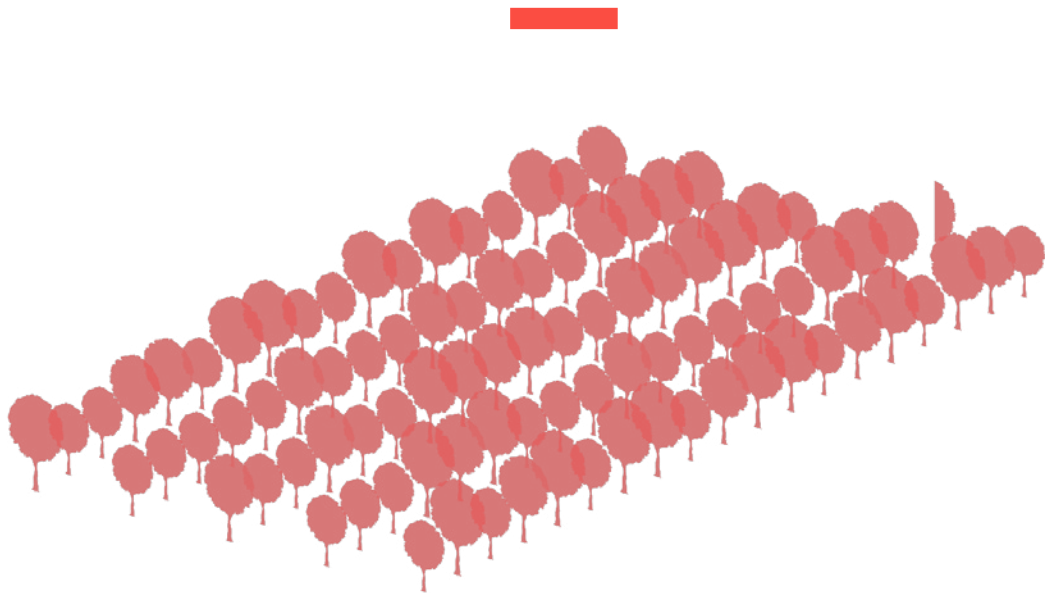


ABSOLUTE CANOPY CHANGE 2014-2019 FURTHER BROKEN DOWN



# CANOPY CHANGE

While canopy remained the same overall, significant canopy expansion and loss were experienced.



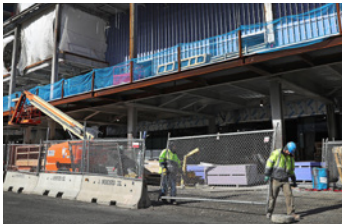
**ACRES OF CANOPY LOST BETWEEN 2014-2019: 920 ACRES\***  
**TOTAL ACRES OF CANOPY 2019: 8,210 ACRES**  
*Causes include:*



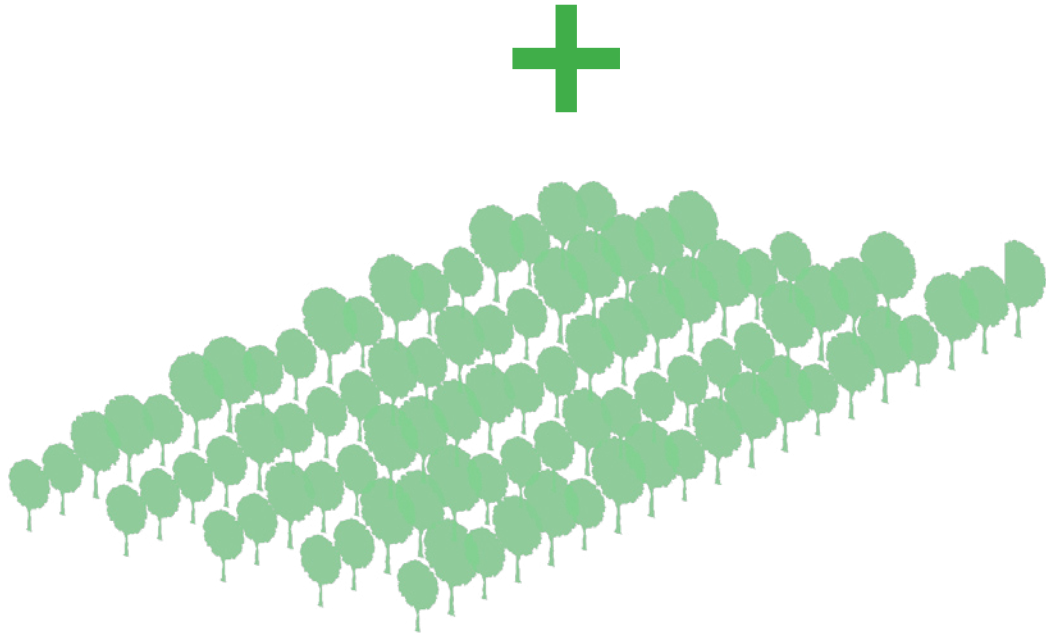
DISEASE / PESTS / STRESS



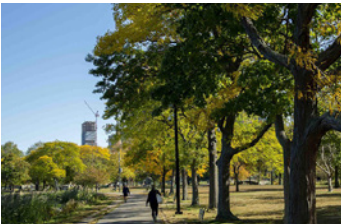
NATURAL PROCESSES  
(STORMS / DEATHS)



DEVELOPMENT



**ACRES OF CANOPY GAINED BETWEEN 2014-2019: 909 ACRES\***  
**TOTAL ACRES OF CANOPY 2019: 8,199 ACRES**  
*Causes include:*



GROWTH



NEW PLANTING

*\*Each tree is equal to 10 acres*



# CANOPY DISTRIBUTION + LAND USE

Land use- the way land is used and built on

## DIFFERENT CHALLENGES AND OPPORTUNITIES

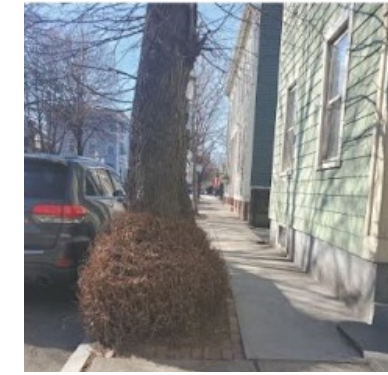
- degree of **protection** (ex. Chp 87 Shade Tree Law)
- how much **space** there is for **healthy** tree growth
- **how many** trees are protected or planted
- **who** takes care of the trees
- **skills and resources** to care for trees as they age
- **exposure** to stressors like foot traffic or vehicle damage



