

# Mapping walkability for a healthier built environment in Peel Region, Ontario

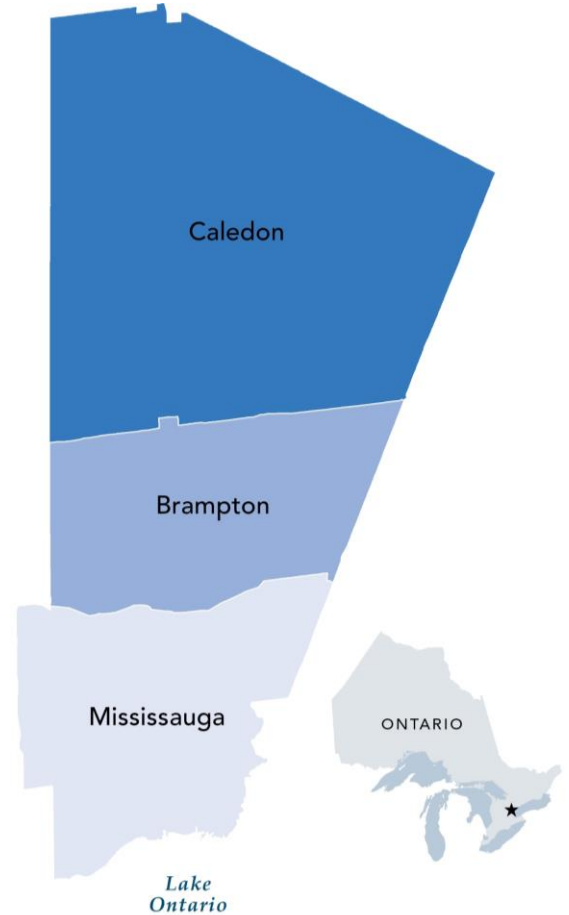
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Supervisor, Chronic Disease and Injury prevention  
Peel Public Health



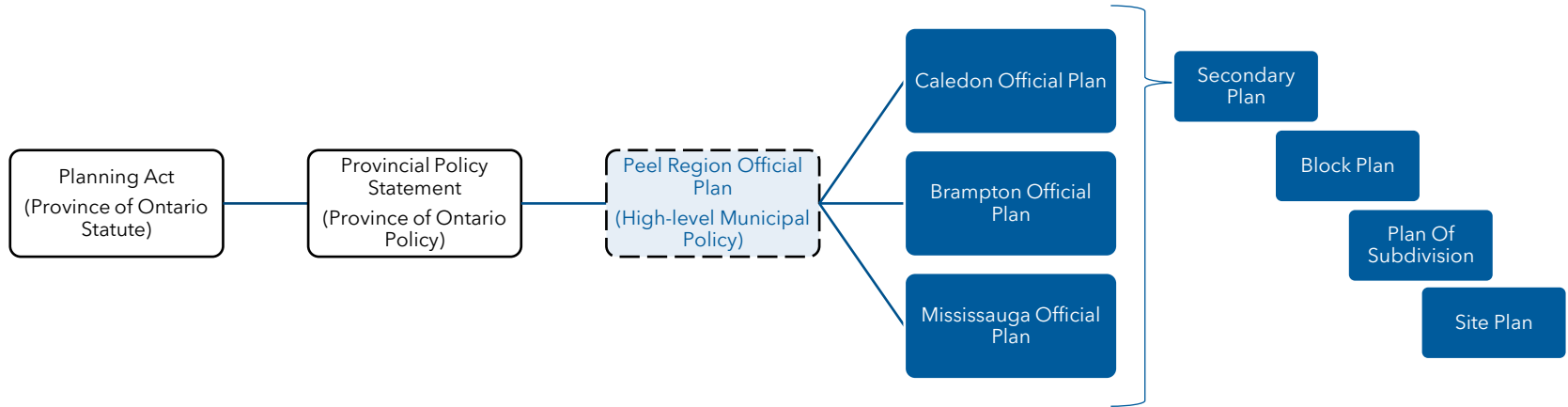
# Background

The background is a solid blue color. On the right side, there are several overlapping, rounded rectangular shapes in a slightly darker shade of blue, creating a layered, geometric effect.

