FRANKLINTON COMMUNITY STREET TREE INVENTORY SUMMARY REPORT

THE CITY OF COLUMBUS RECREATION AND PARKS

FALL 2021

TREE INVENTORY EXECUTIVE SUMMARY

FRANKLINTON COMMUNITY

PROJECT OVERVIEW

In 2021, the City of Columbus' Recreation and Parks Department commissioned an update to the city's existing street tree inventory within the Franklinton community. This project directly supports the implementation of the recently completed *Columbus Urban Forestry Master Plan*, which establishes a vision and future goals for Columbus' urban forest.

COMMUNITY OVERVIEW

Franklinton has an estimated population of 10,763 residents and contains 53 miles of city-maintained streets. The community encompasses 2 square miles of land area and accounts for 1% of the City of Columbus' total area. Current canopy cover within the Franklinton community is estimated to be 15%.

VISION FOR THE URBAN FOREST

To prioritize, preserve, and grow the tree canopy in Columbus, equitably across neighborhoods, to improve health and quality of life for all residents.

COLUMBUS' URBAN FOREST GOALS

- **GOAL 1.** 40% CITYWIDE CANOPY COVER (BY 2050)
- **GOAL 2.** STOP NET CANOPY LOSS (BY 2030)
- **GOAL 3.** EQUITABLE INVESTMENT (BY 2030)

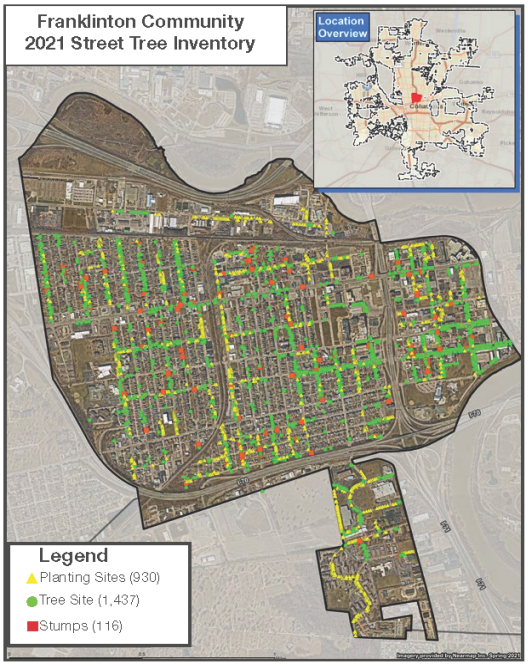
2,483

Sites Inventoried

1,437 Trees

930 Planting Sites

116 Stumps



OVERALL CONDITION OF FRANKLINTON'S INVENTORIED TREES: GOOD

Good	Fair	Poor	Dead
79%	14%	6%	2%

THE CITY OF COLUMBUS RECREATION AND PARKS

DAVEY Resource Group

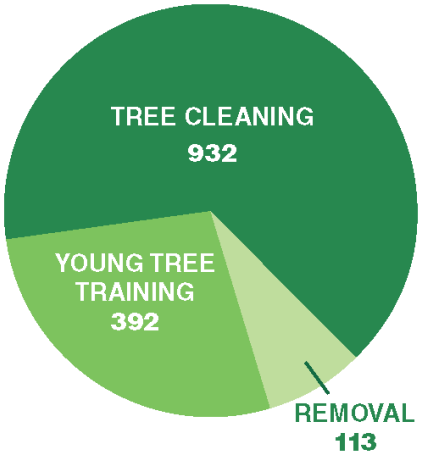
Contact Info

City of Columbus
Recreation & Parks Dept.
1111 East Broad Street
Columbus, Ohio 43205

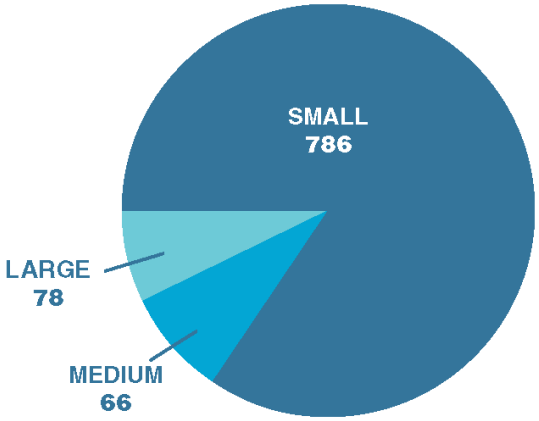
Inventory Details

DRG's team of ISA Certified Arborists completed field data collection during Spring 2021.

TREES BY MAINTENANCE RECOMMENDATION



PLANTING SITES BY TREE SIZE



$3.86 million

Estimated value of Franklinton's inventoried street trees.