OPEN SPACE



RESIDENTIAL



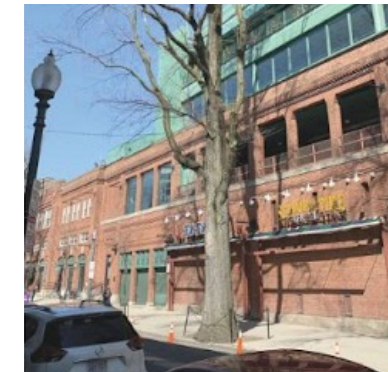
PUBLIC RIGHT-OF-WAY



INSTITUTIONAL



COMMERCIAL



MIXED USE

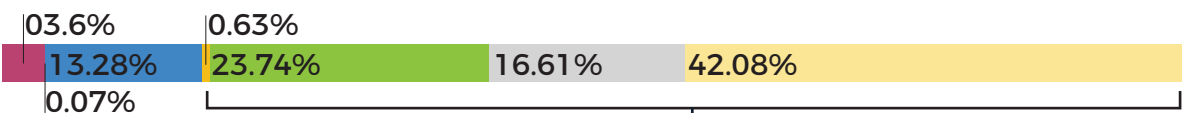


INDUSTRIAL

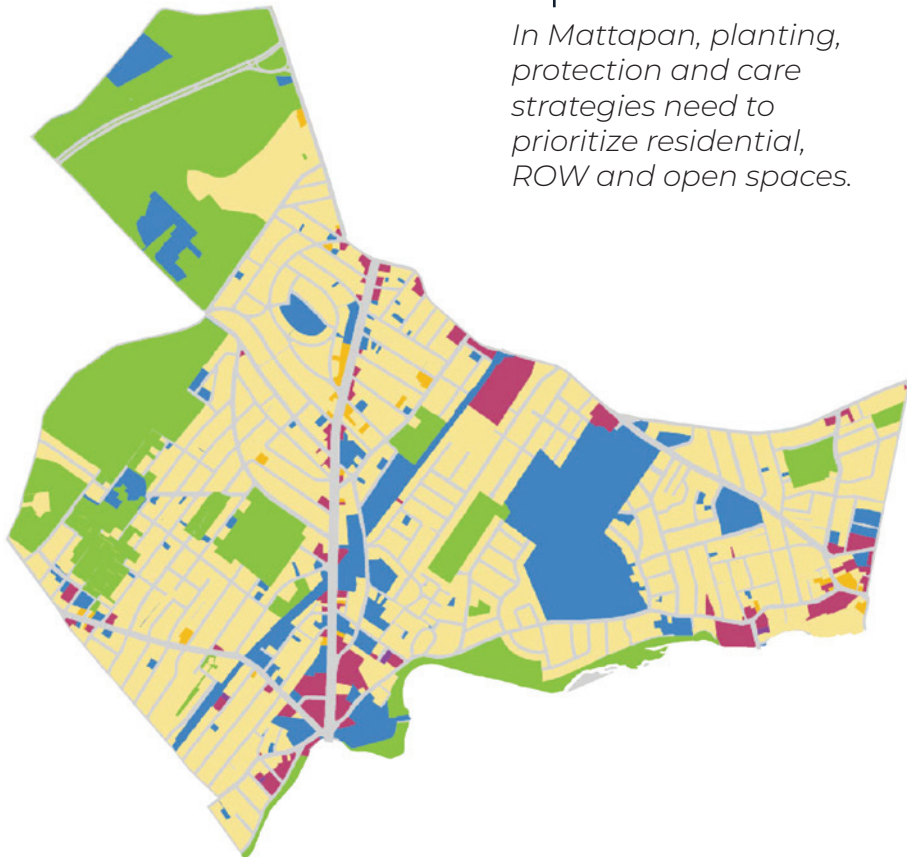


# CANOPY DISTRIBUTION + LAND USE

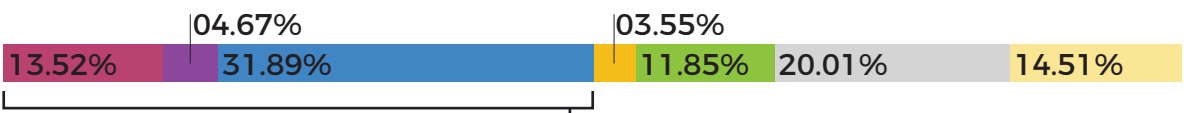
Every neighborhood has a different land use make up, and each land use presents different challenges and constraints for the preservation and expansion of the urban forest.



*In Mattapan, planting, protection and care strategies need to prioritize residential, ROW and open spaces.*



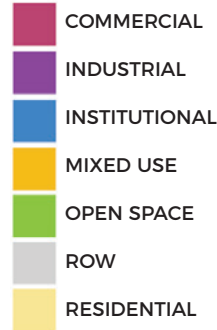
MATTAPAN



*In Charlestown, strategies that target Commercial, industrial and institutional lands could have significant impacts.*

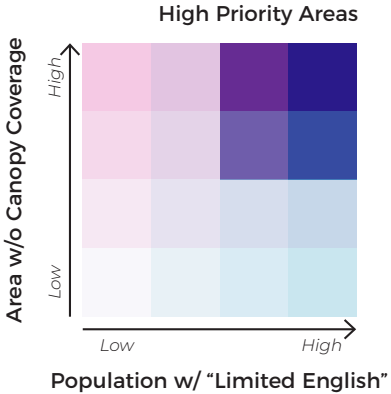
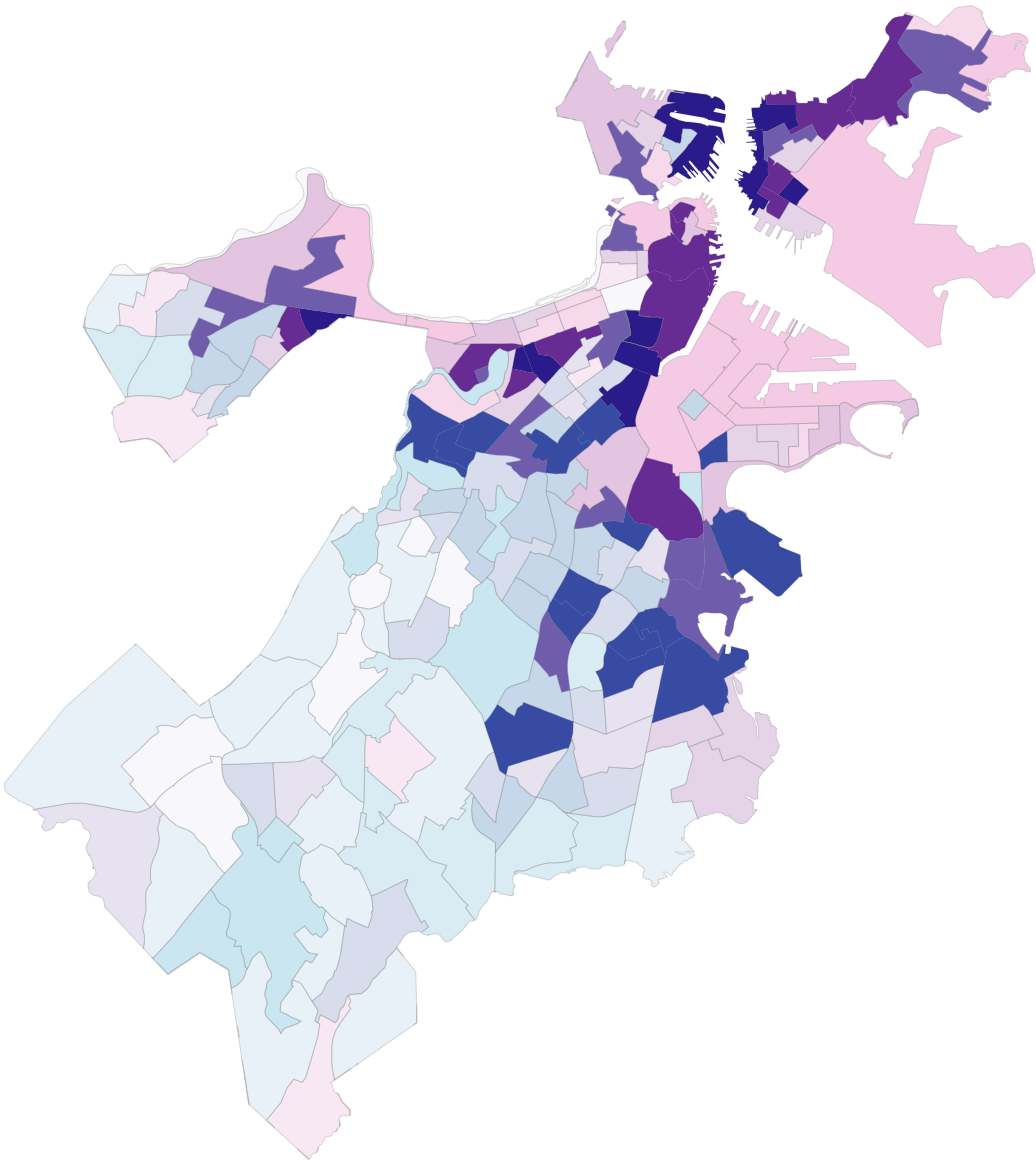


