# City of Ottawa's Tree Equity Analysis

**Clean Air Partnership Webinar**

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# Tree Planting Strategy



- Getting Ottawa to the **40% urban canopy cover** target over time

- **Action focused:** shift from reactive to proactive approach to tree planting

- **Species diversity:** Increase the tree species diversity of Ottawa's urban forest

- **Neighbourhood lens:** plant trees where they are needed the most, using canopy cover data

- **Equity approach:** consider socio-economic factors, public health data to prioritize tree planting

# Tree Planting Strategy Legislative Context

**Term of Council Strategic Priority – "A green and resilient city"**

- Plant, grow, and preserve urban tree canopy, with a focus on low tree canopy cover neighbourhoods

**Official Plan**

- Sets 40% urban tree canopy cover target with equity as guiding principle

**Urban Forest Management Plan**

- Tree Planting Strategy is the feature UFMP project of this term of Council

**Climate Resiliency Strategy**

- Enhance tree canopy, increase shade in parks, and raise awareness about trees

# What is Tree Equity?

- Having enough trees in an area so that everyone can experience health, climate, and economic benefits

- Distribution of urban tree canopy is frequently associated with socio-economic factors

- Historic and current tree canopy cover inequity could be caused by:
    - A lack of funding
    - A lack of integration for the value of urban trees in the planning processes
    - Poor incentives for planting on private land
    - Weak engagement in low canopy cover neighbourhoods

# How Can Tree Equity Be Used?

Help target tree planting initiatives in priority areas

Provide community context and tailor planting programs to fit their needs and interests

Gain an understanding of neighbourhood challenges and how increased canopy cover can alleviate them

Kickstart partnerships with the public in neighbourhoods with lower canopy cover

# Tree Planting Strategy and Tree Equity

- Equitable distribution of tree canopy is a guiding principle of the Tree Planting Strategy

- Staff were directed by council to undertake a tree equity analysis

- The City required a methodology to identify and prioritize tree planting in areas of the city that need it the most

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# American Forests Tree Equity Score

- The American Forests Tree Equity Score produces a score that can evaluate the distribution of tree canopy