14,340 pounds

Annual CO_2 captured

700 pounds

Annual air pollutants removed

225,702 gallons

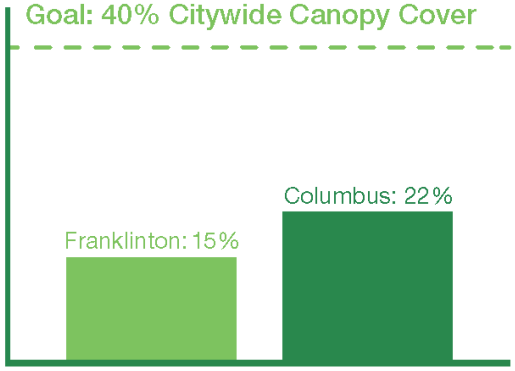
Annual stormwater runoff intercepted

CREATING EQUITABLE CANOPY COVER

Implementation of the following action steps will significantly increase canopy cover over time, provide greater value and more benefits to Franklinton's residents, and help the city realize its vision and achieve its goals for the urban forest.

THE WAY FORWARD: ACTION STEPS

1. Preserve and maintain existing canopy.
2. Prioritize planting of large and medium size planting sites.
3. Develop neighborhood tree planting initiatives and community outreach focused on planting trees on private property.
4. Explore retrofitting existing street infrastructure and updating design standards to expand and improve available tree growing spaces.



Current levels of community and citywide canopy coverage compared to the city's 2050 canopy goal.

THE CITY OF COLUMBUS RECREATION AND PARKS

DAVEY Resource Group

Contact Info

City of Columbus
Recreation & Parks Dept.
1111 East Broad Street
Columbus, Ohio 43205

Inventory Details

DRG's team of ISA Certified Arborists completed field data collection during Spring 2021.

TABLE OF CONTENTS

TABLES

FIGURES

DAVEY Resource Group

Notice of Disclaimer: Inventory data provided by Davey Resource Group, Inc. "DRG" are based on visual recording at the time of inspection. Visual records do not include individual testing or analysis, nor do they include aerial or subterranean inspection. DRG is not responsible for the discovery or identification of hidden or otherwise non-observable hazards. Records may not remain accurate after inspection due to the variable deterioration of inventoried material. DRG provides no warranty with respect to the fitness of the urban forest for any use or purpose whatsoever. Clients may choose to accept or disregard DRG's recommendations or to seek additional advice. Important: know and understand that visual inspection is confined to the designated subject tree(s) and that the inspections for this project are performed in the interest of facts of the tree(s) without prejudice to or for any other service or any interested party.

SECTION 1: STRUCTURE, COMPOSITION, AND MAINTENANCE

The City of Columbus Recreation and Parks Department (CRPD) designated the street rights-of-way (ROW) within the Franklinton community as an area of interest for an on-going update to the city's existing GIS-based public tree inventory. The Franklinton community street tree inventory supports the *Columbus Urban Forestry Master Plan* (CUFMP).

2,483 SITES INVENTORIED

In 2021, DRG arborists performed field data collection and catalogued new data on potential viable planting sites, existing trees, and tree stumps located within the ROW of the Franklinton community.

Of the 2,483 total inventoried sites:

- ***58%*** = **Existing trees along the ROW**
- ***37%*** = **Potential future planting sites**
- ***5%*** = **Existing stumps**