CHARLESTOWN



# ENVIRONMENTAL JUSTICE + CANOPY

Highlighted areas = high need and "socially vulnerable" populations

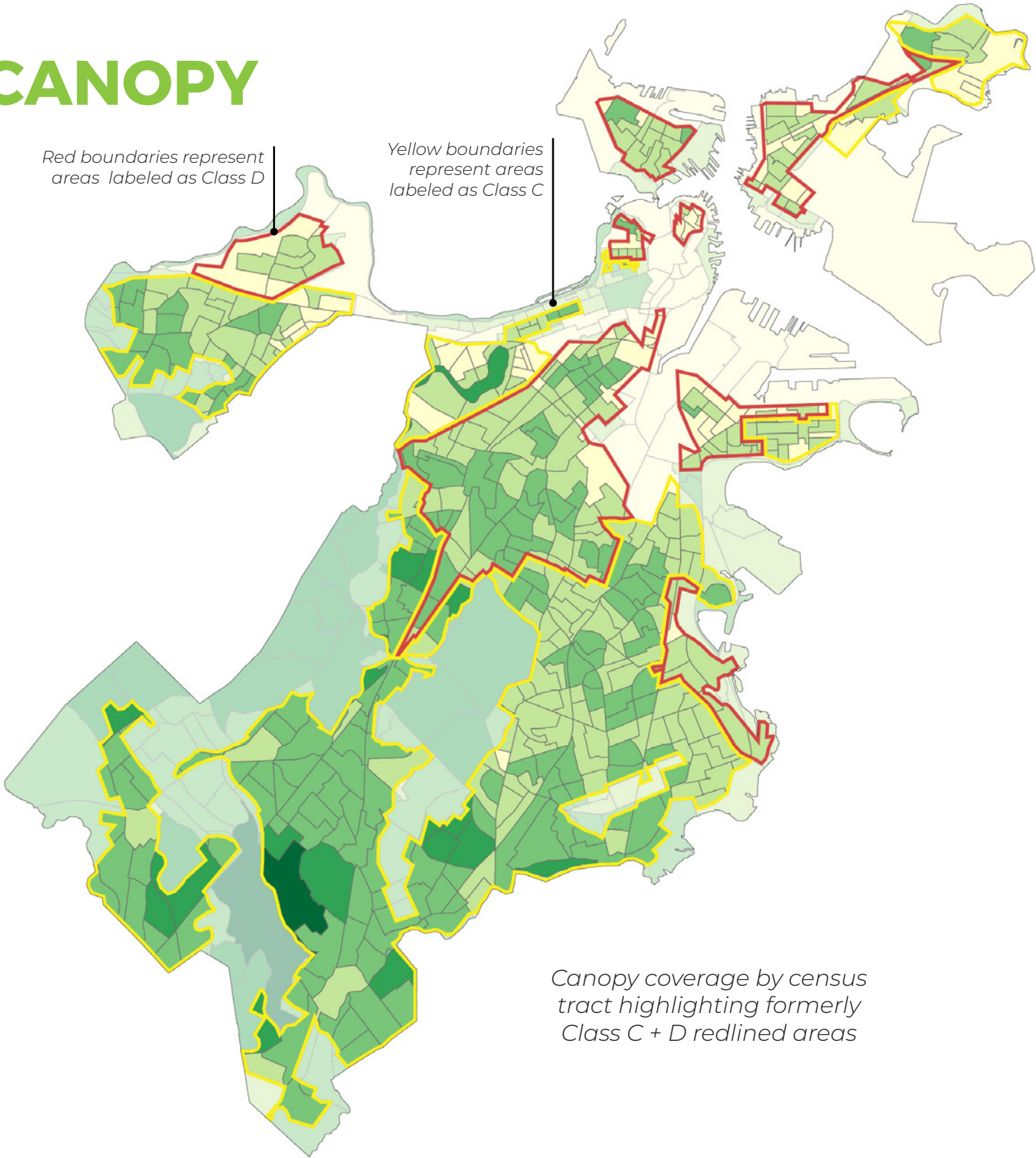




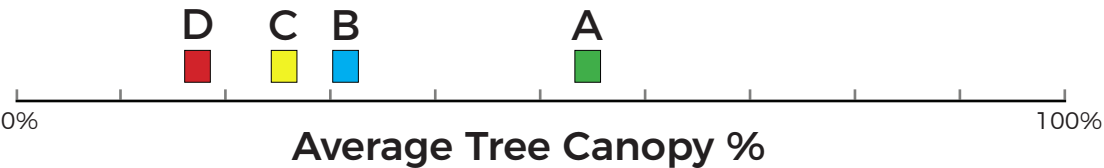
# HISTORIC DISCRIMINATION + CANOPY

Numerous policies, systems, practices have compounded historical disinvestment, marginalization and discrimination.

For example, formerly redlined (HOLC rating class D) neighborhoods, on average, have less canopy coverage than other areas.



**Class A:** average of 54.1% canopy coverage  
**Class B:** average of 31.3% canopy coverage  
**Class C:** average of 25.6% canopy coverage  
**Class D:** average of 17.9% canopy coverage





# THE URBAN FOREST + CLIMATE CHANGE

A range of threats will bring new risks and challenges to the forest with climate change