# Peel Region



# The Planning Framework in Ontario



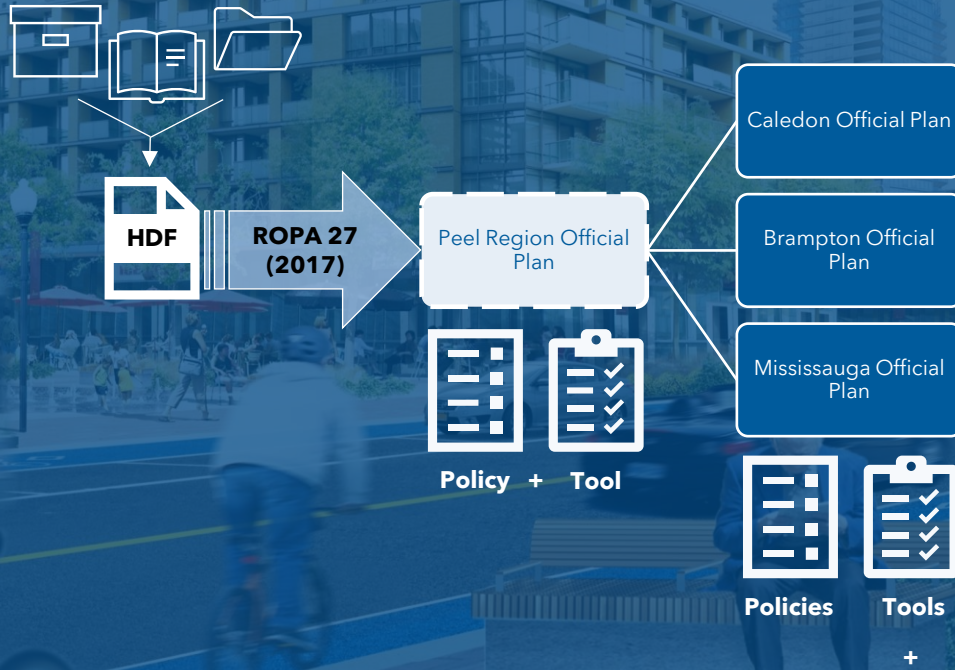
Macro

Micro

Each lower level must be consistent with the direction and policies of the level above



# Embedding the HDF in Planning Policy and Practice



Regional Official Plan amended in 2017 (ROPA 27) with two policy components:

- Age Friendly Planning
- Health & the Built Environment

Health Assessments using the HDF are required for all relevant development applications for residential, mixed-use, institutional, commercial and industrial land-uses.

These policies became reflected in the local official plans.

How the HDF is implemented is tailored to each local municipality through three distinct local Healthy Development Assessment tools that apply the HDF as one integrated approach.

# Creating the Peel Walkability Composite Index (PWCI) To Monitor Implementation of the HDF

## PWCI

- The 8 indicators were selected through a principal component analysis to account for collinearity across the 21 indicators aligned to the HDF's six core elements.

## Indicators

- These 8 indicators are: 1) residential density, proximity to 2) frequent transit, 3) greenspace, 4) food stores, 5) community services/retail, 6) schools, 7) land-use and 8) housing diversity.

## More Information

- [An Objective Walkability Index for Public Health and Planning in Peel Region, Ontario, Canada - PMC](#)
- [Mapping the built environment: Peel Public Health's Healthy Development Monitoring Map Project | NCCEH](#)

# Overview of the PWCI

## Purpose

Evaluate outcomes of former Region of Peel Official Plan policies on Health & Built Environment that are aligned to the core elements of our HDF

## Indicators

Measure the presence of built environment infrastructure and community design that supports active transportation opportunities

## Progress over time

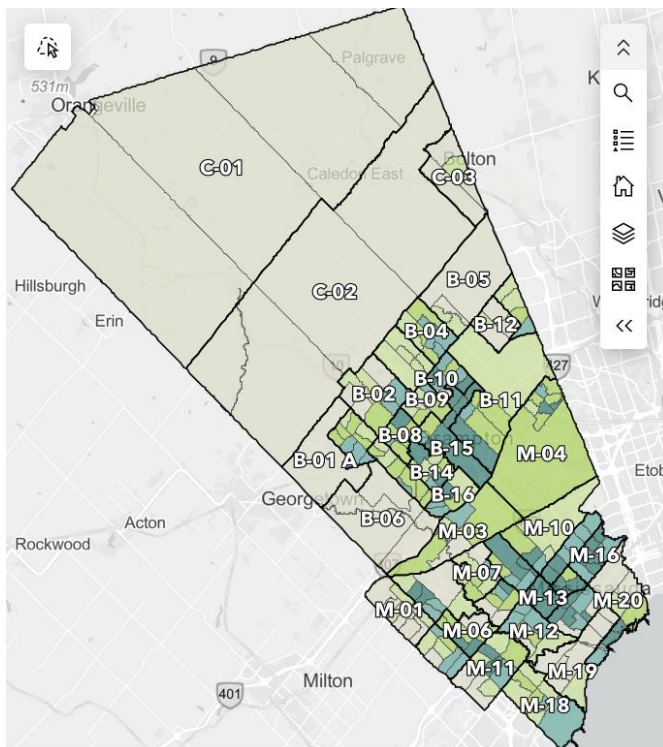
Indicators can be recalculated every 5 years to monitor for changes over time

