



2020 STREET TREE HEALTH ASSESSMENT SUMMARY

NOVEMBER 2020

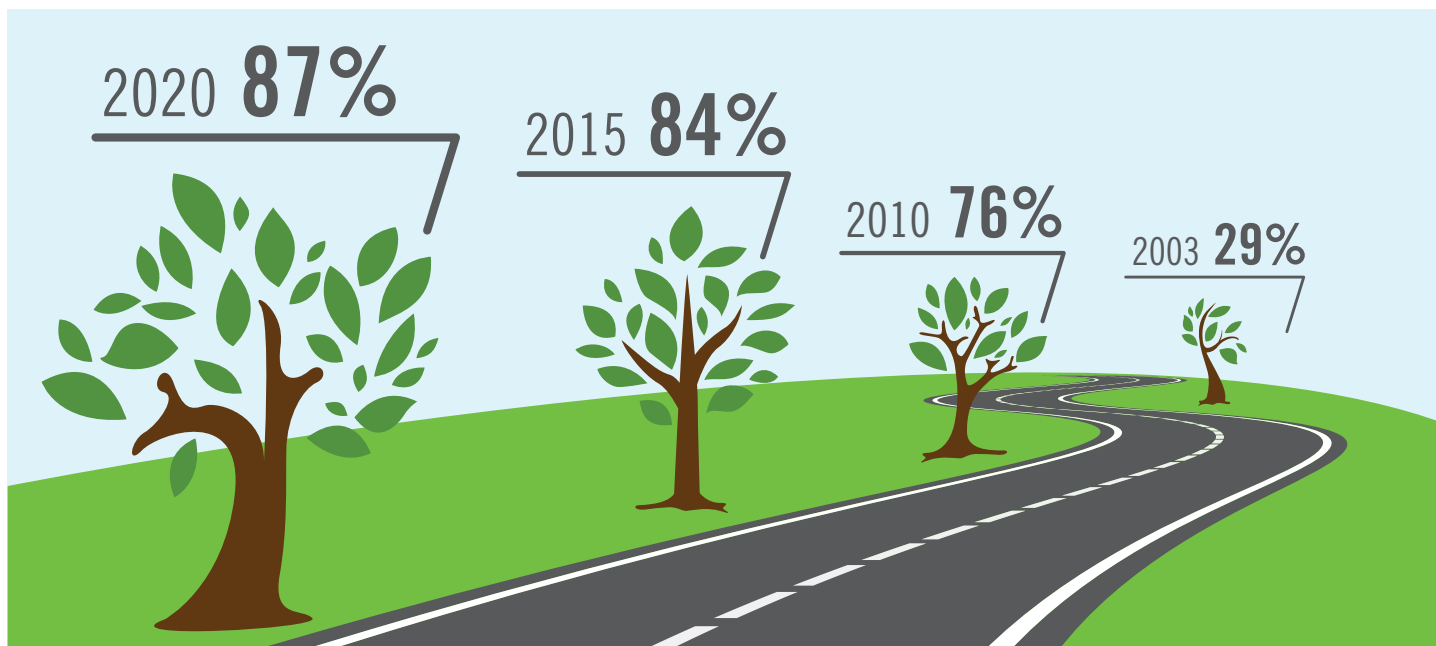
This document summarizes the 2020 York Region Street Tree Health Assessment Report, which is available by emailing accessyork@york.ca



2020 STREET TREE HEALTH ASSESSMENT SUMMARY | NOVEMBER 2020

Since York Region began planting trees in boulevards in the mid-1990s, its population of street trees has grown to become a key part of the Region's green infrastructure.

The Region monitors the health of street trees every five years to check on the success of its planting and maintenance programs. The most recent assessment, in 2020, confirms a strong and steady upward trend in health, measured by the percentage of trees in satisfactory or good condition: from 29% in 2003, to 76% in 2010, 84% in 2015 and 87% in 2020.