STORMS



TEMPERATURE SWINGS + HEAT



DROUGHT



FLOODING / SALINITY



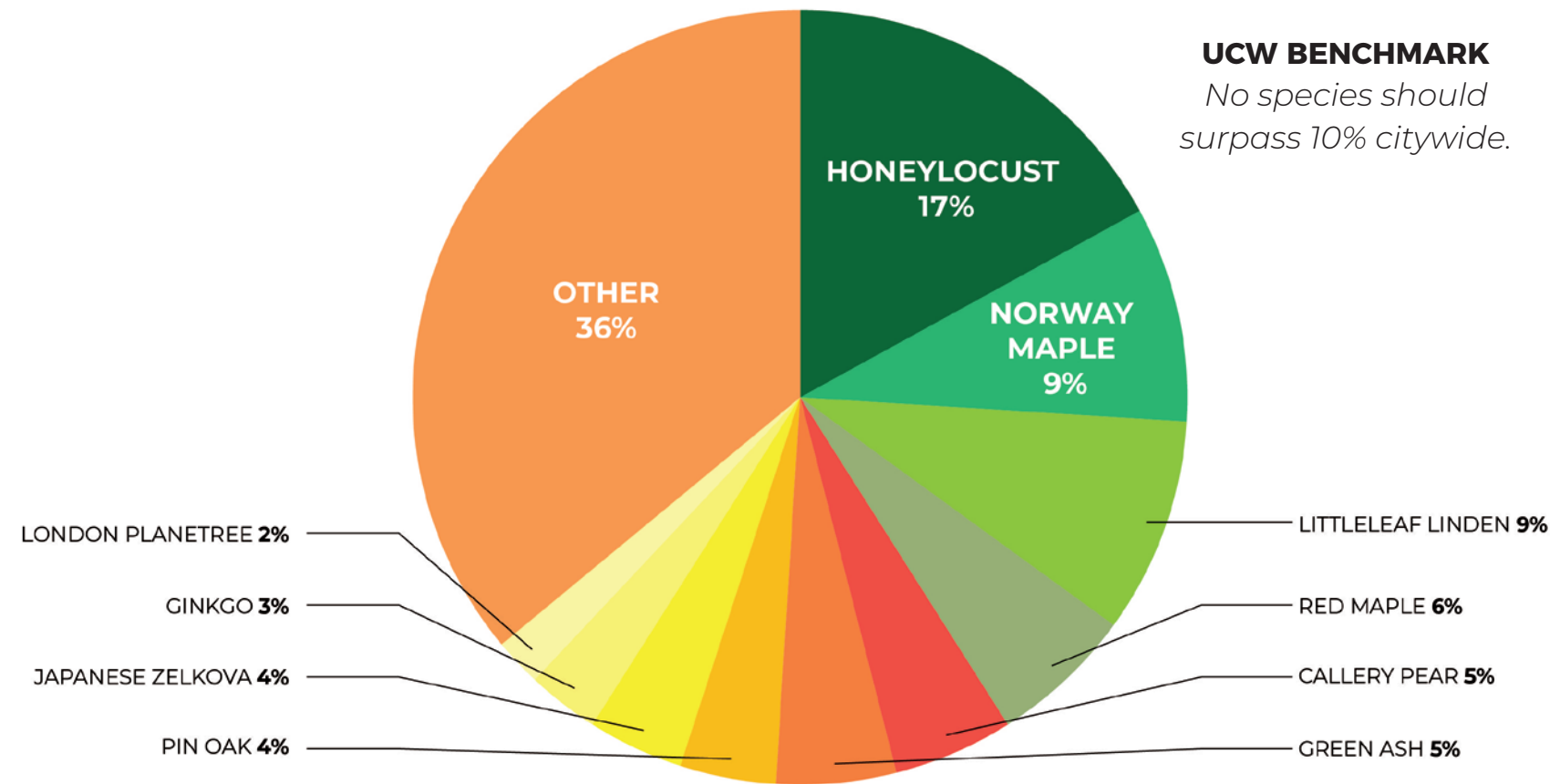
NEW PESTS / DISEASES



DIVERSITY

Diversity is critical to the health of the urban forest. While we don't have species data for the entire forest, Boston's street trees are moderately diverse, with only one species over 10%.

TOP 10 TREE SPECIES IN BOSTON



**HONEYLOCUST**  
*Gleditsia triacanthos*



**LITTLELEAF LINDEN**  
*Tilia cordata*



**NORWAY MAPLE**  
*Acer platanoides*



**RED MAPLE**  
*Acer rubrum*



# SUITABILITY + CLIMATE CHANGE

Common trees in Boston expected to fare **poorly** as climate warms



RED MAPLE



SWAMP WHITE OAK



BLACK WALNUT



AMERICAN LINDEN

Common trees in Boston expected to fare **better** as climate warms



WHITE OAK



BLACK LOCUST



SUGAR MAPLE

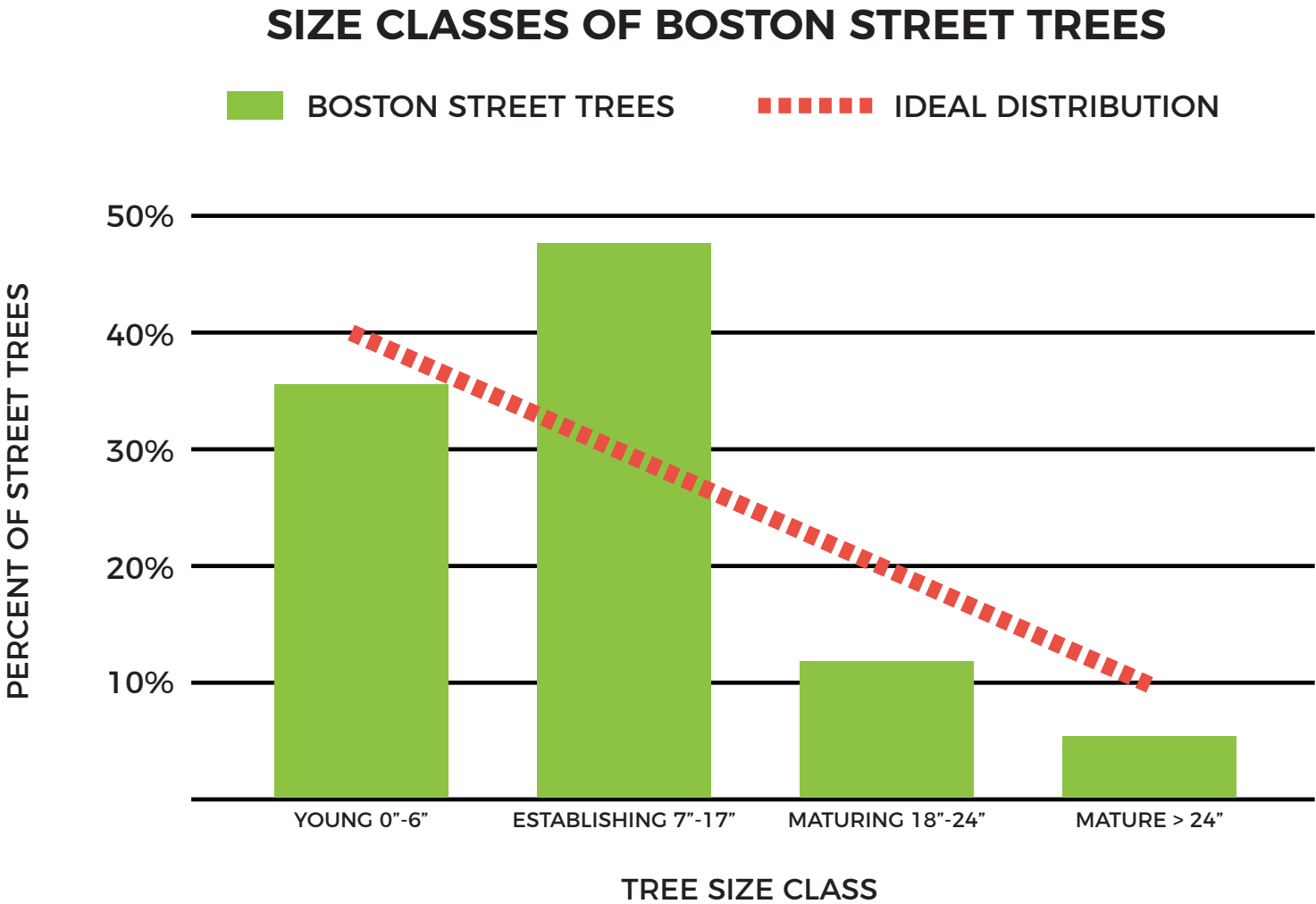


SILVER MAPLE



SIZE + AGE

A diverse distribution of tree age and size lays the foundation for a healthy forest now and in the future.\*



**DISTRIBUTION RATING: FAIR**  
*Boston has too many establishing trees and too few mature and maturing trees.*

\*Comprehensive tree data is not available for trees living in other locations like private property, parks, or other public property.



# CARE + MANAGEMENT

# CARE & MANAGEMENT

Caring for the urban forest takes a community. There are many caretakers and owners.



## GOVERNMENT

- City of Boston (ex. Parks Department)
- State (ex. DCR)
- Federal (ex. NPS)



## COMMUNITY GROUPS + INDIVIDUALS

- You
- Non-profits
- Community Groups
- Neighborhood Associations
- Developers
- Businesses



## INSTITUTIONS

- Universities (ex. Northeastern)
- Massport (ex. Logan Airport)



# CARE & MANAGEMENT

Sustaining life in a tough environment

**Canopy extends across many different property types.**

**Maintainers:** Everyone!

**Health challenges:** Dog waste, salt, soil compaction, drought, vandalism, mechanical damage, pest/disease, construction, storms, soil volume, shadows, temperature swings, bike locks.