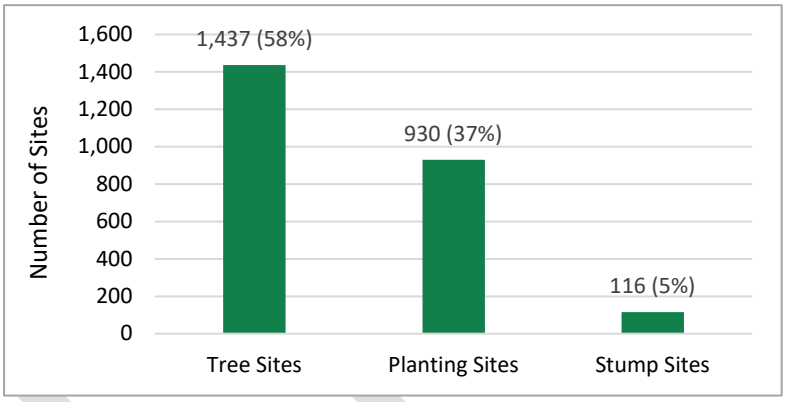


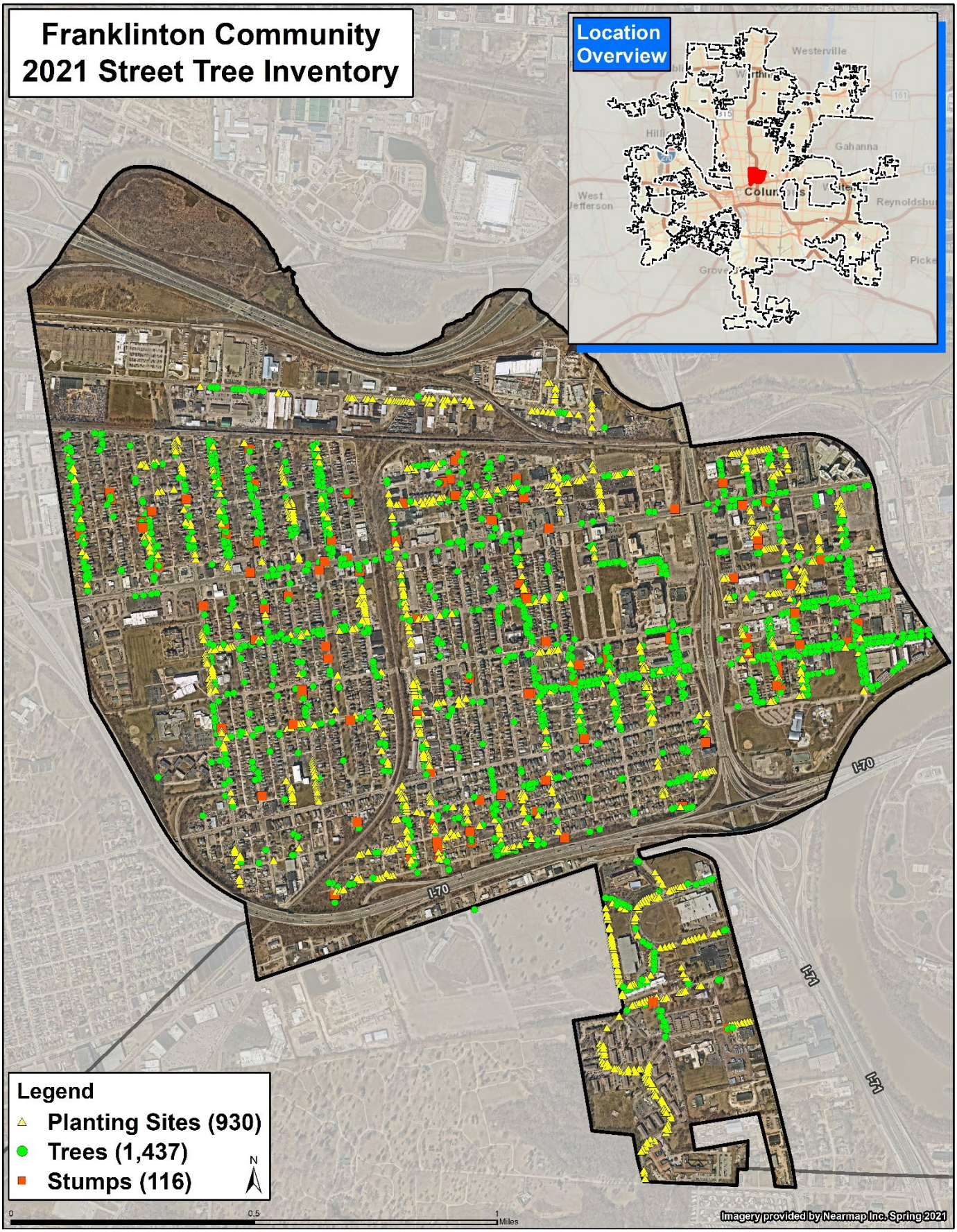
Figure 1. Quantity of inventoried sites by site type.

Low Stocking Level Contributing to Insufficient Canopy Coverage

Stocking is a traditional forestry term used to measure the density and distribution of trees. For an urban/community forest, stocking level reports the ratio of existing street trees to the total number of suitable tree locations within the street ROW, which includes trees, stumps, and vacant planting locations.

The Franklinton community has a stocking level of 58%, which is suboptimal. A partially stocked ROW helps explain why canopy coverage in Franklinton, measured at 15%, is less than the city-wide average of 22%. The positive news is that the street ROW contains plenty of room and opportunity for canopy growth through future targeted planting efforts, which will be driven by the results of the inventory update and analysis.

DRG arborists identified vacant potential planting sites within the rights-of-way (ROW) of Franklinton, such as the one pictured here among the row of oak trees. Stocking the ROW with new tree plantings will help improve canopy coverage and increase the quantity of benefits trees provide to the community.



Map 1. Approximate locations of sites inventoried during the 2021 Franklinton community street tree inventory update.