- Uses socio-economic, health, and canopy data at a census block level

- Produces a score from 0-100

  - Lower scores = lower tree equity and greater priority for tree planting

  - Score of 100 = neighbourhood has met/surpassed their canopy goal
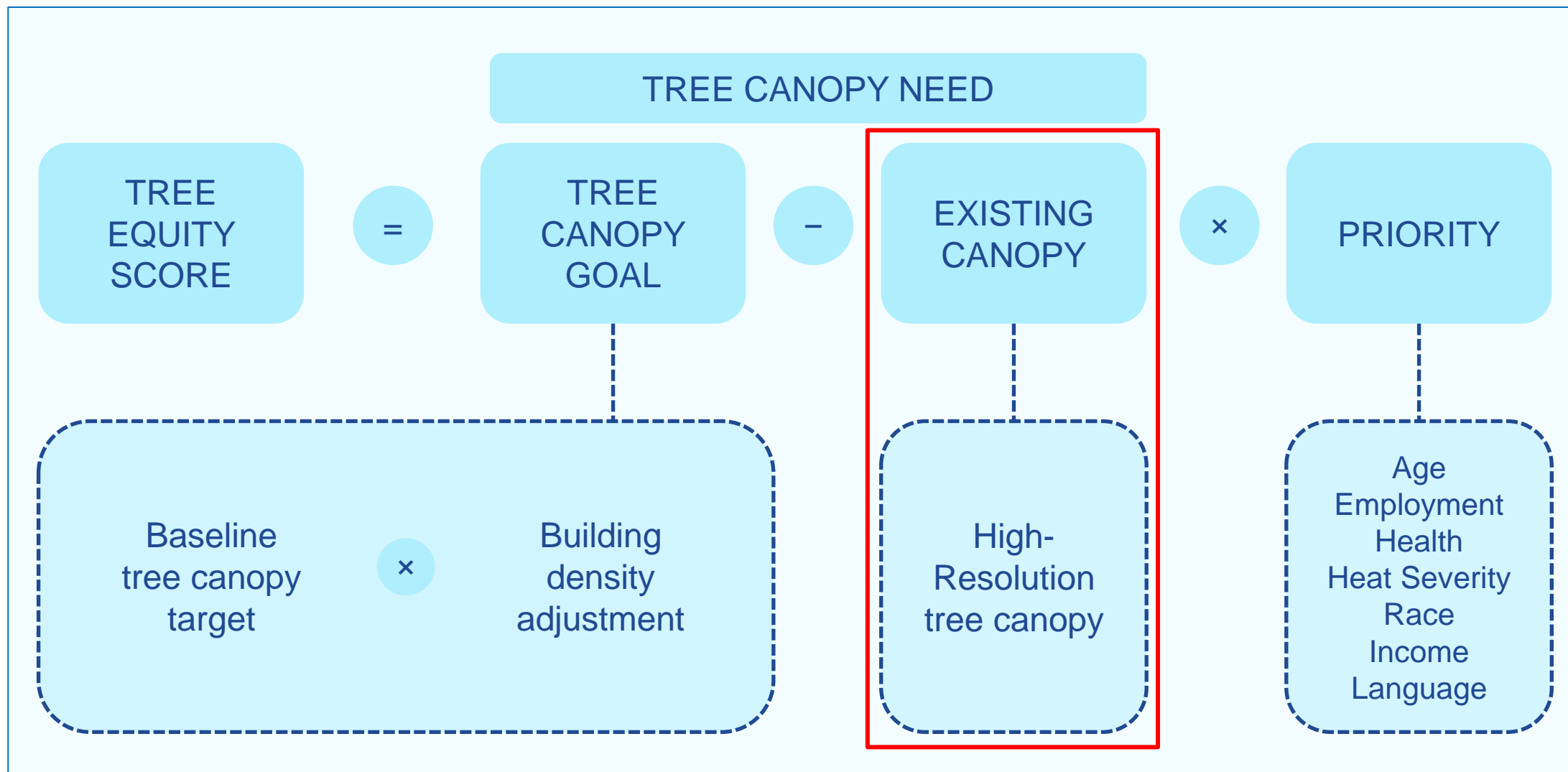
- Widely used – USA, UK, Toronto
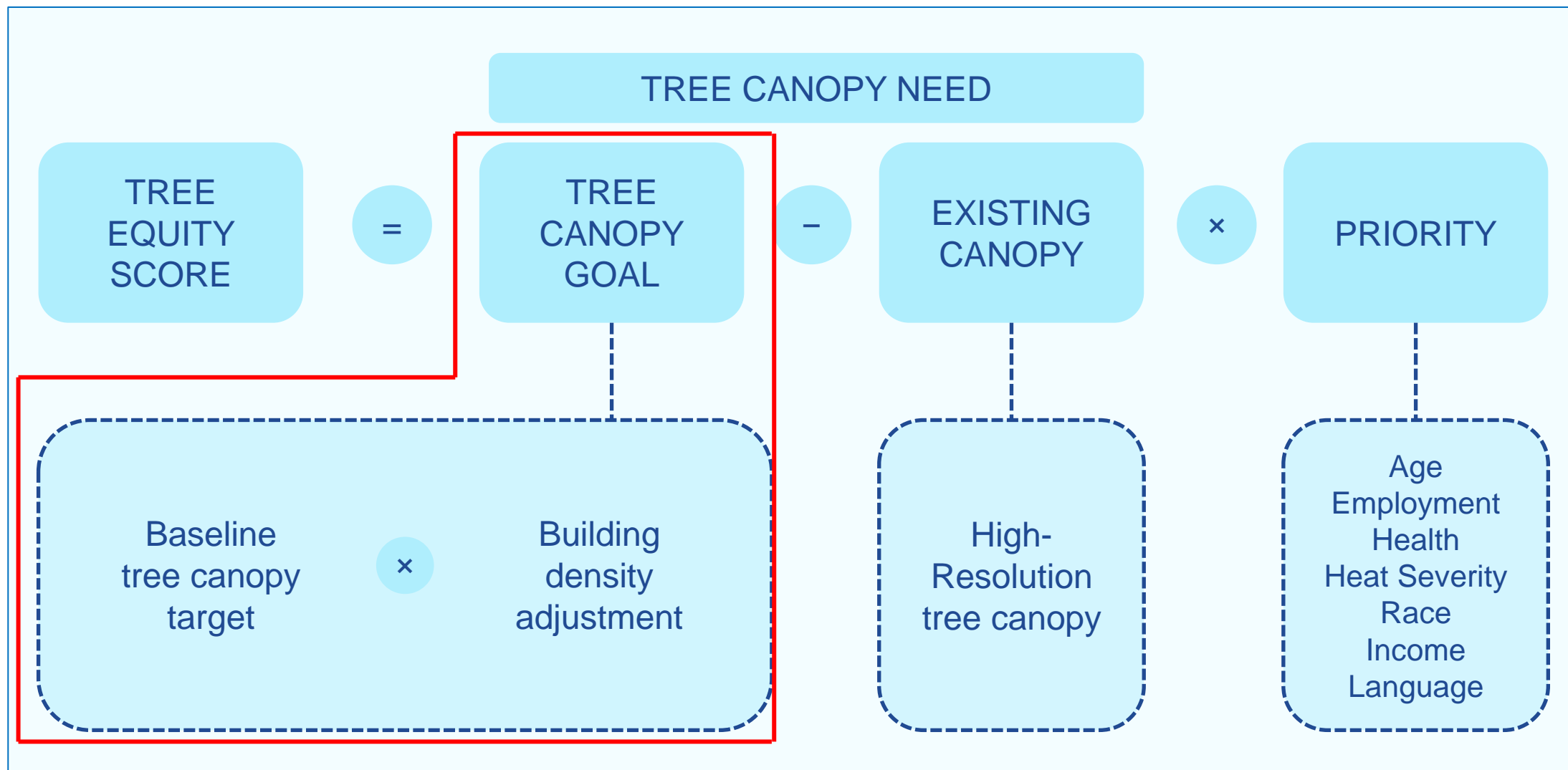
# American Forests Tree Equity Score - Methods