## 2021 Update

first recalculation of indicators from 2016 baseline for the Peel Walkability Composite Index (PWCI)

# PWCI 2021 Update

# 2021 PWCI Comparison Tool



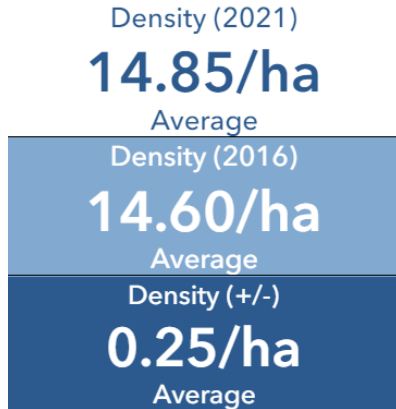
<b>PWCI (2021)</b> <b>56.0</b> Average	<b>PWCI (+/-)</b> <b>0.4</b> Average
<b>Residential density (+/-)</b> <b>0.25/ha</b> Average	<b>Access to transit (+/-)</b> <b>-1.5%</b> Average
<b>Access to green space (+/-)</b> <b>1.1 %</b> Average	<b>Access to food stores (+/-)</b> <b>6.3%</b> Average
<b>Access to schools (+/-)</b> <b>0.0%</b> Average	<b>Access to services (+/-)</b> <b>-2.9%</b> Average
<b>Land use diversity (+/-)</b> <b>0.00</b> Average	<b>Housing diversity (+/-)</b> <b>-0.2%</b> Average

- Visit our interactive mapping tool on our [Peel Health Status Data website](#):
  - [Peel Walkability Composite Index - Comparison Tool](#)

# Density



# Gross Residential Density



## Definition:

The number of dwellings per hectare.

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## Indicator methodology:

**Gross Density:** All land area was included. Gross density is calculated using dwelling count data from the Census 2021, and area data from the baseline Census, 2016.

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## Limitations:

This indicator captures the number of dwellings, not the number of people or households that could reside in those dwellings.

# Service Proximity



# Proximity to Frequent Transit

% Population with Access

**45.5%**

Average

% Population with Access (2016)

**47.0%**

Average

% Population with Access (+/-)

**-1.5%**

Average

**Note:**  
2022  
transit  
data used

## Definition:

Percent of residents that reside within a five-minute (400 meter) network walking distance to a municipal transit stop and/or a 10-minute (800-meter) network walking distance to a higher-order regional transit stop with frequent service.

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## Indicator methodology:

Uses a pedestrian-network walking distance, population counts are in residential parcels, stop locations & timing from GTFS data. A transit stop was determined to have frequent service if it averaged 15-minute headways during peak hours and 30-minute headways during non-peak hours.

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## Limitations:

Although level of service is accounted for in this indicator, the proximity of a stop cannot describe actual use of the stop.

# Proximity to Parks and Green Spaces

% Population with Access (2021)

**79.6%**

Average

% Population with Access (2016)

**78.5%**

Average

% Population with Access (+/-)

**1.1%**

Average

## Definition:

Percent of residents within a five-minute (400 meter) network walking distance to any park or conservation area that either contains an active recreation amenity (e.g., play equipment), or pedestrian infrastructure. Conservation areas with paid parking were included in the measure, given pedestrian access focus. Paid entry green spaces not included in this metric.

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## Indicator methodology:

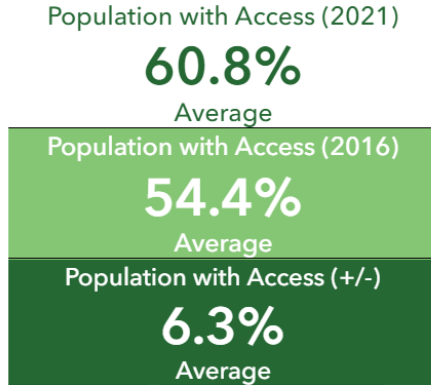
Multiple entry points accounted for. Includes: parks, parkettes, provincial parks, valley and wildlife refuge with a trail running through it (at any point in the greenspace parcel) or active recreation amenity (i.e., play equipment).

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## Limitations:

Does not indicate actual use or quality of greenspace. Size of park or greenspace not accounted for.