Effects of dog urine on bark. Trees can die from damage to their bark. The sensitive outer layers of a tree acts as a circulatory system, transporting water and sugar up and down the tree. PHOTO: Carrie Maria

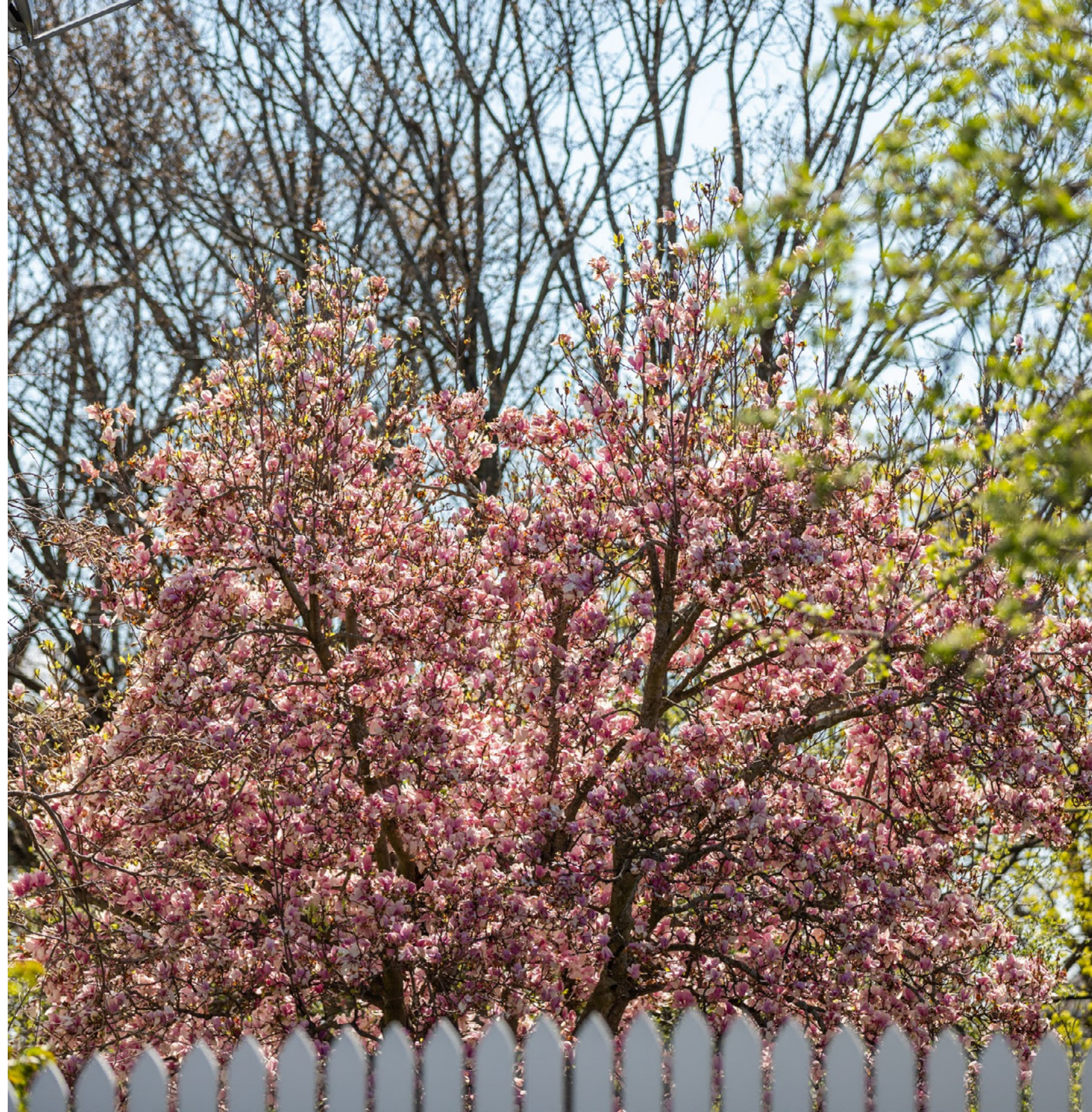


# CARE & MANAGEMENT

Sustaining life in a tough environment

## What does a tree need?

- Right place, right species
- Kindness
- Proactive care - pruning is a great way to reduce the chances of storm damage to a tree. Pests and diseases can be caught early on if the tree's health is monitored.
- Watering, especially in the first two years of its life





# CARE & MANAGEMENT

## Parks and street trees

- Boston Parks and Recreation is responsible for public street trees and trees in City-owned parks.
- State Department of Conservation and Recreation owns half the parkland in Boston.





# CARE & MANAGEMENT

Non-profits and community groups

Non-profits and community groups also play an important role.

- Planting and maintaining trees on public and private lands.
- Community programming
- Workforce development programs
- Advocacy
- Awareness-raising

Examples:

- Tree Eastie
- Climate Crew (CREW)
- Emerald Necklace Conservancy
- Speak For The Trees





# CARE & MANAGEMENT

## Institutions

- Institutions and other major landowners like universities and hospitals are major players in preserving and expanding canopy.
  - Much of this canopy is publicly-accessible.
- Includes other publicly-owned land that aren't parks.





# CARE & MANAGEMENT

Developers, landowners, and businesses

- Privately-held land is home to 60% of the city's canopy.
- Much of this land is small residential property.
- Often a less stressful environment for trees than sidewalks.





# CARE & MANAGEMENT

## Individual residents

Residents can support or care for trees almost anywhere! You don't have to be a homeowner to advocate or care for trees.

- Care for a tree near you
- Organizing planting and care on public and private property
- Participating in programming and volunteer opportunities
- Awareness-raising
- Advocacy
- 311 requests for public tree care + planting





# KEY GOALS + RECOMMENDATIONS



# GOAL #1

## EQUITY FIRST

*Focus Investments and Improvements  
in Under-Canopied, Historically Excluded  
and Socially Vulnerable Areas*

**Strategies and recommendations under this goal would include (but are not limited to):**

- **Prioritize efforts** in historically excluded communities, places with high concentrations of socially vulnerable peoples, and areas with relatively low canopy cover.
- **Targeted planning, care, planting, preservation, and replanting**, to maximize public health benefits and to adapt to climate change in equity focused communities and areas.
- **Address each neighborhood's unique history** and mitigate physical constraints to tree planting (such as narrow sidewalks).
- **Creating or supporting workforce development opportunities** (training and use of local workforces for various areas of tree work), to create training and career opportunities for residents in tree care work, especially in historically excluded communities, places with high concentrations of socially vulnerable peoples, and areas with relatively low canopy cover.
- **Target tree planting and care in equity focused areas**, in alignment with other strategic objectives, such as improving high traffic pedestrian corridors (e.g., paths to schools or grocery stores), and outdoor waiting spaces (e.g., bus stops).
- **Conduct outreach** on the importance of trees and **provide support** for socially vulnerable residents to protect and care for trees on private property.



## GOAL #2

### PROACTIVE CARE & PRESERVATION

*Ensure Trees/Tree Canopy are Proactively Cared For*

**Strategies and recommendations under this goal would include (but are not limited to):**

- Instituting a **proactive tree care program** for the City which includes resources for staff and contracts, and a strategy for a planting plan that will support tree health and growth of the canopy for BPRD's urban forestry program.
- Initiatives to **improve tree preservation**, including a tree protection ordinance, requirements and incentives for tree protection during development;
- A focus on **protection of mature trees** (guidelines/education) given their critical importance.
- Ensuring other departments and quasi-public agencies **share the same goals** and have resources for proactive care.
- Address hurdles to proactive care on **private lands** (cost and knowledge of large tree care)
- Utilize workforce development grants and training opportunities to help **expand tree care workforce** in the city at large
- **Increase data sharing** and work closely with partners to create robust data sources that serve decision making needs and **increase transparency**.
- "Future-proofing" the urban forest to the **impacts of climate change** - addressing pest/disease issues, species resiliency, adequate growing conditions (soil volume and quality, gas leaks, salt, utility conflicts, etc.), and other evolving care needs (adequate staffing and funding) as conditions change.