> Tree Canopy Goal

- A goal that considers the building density of the neighbourhood
- Baseline tree canopy target – predetermined goal based on the area's natural biome
  - Ex: Forest = 40%, Grassland = 20%
- Building density adjustment – the density of buildings in the neighbourhood, as a percentage of area
  - Ex: neighbourhood has 22% of its area covered by buildings

| Building Density (%) | Forest (% canopy) | Grassland (% canopy) | Mediterranean (% canopy) | Desert (% canopy) |
|---|---|---|---|---|
| <14% | 50% | 30% | 30% | <15% |
| 14-22% | 40% | 30% | 25% | 15% |
| 22-30% | 30% | 25% | 20% | 15% |
| >30% | 20% | 20% | 15% | 15% |

*Goals are in % tree canopy.

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TREE CANOPY NEED

TREE EQUITY SCORE = TREE CANOPY GOAL − EXISTING CANOPY × PRIORITY

Baseline tree canopy target × Building density adjustment

High-Resolution tree canopy

Age
Employment
Health
Heat Severity
Race
Income
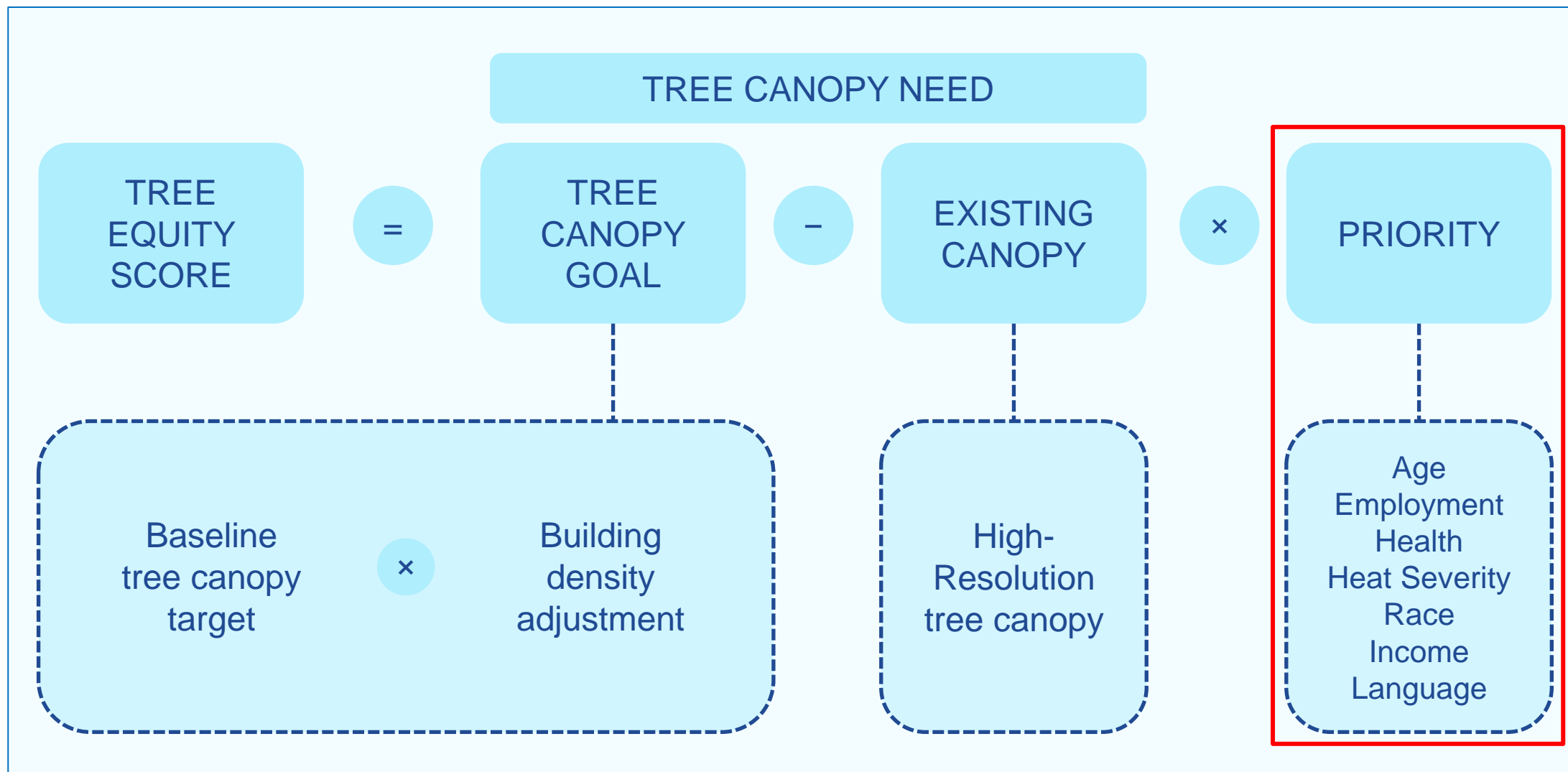Language