Street trees in healthy condition

The poor assessment results in 2003 reflect the condition of trees before planting, how they were planted, and their early care. Evidence-based practices adopted by the Region to address these concerns include:

- Creating a short list of acceptable tree species – called Proven Performers – that are appropriate to growing conditions along Regional roads
- Selecting trees at the nursery for vigour and structure, inspecting them before they are planted, and checking that contractors planted them correctly
- Mulching around a tree's base and weeding regularly when the tree is young to discourage competition from other plants
- Watering newly planted trees on a regular schedule during the first three growing seasons to reduce stress from transplanting and drought

WHAT'S MEASURED AND HOW

Each street tree health assessment looks at a sample of street trees, defined as trees planted by the Region along roads in urban and suburban areas.

In 2020, this involved evaluating 3,099 trees, or 8% of 38,000 street trees in total. A focus was on trees planted in the past six years, many in conjunction with the building of Viva bus rapidways.

The 2020 assessment confirmed the value of continuing these existing practices.

WHY HEALTHY STREET TREES ARE A VALUABLE INVESTMENT

“From Athens to Melbourne and Seoul to New York, big cities are increasingly turning to trees to help protect them from heatwaves and floods, and to boost people’s physical and mental health...”

- World Economic Forum Agenda

Trees in cities help clean the air, shade buildings in summer and shelter them from cold winds in winter, absorb stormwater, beautify streetscapes and encourage people to go outside, provide habitat for birds and pollinators, and store carbon to help mitigate climate change. Many of the benefits increase in relation to the tree’s size and leaf density, which are markers of its health.

And because trees provide these benefits far more cost-effectively than built infrastructure could, their long-term economic benefits outweigh the costs of planting, nurturing and protecting them.

The Region’s 2017 Green Infrastructure Asset Management Plan put the value of its green infrastructure, including street trees, at close to \$488 million. These assets store more than 155,000 tonnes of carbon and provide roughly \$5.5 million in services each year by sequestering additional carbon, managing runoff and capturing pollution.

The environment around a tree is also an important determinant of its health. The healthiest trees in the 2020 assessment were located where there is good drainage and shelter from strong winds, roots have room to grow, and high-quality soil provides the right nutrients.

For street trees, the surrounding built environment is of equal or greater importance. Since 2003, York Region’s built environment has undergone significant changes:

- Many Regional roads have been widened
- Sidewalks, separate cycle paths, and other infrastructure have been installed or upgraded on roads in urbanized areas
- Trees and other plants have been used to enhance the streetscape along Viva bus rapidway network

The first two factors tended to intensify known concerns. Construction typically removes topsoil and compacts the poorer soil that’s left. Smaller planting spaces and compacted soil make it harder for roots to grow and limit the ultimate size and benefits the tree can provide. Trees are also exposed to more road-related stresses, such as winter road maintenance, collision risk, and heat from the roadway. In addition, many trees in the Viva network had to be placed in raised concrete planters or tightly integrated into hard surfaces like sidewalks.



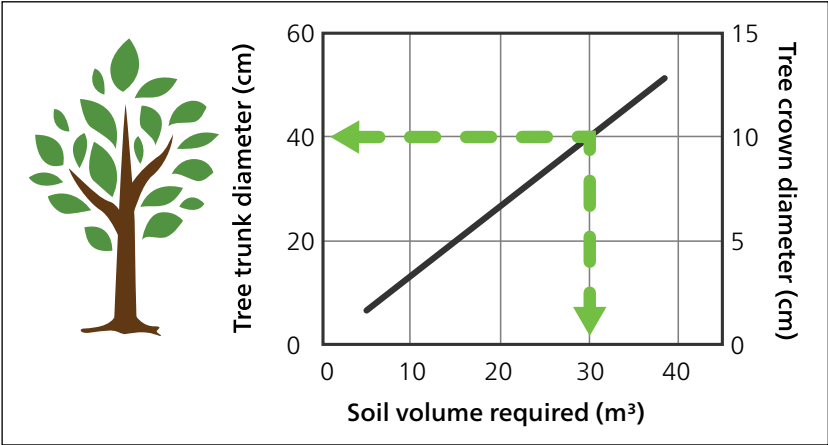
Raised concrete planters along Viva Rapidway

The Region’s approach to managing street trees evolved in line with these developments, as well as with research studies and the findings of earlier health assessments. As a result, the Region is placing increasing emphasis on soil health, volume and drainage:

- The Region’s target is to provide street trees in “hardscaped” locations with at least 30 cubic metres of well-drained, good quality soil. As well, these trees are planted using soil prepared to the Region’s standards
- In these locations the Region may install soil cells under adjacent hard surfaces, such as sidewalks, to achieve minimum soil volume targets. These cells are engineered frames filled with planting soil that provide uncompacted soil for tree roots underground while supporting pavement, interlocking stones or other load-bearing materials on the surface
- In other locations structural soil, a mix of topsoil and angular chunks of rock that lock together so they can bear weight, is used under hard surfaces to create a path for roots to connect to the soil beyond
- A further success factor for trees in raised planters appears to be building the walls higher on the road side to protect plantings from salt and other risks
- The area around a tree that gets mulch, which is eventually incorporated into soil, has been increased, and mulch beds have been deepened
- Soil around existing trees in difficult locations is being rejuvenated by adding a high-organic-matter blend to the soil, watering and applying fresh mulch



Tree inspection using tablet



Distribution of tree size in relation to available soil volume



Installation of a soil cell system

The Region has also been addressing challenges from broader environmental and biological factors, such as more frequent and extreme winds and ice storms and the spread of pests and diseases:

- Starting in the fourth year after planting, trees are pruned on a regular cycle to encourage development of a strong structure that better resists high winds and ice build-up
- Pruning is also used to control black knot, a fungal disease that attacks cherry trees

With the overall total at 87%, the Region is now close to its goal of ensuring at least 90% of its street trees are in satisfactory or good condition. This target was established in previous health assessments through a review of industry best practices, experience and expectations for the harsh roadway environment. The assessment nonetheless highlighted issues that must be managed effectively for the 90% goal to be reached and maintained:

- With the loss of planting space in boulevards, trees are closer to the roadside and the winter threat zone, where road salt is splashed and ice and snow are thrown up by plows. The assessment showed tree health decreased with proximity to a roadside
- Trees need good drainage, and Regional standards call for a soil that provides that. Drainage can be a problem, however, in sites where the planting soil is good but drainage is poor beyond it, allowing water to collect around roots

These concerns tend to go hand in hand with the Region's increasing growth and urbanization, which are triggering higher density development and the need for an expanded transportation network.

Focusing growth in Regional centres and along corridors to better manage growth is already a priority. In line with provincial direction, the Region recently designated 72 major transit station areas to support bus rapidways, GO Transit and subways, including the planned extension of the Yonge Street subway line. This brought higher density targets to some new areas.

While intensification and public transit are key to sustainable growth, urban areas that lack trees and other landscaping can feel harsh and unwelcoming. At the same time, more intense growth makes it challenging to provide conditions in which trees and plants can thrive.



Raised median before installation of Region designed soil



Street trees and landscaping

What the Region has learned from its success to date will help address these and other challenges:

- The health of plantings along the Viva bus rapid transit routes shows the value of a well-thought-out approach to planting in difficult urban environments like planters and grates in sidewalks. The assessment found that trees in these settings benefit from the use of soil cells under hard surfaces, provision of ample, high-quality soil, and attention to drainage, in addition to ongoing watering, other maintenance and monitoring. This experience will be helpful in creating attractive growth centres, transportation corridors and major transit station areas
- The Region is completing updates to its design guidelines to deal with the impacts of smaller planting spaces generally, including increased winter threats, along both suburban and urban roads
- Regular pruning is resulting in healthier trees with stronger structure, which will reduce the threat of damage from extreme weather and some diseases
- The Region is continuing to select trees using its Proven Performer list of species and will consider adding species to improve diversity

Street trees are more critical than ever for York Region. In crowded urban centres, they provide refuge, shade and a visual contrast to the built environment, making public spaces more welcoming and attractive.

So that residents, communities and wildlife can enjoy these benefits, the Region will continue to monitor tree health and growing conditions regularly to understand performance and identify future challenges, and use evidence-based practices to improve tree health.

By leveraging the knowledge gained over the past years and continuing to innovate as conditions change, the Region will enjoy the increasing social, environmental and economic benefits of healthy and abundant street trees in the decades to come.



Tree grate installation



Tree Gator being filled with water