IMPROVE TREE POPULATION DIVERSITY

Urban forest resiliency is positively correlated with tree population diversity; greater diversity helps reduce exposure to harmful pests and disease which can target individual tree species, groups of species, or even entire tree genera.

Species and genus diversity distributions offer a critical measure of a tree population's resiliency to such attacks and help managers to identify and remedy potential areas of overexposure.

When assessing tree population diversity, it is widely accepted that **no more than 10% of an urban tree population should be comprised of a single species and no greater than 20% from a single genus.**

Species Distribution is Acceptable

A total of 84 individual tree species were catalogued during the inventory. Of the five most abundant tree species recorded during the inventory, none exceeded the recommended 10% threshold (Figure 2).

Callery pear (*Pyrus calleryana*) is the most abundant species found within the community's street ROW, accounting for 7% of all inventoried trees.

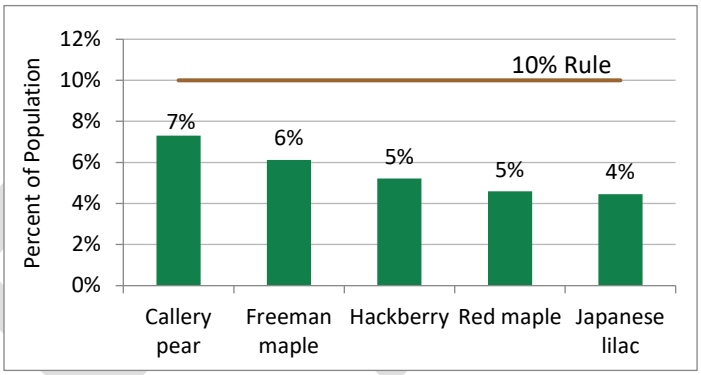


Figure 2. Species distribution of inventoried trees.

Genus Distribution is Skewed

Franklinton has 44 unique tree genera, or groups of tree species that are closely related. Figure 3 compares the five most abundant tree genera in Franklinton against the ideal 20% limit.

The genus *Acer*, which is composed of maple trees, accounts for 26% of the entire inventoried population—higher than the recommended threshold.

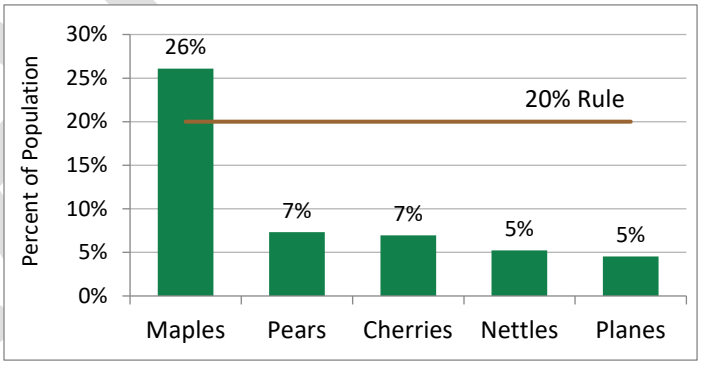


Figure 3. Genus distribution of inventoried trees.

Maple Trees are Overrepresented

Future planting initiatives should minimize the installation of additional maple within Franklinton until representation of the genus *Acer* falls within the recommended 20% threshold.

Maple trees are susceptible to a variety of harmful pests and disease, including the fungal pathogen Verticillium wilt (*Verticillium* spp.) and the invasive Asian longhorned beetle (*Anoplophora glabripennis*). Improved genus diversity will reduce the potential for tree loss and help ensure long-term urban forest health and viability.

Above: Asian Longhorned Beetle (ALB). Photo: Jeff Tessner, DRG.

Left: Sugar maple with Verticillium wilt. Photo: Jerry Weiland, USDA-ARS.

OVERALL TREE CONDITION IS GOOD

The condition of each inventoried tree was evaluated and rated as good, fair, poor, or dead. Several factors affecting condition were considered for each tree, including root characteristics, branch structure, trunk, canopy, foliage condition, and the presence of pests.

Figure 4 exhibits the condition breakdown of the inventoried trees. The general health of the inventoried tree population is characterized by the median average condition rating. Overall, **Franklinton's street trees are in good condition.**

Routine Inspections are Key

Proactive monitoring helps identify, prevent, and mitigate concerns. Routine tree inspections are necessary to monitor for changes in tree condition, the presence of pests and/or disease, or the worsening of existing defects—particularly among trees rated in poor condition.

Poor condition ratings are generally due to visible signs of decline and stress, such as decay, dead limbs, or discolored foliage. If retained, these trees will likely require corrective pruning and intensive plant health care to improve their vigor. Dead trees and trees with defects that cannot be remedied should be removed as soon as possible.