## GOAL #3

### COMMUNITY DRIVEN PROCESSES

*Ensure Community Input Informs  
Urban Forest Priorities, Decisions and  
Management*

**Strategies and recommendations under this goal would include  
(but are not limited to):**

- Efforts to ensure the **community has an active role** in guiding tree canopy decisions and operations within their neighborhood, and sufficient City support to do so.
- Develop ways to easily **provide input into decisions** that impact residents' community
- Ensure that community needs, goals, and aspirations are integrated into and prioritized in decisions made. Strategies to support this could include:
  - An **advisory City tree board with representation** that ensures historically excluded, socially vulnerable, and relatively low canopy communities are equitably integrated to represent their own needs, goals, and aspirations.
  - Ensure **transparent communication** lines around tree work.
- Ensuring every community has **access to the best information** to make decisions is key to supporting community led canopy management. Strategies to support this could include:
  - **Create and maintain an urban forest website** with up-to-date science, data and information including the importance of trees, information on the dynamics of managing a living forest, tree health, management programs, policies, etc., And how people can get involved in canopy care.



## GOAL #4

### TREES ARE PRIORITIZED AND VALUED

*Increase awareness and buy-in regarding the importance of trees in Boston, across the public and private sector.*

**Strategies and recommendations under this goal would include (but are not limited to):**

- More outreach and engagement to **increase awareness** of the role of trees and the urban forest to Boston, and develop the relationships integral to implementation and sustained efforts.
- **Improved coordination and alignment** within government departments, to ensure that the value of trees is embedded within other programs, priorities and policies.
- Make adjustments to the **development process** that support retention of existing large trees and increase new plantings
- Continue other city efforts that improve the urban forest:
  - The integration and accommodation of canopy expansion and providing adequate space for healthy trees into mobility efforts (from corridors to **Complete Streets**)
  - Reinforce stormwater management through capture and **green infrastructure initiatives**
- Build upon **current efforts from residents and organizations** to reinforce existing work and build new connections.
- Build structures and communication channels for **regional coordination** on practices, funding, pest response, and other issues that would benefit from combined efforts.



## POLL

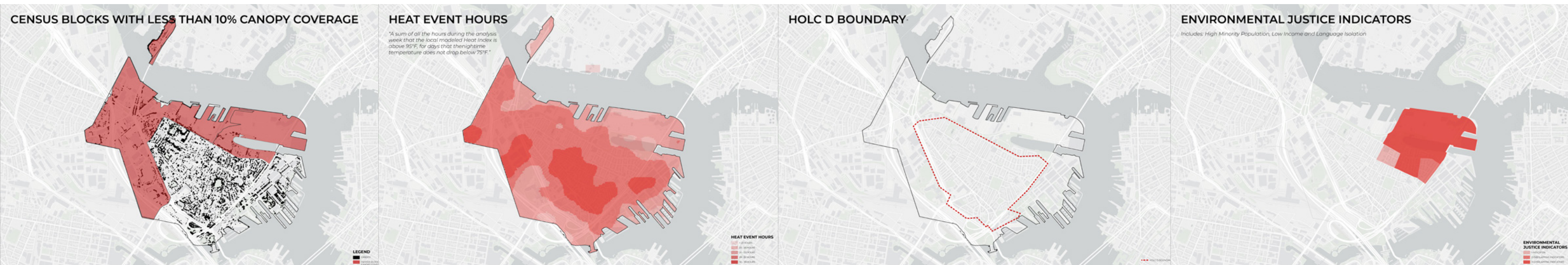
WHICH STRATEGIES AND RECOMMENDATIONS ARE  
MOST IMPORTANT TO YOU?

WHICH DO YOU THINK WILL BE THE HARDEST TO  
IMPLEMENT SUCCESSFULLY?

# PLANTING PRIORITIZATION

## IN PROGRESS

- Less than 10% canopy coverage
- Environmental justice populations
- Heat event hours
- Areas that were historically redlined as class D
- Sidewalk width
- Existing canopy/existing street trees
- Land use
- Open space





POLL

WHERE IS IT MOST IMPORTANT TO  
PRIORITIZE TREE PLANTING?

# NEXT STEPS



## NEXT STEPS

# CARING FOR A TREE NEAR YOU

- Ask your local neighborhood group or park Friends Group about programming or volunteer opportunities
- Volunteer at Urban Wilds cleanup days:  
[boston.gov/urban-wilds](https://boston.gov/urban-wilds)
- Submit a 311 case to request a tree planting or maintenance
- Keep dogs away from pits
- Keep trash out of pits
- Avoid stepping in pits
- Water young trees during droughts

Learn more about caring for street trees and how to request a street tree or apply for a removal:  
[boston.gov/trees](https://boston.gov/trees)



# WHAT COMES NEXT?

STEP

1

EXISTING CONDITIONS  
AND ANALYSIS

STEP

2

WE ARE HERE....

STAKEHOLDER AND  
PUBLIC ENGAGEMENT

STEP

3

...AND HERE

GOAL SETTING AND  
RECOMMENDATIONS

STEP

4

REPORT AND  
IMPLEMENTATION



## RESOURCES

**Caring for our urban forest** | maintenance, planting, and street tree removal hearings  
[boston.gov/trees](https://boston.gov/trees)

**Urban Forest Plan** | Project notes, data, and news  
[boston.gov/urban-forest-plan](https://boston.gov/urban-forest-plan)

**Call 311 or use 311 app** | report issues with public trees, request a planting  
[boston.gov/departments/bos311](https://boston.gov/departments/bos311)

**Healthy Places** | Learn about the Heat Resilience Study + Open Space and Recreation Plan  
[boston.gov/healthy-places](https://boston.gov/healthy-places)

**Employment** | Two open positions with the Tree Division as of March 9, 2022  
Research Analyst (P&R Tree) + General Tree Maintenance Foreperson (listed under Gen Tree Maint Frprs)  
<https://www.boston.gov/career-center>

**THANK YOU!**



# ADDITIONAL INFORMATION

DIVERSITY

A few simple rules help guide a genetically diverse population across the city and for each neighborhood.

SPECIES (10% rule)

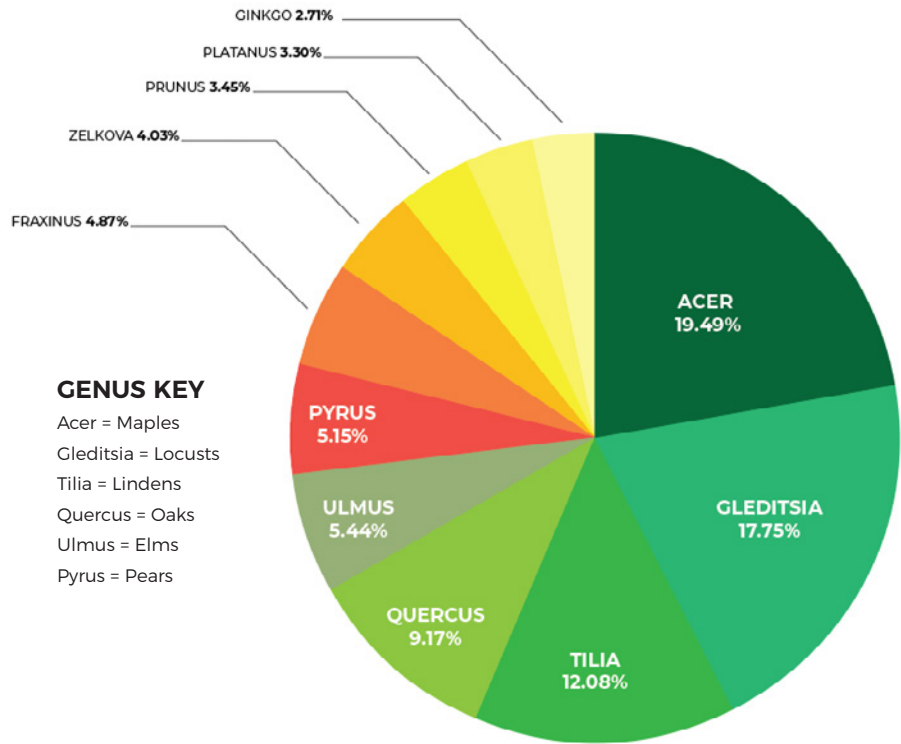
- No species surpasses the 10% citywide.

