

# OTTAWA URBAN TREE EQUITY ANALYSIS

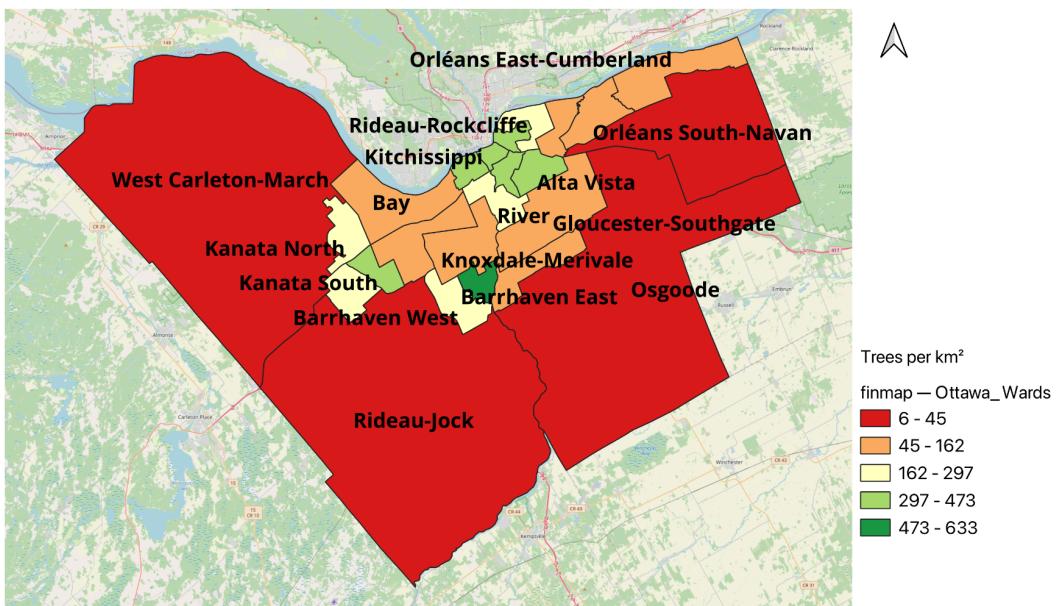
## Executive Summary

Analyst: Prosper Ocheme

Completed: December 3, 2025

Time Investment: 20 hours

**City-Managed Tree Density by Ward  
Ottawa, Ontario**



0 7.5 15 km

Data Source: City of Ottawa Open  
Data Analysis: Prosper Date: November 2025

## PROJECT OVERVIEW

This analysis examined the distribution of 300,000 city-managed trees across The City of Ottawa's 24 municipal wards to identify equity gaps and prioritize areas for tree planting investment. I checked whether all residents have fair access to the environmental and quality-of-life benefits that urban trees provide. Using spatial analysis and statistical methods, I assessed whether all residents have equitable access to the environmental and quality-of-life benefits that urban trees provide.

## KEY FINDINGS

Critical Gap Identified:

Rural wards in Ottawa are drastically underserved in terms of tree coverage. Despite having a lot of open space and natural land, I noticed rural areas show surprisingly low city-managed tree density. Specifically, I saw Osgoode at 6 trees per km<sup>2</sup>, West Carleton-March has 9 trees per km<sup>2</sup>, and Rideau-Jock has 16 trees per km<sup>2</sup>

In comparison, urban and suburban wards have an average of 266-268 trees per km<sup>2</sup>. Almost a 26-fold difference, which is insane.

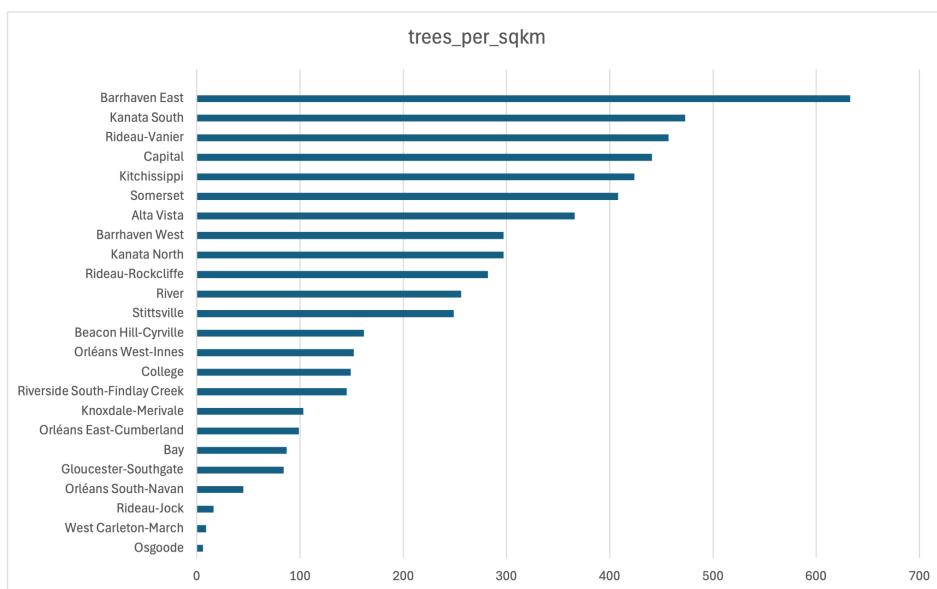
What Makes This Surprising:

With the vast open space and natural land in rural areas, I had expected significantly higher tree coverage.

However, the data reveal that for the amount of land available, city-managed tree coverage is surprisingly very low. This suggests systematic underinvestment rather than just different development patterns.

Distribution Statistics:

- Range: 6 to 633 trees per km<sup>2</sup> (100x difference)
- Mean: 235 trees per km<sup>2</sup>
- Rural wards average: 10 trees per km<sup>2</sup>
- Urban wards average: 268 trees per km<sup>2</sup>
- Suburban wards average: 266 trees per km<sup>2</sup>



## **METHODOLOGY**

Data Sources:

- City of Ottawa tree inventory (300 000 records, 2011-2025)
- Ottawa ward boundaries (2022-2026 system, 24 wards)

Technical Approach:

- Spatial analysis in QGIS to map tree distribution
- SQL queries to aggregate tree counts by ward
- Statistical analysis to identify patterns and outliers
- Density calculations (trees per km<sup>2</sup>) to enable fair comparison across different ward sizes
- Comparative analysis across ward types (Urban, Suburban, Rural)

Key Decision:

I used density metrics rather than raw counts because wards vary dramatically in size (13 km<sup>2</sup> to 1,550 km<sup>2</sup>). This normalization helped with equitable comparison and revealed true coverage gaps.

## **PRIMARY RECOMMENDATION**

Prioritize Rural Wards for Tree Planting Investment

Target: Increase rural ward density from the current average of 10 trees/km<sup>2</sup> to 50 trees/km<sup>2</sup>, which is a 5 times improvement.

Implementation Strategy:

- The city can use urban core and suburban wards as templates for achievable density targets
- Ottawa forestry services can also focus on planting in village centers, along roadways, and at community facilities
- Proposed targets:
  - Rural wards: 50 trees/km<sup>2</sup> (meaningful improvement, context-appropriate)
  - Urban/Suburban wards: Maintain current 266 trees/km<sup>2</sup> average

Estimated Need (Top 3 Priority Wards):

- Osgoode: 55,000 additional trees
- West Carleton-March: 64,000 additional trees
- Rideau-Jock: 50,000 additional trees

Benefits:

There are valuable environmental and social benefits to supporting urban forest expansion initiatives in Ottawa's rural wards, including improved air quality, cooling, stormwater management, and quality of life for rural residents.

## **SKILLS DEMONSTRATED**

Technical Skills:

- QGIS (spatial analysis, data visualization, field calculations)
- SQL (data aggregation and querying)
- Statistical analysis (descriptive statistics, group comparisons)
- Excel (charting, additional analysis)
- Data management and quality control

Analytical Skills:

- Equity analysis and environmental justice assessment
- Problem-solving (adapted methodology when initial approach failed)
- Density normalization for fair comparison
- Priority ranking and target-setting
- Limitation identification and transparent reporting

## **DELIVERABLES**

1. Tree Density Map: Graduated symbology showing coverage gaps
2. Statistical Analysis: Complete descriptive statistics by ward and ward type
3. Bar Chart: Visual comparison of all 24 wards ranked by density
4. Methodology Documentation: 8-section comprehensive methodology (reproducible)
5. Priority Recommendations: Ranked list with specific planting targets

## **PROJECT MATERIALS**

GitHub Repository: [GitHub link here](#)

Full Methodology: Available in the repository

Map Visualization: High-resolution PNG included

Data Sources: City of Ottawa Open Data Portal

## **CONTACT**

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Your GitHub

Available for questions, presentations, or collaboration opportunities.