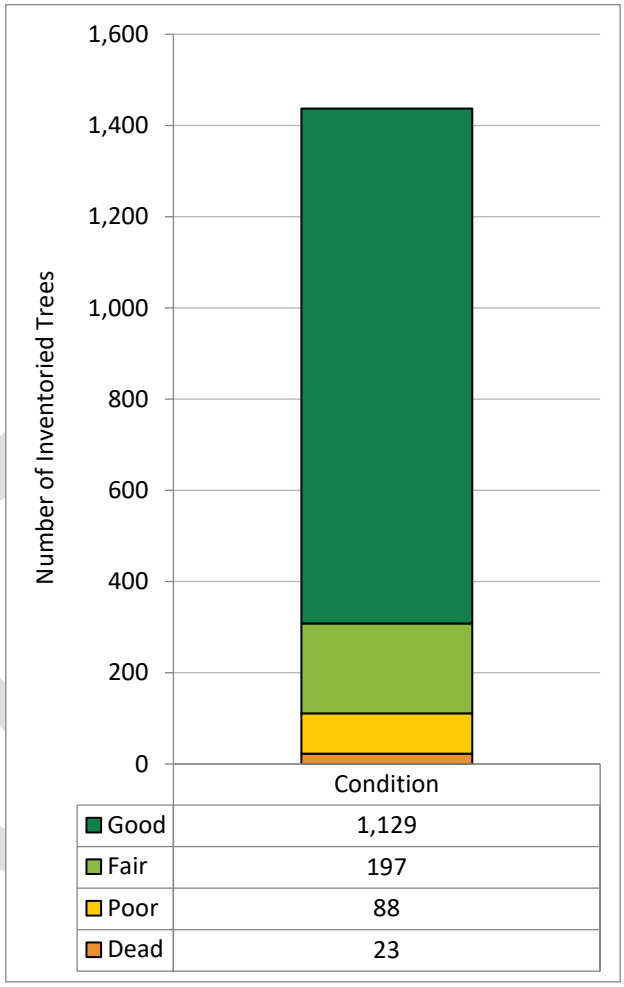


Figure 4. Condition of inventoried trees.

TREE DIAMETER-AGE DISTRIBUTION

Understanding the relative age of a tree population can help planners align future management strategies with current policy goals. To determine relative tree age, DRG first categorized Franklinton's inventoried tree population by small- and large-growing trees and then assigned each tree to an age grouping based on the tree diameter measured at breast height (DBH), as outlined in Table 1.[1]

The relative age distribution of Franklinton's inventoried tree population was then compared to an ideal distribution for an expanding urban forest, which suggests the tree population composition be equivalent to 40% young trees, 30% establishing, 20% maturing, and 10% mature trees (Figure 5).

Table 1. Tree age by tree size at maturity and diameter size-class.

Relative Tree Age	Large-Growing DBH Size	Large-Growing Qty	Small-Growing DBH Size	Small-Growing Qty	All Sizes Qty
Young	0–8"	348	0–4"	120	468
Established	9–17"	367	5–8"	127	494
Maturing	18–24"	178	9–12"	80	258
Mature	> 24"	189	>12"	28	217

Young Trees are Underrepresented

Only 33% of all trees are classified as young—less than the recommended 40%. If this trend continues as the tree population ages, there will not be enough large trees to sustain neighborhood canopy growth and expansion. The maturing age group among large-growing trees is also underrepresented. This age group is critical for ensuring sufficient succession and expansion of mature tree canopy cover.

Existing, Mature Canopy is Aging

The proportion of large-growing mature trees is significantly above the level suggested for an expanding urban forest. With age comes wear and tear; larger, older trees are more likely to have defects which require mitigation, tend to require more frequent inspection to identify those defects, and need regular maintenance to remain healthy and safe.