GENUS (20% rule)

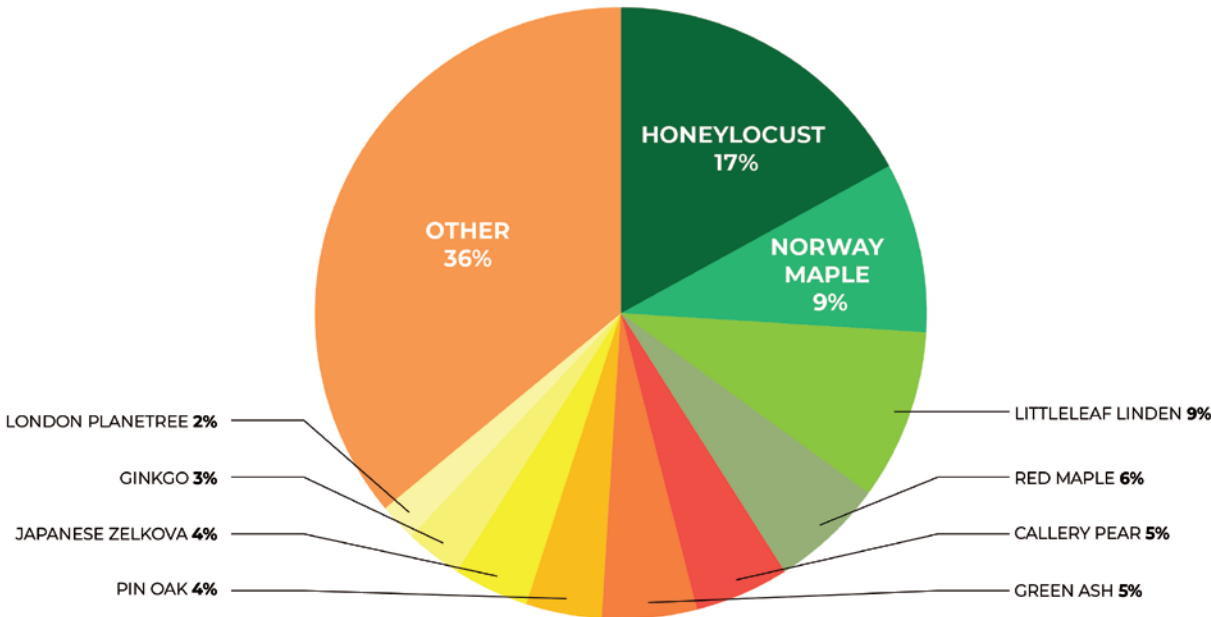
- No genus surpasses the 20% citywide.
- Almost every neighborhood has at least one genus that surpasses the recommended 20% level, commonly Acer and Gleditsia.

FAMILY (30% rule)

- No family surpasses the 30% rule.