# American Forests Tree Equity Score - Methods

Existing Canopy

- Expressed as a percentage and represents existing canopy area occupied by trees within each neighbourhood
- American Forests uses data from Google that is not available in Ottawa
- City will use the canopy cover data for calculations

# American Forests Tree Equity Score - Methods

Existing Canopy

- Tree Canopy Gap - percent area of a neighbourhood that could be planted to reach the neighbourhood planting goal
  - Determined by subtracting existing canopy from the building density adjusted tree canopy goal
  - Is a general way to consider plantable space
- **Tree Canopy Gap value is used to calculate the Tree Equity Score**

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Baseline tree canopy target × Building density adjustment

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# American Forests Tree Equity Score - Methods

Priority Index

- Made up of 7 equally-weighted climate, health, and socio-economic indicators
- Index values range from 0.1 to 1, with 1 representing the greatest priority
- A higher priority index means a greater proportion of at-risk populations in the neighbourhood
- **Value from the Priority Index is used to calculate the Tree Equity Score**

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# Tree Equity Score - Priority Index

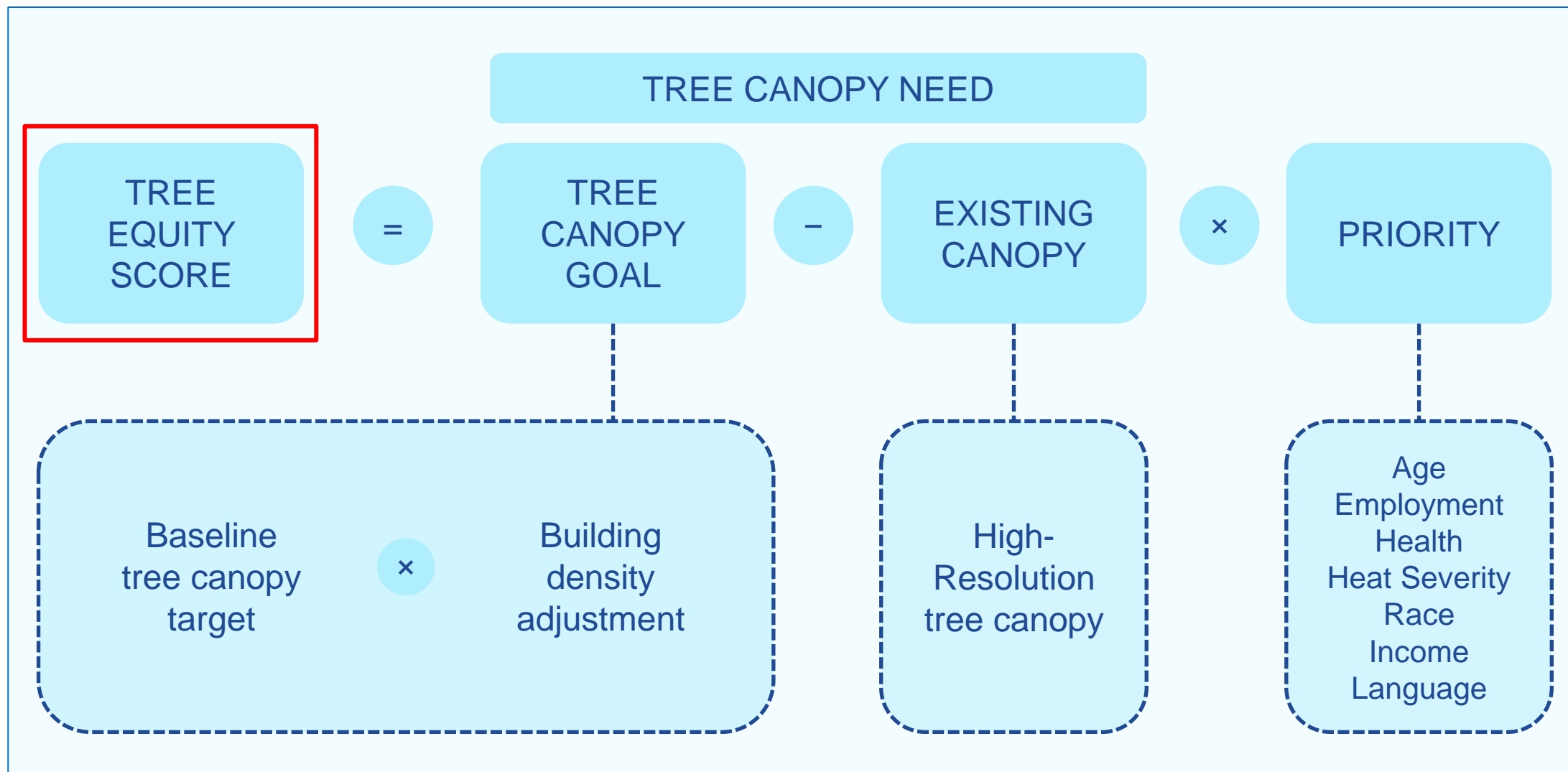| | |
|---|---|
| Age – Dependency Ratio | • Number of Seniors (65+) and children (0-14) |
| Employment – Unemployment Rate | • Unemployment rate (%) |
| Health – Health Burden Index | • Self reported prevalence of poor mental and physical health, asthma, and heart disease |
| Heat Severity – Heat Disparity | • Difference between the maximum summer surface temperature for the neighbourhood and the urban area |
| Race – People of Colour | • Total visible minority population (%) |
| Income – People in Poverty | • Prevalence of low income based on "Low-income Prevalence, After Tax" |
| Language – Linguistic Isolation | • Population with no knowledge of English or French (%) |

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**TREE CANOPY NEED**

TREE EQUITY SCORE = TREE CANOPY GOAL − EXISTING CANOPY × PRIORITY

Baseline tree canopy target × Building density adjustment

High-Resolution tree canopy

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# American Forests Tree Equity Score - Methods

## Tree Equity Scores

- The Tree Equity Score (TES) is calculated by multiplying a normalized Tree Canopy Cover Gap by the Priority Index value
- Tree Equity Score range from 0-100

*REMINDER:*
- *Lower scores indicate lower tree equity and greater priority for tree planting*
- *Score of 100 indicates the area has met or surpassed the canopy cover goal for their neighbourhood*

# American Forests Tree Equity Score - Methods

City-wide Tree Equity Scores

- An overall Tree Equity Score for the entire city can be calculated by combining the scores from all neighbourhoods
- The city can raise the overall score faster by targeting planting efforts in high priority neighbourhoods first
  - Priority neighbourhoods = low Tree Equity Score **AND** high Priority Index

# Next Steps

1. Receive new canopy cover data
2. Undertake the analysis and produce Tree Equity Scores
3. Rollout Tree Equity Score data – present results to council, make data publicly available
4. Use Tree Equity Scores to determine priority areas for planting:
   - Assess priority areas for tree planting opportunities and challenges
   - Develop consultation plans and discuss tree planting with local communities
   - Evaluate neighbourhood context to develop plans for tree planting by tailoring existing programs and/or trying new approaches

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