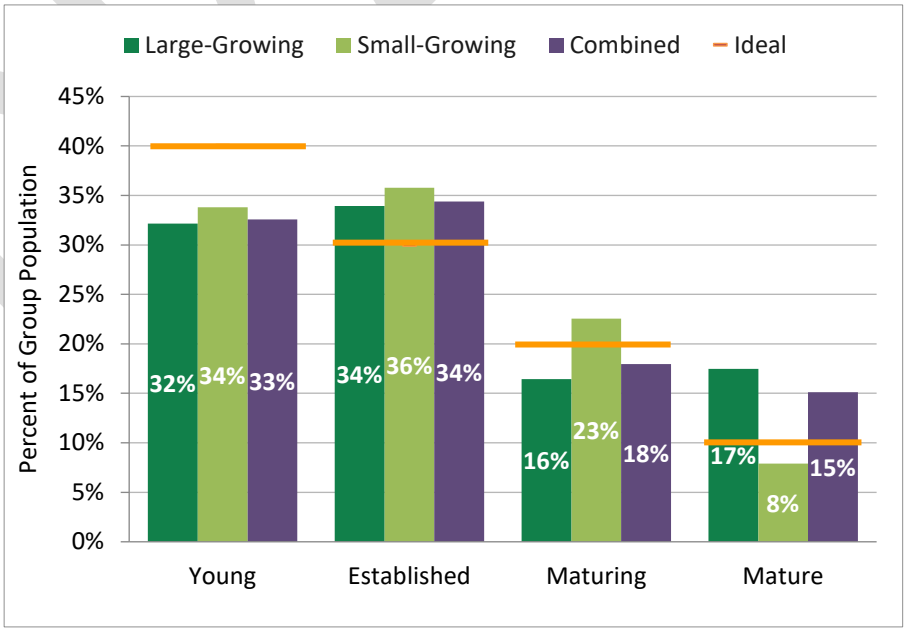


Figure 5. Distribution of relative tree age by diameter size-class.

[1] It should be emphasized that tree size is only a rough approximation of tree age; tree size alone is not a definitive or appropriate measure of tree age. In the urban environment in particular, numerous factors play a role in determining tree size, including the availability of water, soil, and sunlight, proper tree care and planting techniques, the presence of pests and pathogens, etc.

TREE MAINTENANCE RECOMMENDATIONS

During the inventory, DRG arborists assigned a primary and secondary recommended maintenance activity to each of the 1,437 inventoried trees.

Figures 6 and 7 display the proportion of the inventoried trees assigned to each maintenance category.

City managers generally prioritize maintenance activities by risk. For example, a large dead tree by a busy intersection should be removed before a small dead tree at the end of a little-used secondary street.

PRIMARY MAINTENANCE CATEGORIES

Tree Cleaning = 932 Trees

Tree cleaning describes pruning to remove dead, dying, broken, decayed, and/or crossing limbs. Trees in this category are recommended for inclusion in a regularly scheduled, routine maintenance program. Over time, routine pruning minimizes the occurrence of reactive maintenance.

Tree Removal = 113 Trees

In Franklinton, 113 trees are designated for removal. City Forestry only removes trees that are hazardous: either dead, dying, or dangerous to public safety.

Young Tree Training = 392 Trees

Younger trees can have branch structures that lead to potential problems as the tree ages. These trees should be pruned to train future growth patterns and correct or eliminate weak, interfering, or objectionable branches to minimize future maintenance requirements.

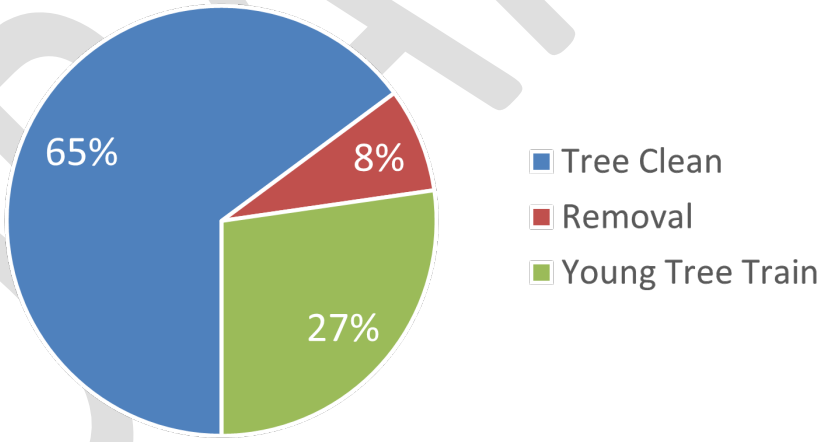


Figure 6. Trees by primary maintenance recommendation.

SECONDARY MAINTENANCE CATEGORIES

Canopy Reduction = 63 Trees

Selective pruning to decrease canopy height or spread and provide clearance to overhead utilities, lighting, or street and traffic signage.

Canopy Elevation = 728 Trees

These trees require pruning to remove low branches over roads and sidewalks that interfere with sight lines, passing traffic, and pedestrians.

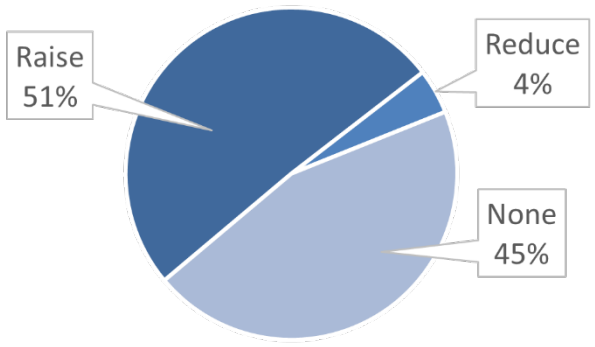


Figure 7. Trees by secondary maintenance recommendation.