STREET TREE INVENTORY BY GENUS



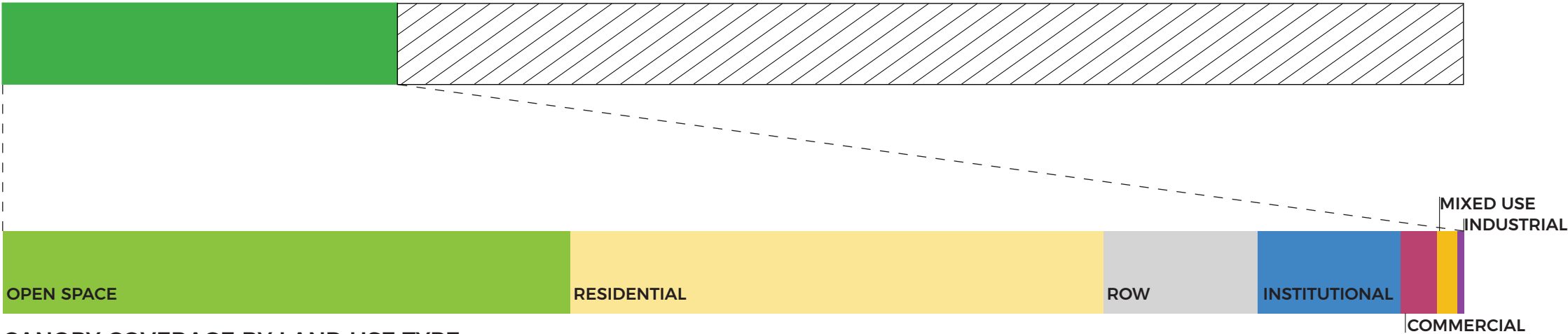
STREET TREE INVENTORY BY SPECIES



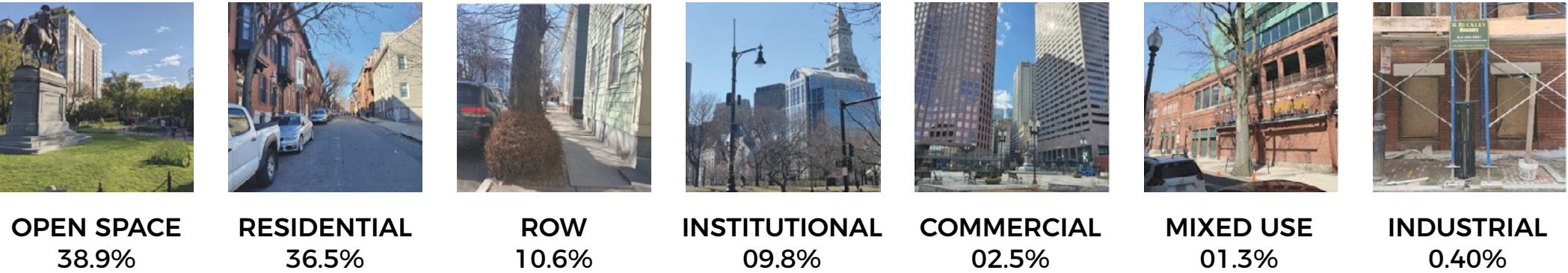
# CANOPY DISTRIBUTION + LAND USE

Open space and residential land uses makeup ~75% of existing canopy

CANOPY COVERAGE IN BOSTON



CANOPY COVERAGE BY LAND USE TYPE





SUITABILITY + CLIMATE CHANGE

Common trees in Boston expected to fare poorly as climate warms



RED MAPLE



NORTHERN RED OAK



AMERICAN LINDEN



SWAMP WHITE OAK



SERVICEBERRY



EASTERN WHITE PINE



BLACK WALNUT



# SUITABILITY + CLIMATE CHANGE

Common trees in Boston expected to fare better as climate warms



GREEN ASH



PIN OAK



SILVER MAPLE



EASTERN HORNBEAM



AMERICAN HORNBEAM



SUGAR MAPLE



PIGNUT HICKORY



WHITE OAK



BLACK LOCUST



BLACK CHERRY



BLACK OAK



AMERICAN BEECH



BLACKGUM



GRAY BIRCH



EASTERN REDCEDAR



MOCKERNUT



HICKORY



AMERICAN HOLLY



BITTERNUT HICKORY



SASSAFRAS

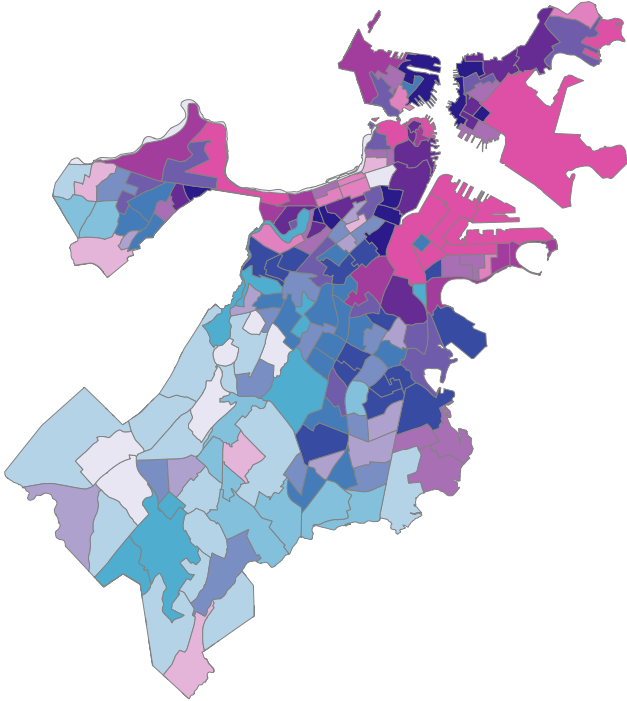
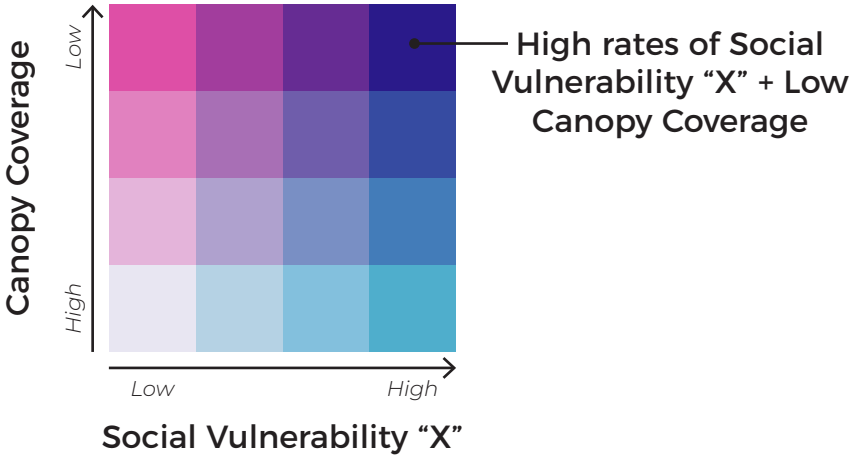


YELLOW BIRCH

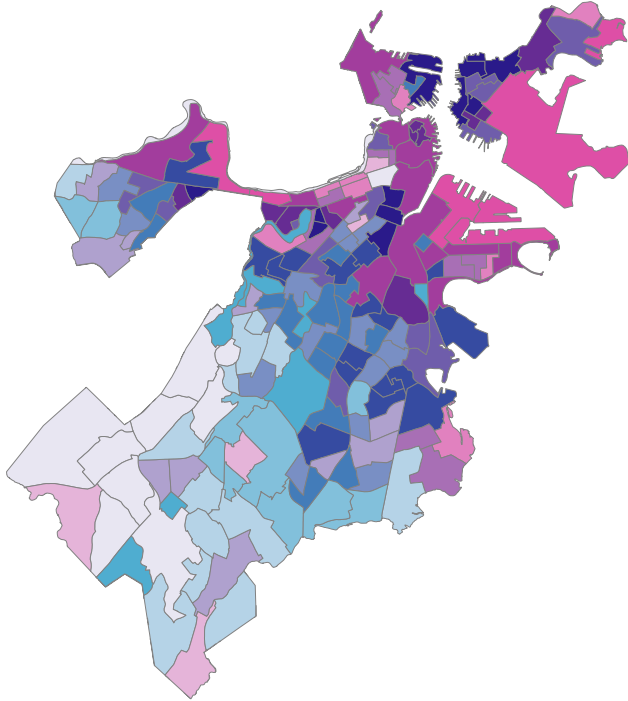


# SOCIAL VULNERABILITY + CANOPY

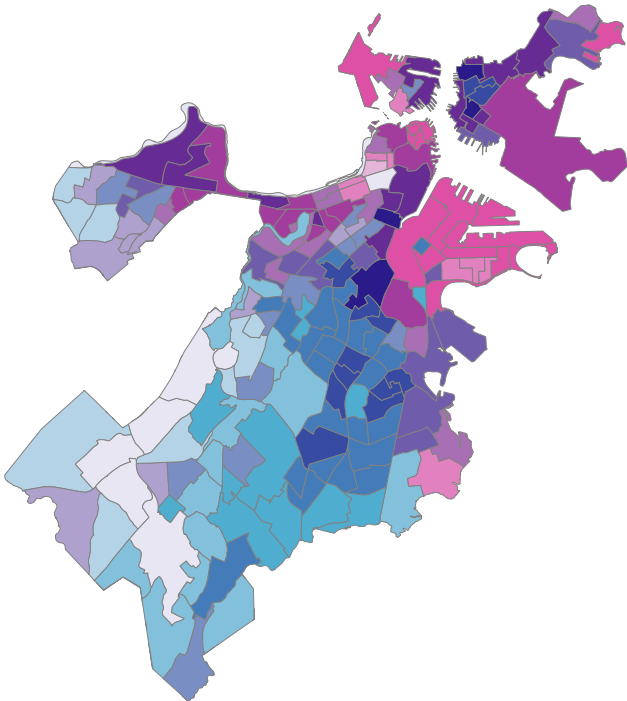
Areas with high concentrations of socially vulnerable populations and low canopy coverage



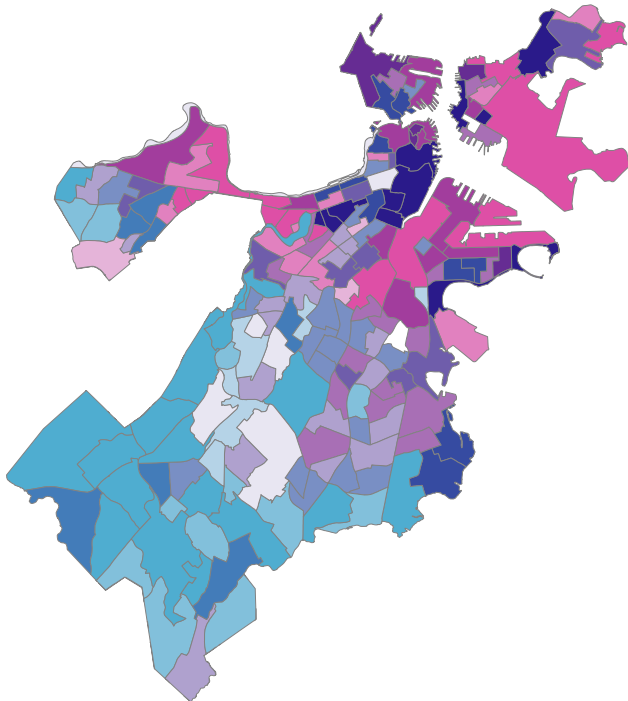
*Limited English Population*



*Low to No Income*



*Communities of Color*



*Older Adults*



SPECIES DIVERSITY + PESTS

Pests pose a significant risk to the urban forest. A diverse forest also reduces forest-wide pest vulnerability.



**EMERALD ASH BORER - IN BOSTON**  
*5% of Boston’s inventoried street trees are at risk.*



**SPOTTED LATERNFLY- NOT HERE. HIGH RISK.**  
*23% of Boston’s inventoried street trees are at risk.*



**ASIAN LONGHORNED BEETLE- NOT HERE. LOW RISK.**  
*29% of Boston’s inventoried street trees are at risk.*