SECTION 2: TREE BENEFITS

VALUE OF FRANKLINTON'S STREET TREES: $4 MILLION

Trees are critical to public health and contribute significantly to quality of life for every community resident. In addition to improving air quality, water quality, and alleviating heat stress, trees provide significant social benefits such as reducing mental stress, encouraging greater neighborhood-level involvement, and fulfilling spiritual and aesthetic needs.

Because of the significant value of these benefits, cities across the country now recognize trees are critical infrastructure. In fact, they are the only type of infrastructure that increases in value over time and have been proven to pay for themselves. Urban trees in the Midwest consistently provide benefits value three times more than the cost to maintain them.[2]

The 1,437 street trees inventoried within the Franklinton community are presently valued at over $4 million—and those are just the benefits that can be quantified by this analysis. Trees also boost property values, reduce energy costs, lower crime rates, and help create more successful business districts.[3]

Table 2. Estimated value of the inventoried trees.

Category	Value
Ecosystem Services	$160,576
Structural Value	$3,861,131
Combined Value	**$4,021,708**
Per Tree Average	**$2,799**

ECOSYSTEM SERVICES

Annual Carbon Captured – 14,340 pounds

As the primary greenhouse gas driving climate change, carbon dioxide (CO_2) impacts people, property, and the environment. Trees are carbon sinks – constantly absorbing CO_2 from the atmosphere and storing it within tree tissue. Over the course of their lifetime, Franklinton's inventoried trees have captured over 904 tons of carbon. Using trees to sequester CO_2 is a key part of the *Columbus Climate Adaptation Plan*'s goal to make the city more resilient.

Annual Air Pollution Removed – 700 pounds

Ozone and particulates can especially aggravate existing respiratory conditions (like asthma) and create long-term chronic health problems.

Annual Rainwater Intercepted – 225,702 gallons

As cities grow, land that naturally absorbs rainwater (i.e., lawns, parks, fields) tends to be replaced by hard surfaces that cause rain to runoff (i.e., roads, buildings, parking lots). Rainwater flowing over these hard surfaces accumulates pollutants, and the contaminated stormwater flows into overloaded sewers, ultimately reaching the local lakes and streams. Polluted water is a major cause of human health issues and degrades the local ecology.

STRUCTURAL VALUE – $3.8 MILLION

Structural value represents the cost to replace a given tree with an identical one. Structural value increases over time as more trees are planted and existing trees mature. The total value of the Franklinton community forest will grow considerably in future years as more trees are planted, existing trees are maintained and become healthier, and the city works toward achieving the goals of the *Columbus Urban Forestry Master Plan*.

[2] Peper, Paula J.; McPherson, E. Gregory; Simpson, James R.; Vargas, Kelaine E.; Xiao, Qingfu. 2009. Lower Midwest community tree guide: benefits, costs, and strategic planting. Gen. Tech. Rep. PSW-GTR-219. Albany, CA: U.S. Forest Service, Pacific Southwest Research Station. 115 p.

[3] See the Columbus Urban Forestry Master Plan for in-depth discussion on tree benefits and their impact on the city's residents.

SECTION 3: FUTURE CONSIDERATIONS

Every neighborhood deserves access to the benefits trees provide. With only 15% canopy cover in Franklinton, future investment in the community forest is critical to improving quality of life for neighborhood residents. Realizing the vision and achieving the goals of the *Columbus Urban Forestry Master Plan* will take planned strategic effort guided, in part, by data analysis and application.

585 POTENTIAL PLANTING SITES

A key objective of the tree inventory update is to catalog and analyze growing spaces along the neighborhood's street ROW. Analysis results will inform future planting initiatives and help ensure the selection of the most appropriate tree species given the available growing spaces within the neighborhood.

DRG arborists found a total of 930 vacant sites potentially suitable for planting trees.[4] Sites were categorized as small, medium, or large. In addition to the data collection guidelines summarized below, DRG considered the presence of existing utilities, overhead lines, and distances from stop signs, fire hydrants, driveways, and other existing infrastructure.

786 Small Planting Sites

- Best suited for small-maturing trees.
- Minimum width of 3 to 5 feet.
- Located at least 20 feet from another tree.
- Includes all sites with overhead utilities, regardless of site width.

66 Medium Planting Sites

- Best suited for medium-maturing trees.
- Minimum width of 5 to 7 feet.
- Located at least 30 feet from another tree.

78 Large Planting Sites

- Best suited for large-maturing trees.
- Minimum width of greater than 7 feet.
- Located at least 40 feet from another tree.
- The highest quality potential planting site.

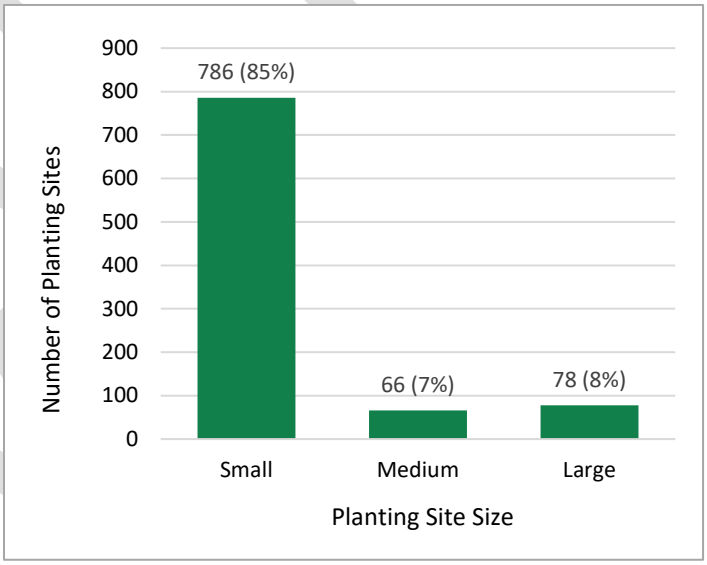


Figure 8. Planting sites by quantity and type.

PLANTING CONSIDERATIONS

Site Selection: Urban environments constrain what tree species are appropriate. Existing infrastructure such as utilities and sidewalks, growing space size, and other trees all impact what tree is appropriate for a site.

Tree Selection: Tree species should be resilient to the urban environment, diverse, and the appropriate height and width for the growing space.

Blocking an unsightly view or creating shade may be a priority, but the impact of a tree on its environment – and vice versa – must be considered. Sustainable and successful planting initiatives select tree species that thrive and flourish in the chosen planting location in a way that harmonizes with the surrounding urban environment.

[4] All planting locations will require further investigation by the city and CRPD prior to any final determination of suitability for planting.

AN ABUNDANCE OF (SMALL) PLANTING SITES

The good news: Planting sites are readily available. With 930 potential planting locations, the neighborhood's street ROW is currently at less than half of its maximum capacity for trees. The quickest way to improve canopy cover is to plant more trees.

The not so good news: 85% of the available sites are best suited for small-maturing trees (Figure 8). As exemplified in the photograph on the right, many of Franklinton's streets have narrow tree lawns and overhead utility lines–both of which constrain species selection to small-maturing trees. While a small tree is generally a better option than no tree at all, small-maturing species generate fewer benefits and are significantly less impactful when it comes to improving canopy cover.

THE WAY FORWARD: ACTION STEPS

Investing in equitable canopy does not just entail increasing overall tree canopy cover through planting, but also addressing the quality of the trees, caring for the existing trees, planning for trees within the different land uses and infrastructure, and reaching out to residents about the importance of trees.

In Franklinton, we know that existing canopy cover is insufficient, the community needs equitable investment, and though there is an abundance of available planting locations, their smaller size diminishes their potential for improving the urban forest. Given this set of facts, what can be done in Franklinton to maximize growth of the neighborhood forest for the benefit of its residents, stakeholders, and the entire City of Columbus?

Maintain and Preserve Existing Trees (Near-Term)

It takes a long time for a young tree to become a large, stately mature shade tree. Preserving what is already there is a major component of an urban forest growth strategy.

Prioritize Planting of Large and Medium Sites (Short-Term)

Larger trees provide residents with greater benefits. Within Franklinton, 78 large and 66 medium sites were identified. Planting only these locations will increase the amount of community street trees by 10% and provide a solid foundation to build upon for improving neighborhood canopy cover.

Explore Planting Beyond the Right-of-Way (Intermediate-Term)

Where insufficient space or overhead utilities restrict available planting options, planting on private property can allow for the selection of more desirable tree species. Urban forestry stewardship on private property will require education and outreach initiatives, as well as easy and low-cost access to trees.

Expand Right-of-Way Growing Spaces (Intermediate to Long-Term)

Future policy initiatives should consider options to improve available grow space, including retrofitting existing infrastructure and implementing design standards that provide adequate grow space for trees within street rights-of-way. Examples include the addition of bump-outs, expanding the size of tree lawns during utility or development projects, and exploring the use of green infrastructure technologies (e.g., silva cells, structural soils). Ensuring canopy equity requires sufficient growing space for trees to survive and thrive in an urban setting.