# Proximity to Food Stores



## Definition:

Percent of residents living within a 10-minute (800 meter) network walking distance to a food store.

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## Indicator methodology:

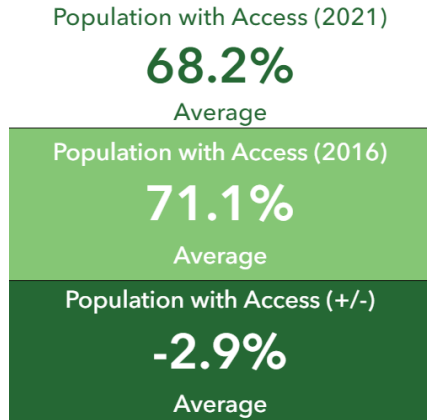
Supermarket, food store (e.g., convenience and variety) and multi-unit food store and sells a significant quantity and diversity of fruits and or vegetables OR Specializes in / focuses on one category in Canada's Food Guide (2016) OR does not sell calorie-dense, nutrient poor foods or beverages of any kind.

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## Limitations:

Generous in our interpretation of applying the inclusion criteria for food stores given the focus of indicator to measure these sites as generators for pedestrian trips. The indicator can have a high degree of subjectivity in the classification process. This was managed by 2 independent reviewers performing classification with a third brought in for disagreements.

# Proximity to five or more unique community and retail services



## Definition:

The proximity of residents to retail and community services measures the percent of residents within a 10-minute (800 meter) network walking distance to five+ unique public services and/or community retail services.

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## Indicator methodology:

The services included: childcare centres, hospital and health clinics, libraries, performance/cultural spaces, rec. centres, adult/senior care facilities, pharmacies, places of worship, restaurants, post offices, salons, gyms, cinemas, laundry/dry cleaners, etc.

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## Limitations:

With COVID-19, retail and community services may have closed or relocated; the data presented here may not capture this phenomenon entirely, especially for the impact to restaurants.

# Proximity to Schools

Population with Access (2021)

**86.3%**

Average

Population with Access (2016)

**86.4%**

Average

Population with Access (+/-)

**0.0%**

Average

## Definition:

Percent of population that resides within 800-meter (10 minute) network walking distance to an elementary school and the per cent of the population that resides within 1,600 meter (20 minute) of secondary school.

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## Indicator methodology:

Distance will be calculated from the address point provided for the school. Multiple entry points were identified through ground truthing.

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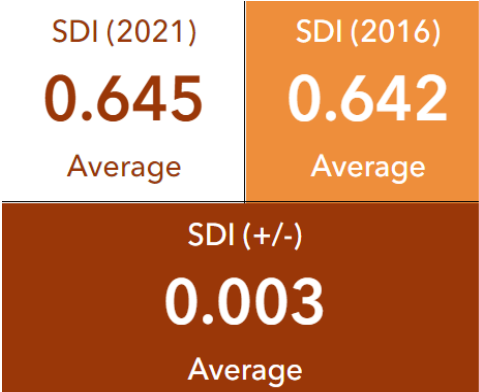
## Limitations:

Indicator only includes data on Peel District School Board and Dufferin-Peel Catholic District School board locations. Private school locations are not added to the data set.

# Land-Use



# Land Use Mix



**Definition:**

The Diversity of Land Uses measures the relative proportion of eight different types of land uses:

Commercial (office and commercial services), institutional (government and institution), industrial, open space (greenspace), low-density residential, medium density residential and high density residential.

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**Indicator methodology:**

$$D = 1 - \frac{\sum n(n - 1)}{N(N - 1)}$$

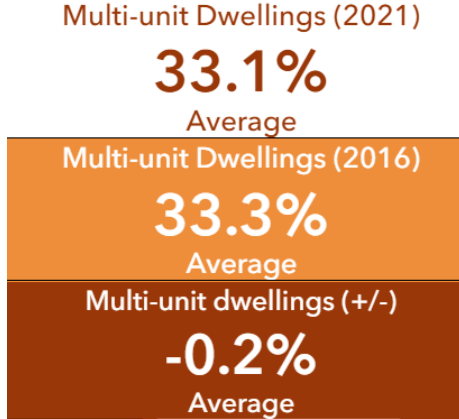
Where n is the area of a particular land use type and N is the area of all land use types together.

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**Limitations:**

There is no 'ideal' proportion of land use mix that contributes to complete communities, and therefore it is hard to understand how an SDI score translates into real-world representation of a walkable environment.

# Diversity of housing stock



## Definition:

Percent of dwelling units that are classified as medium or high-density residential units in a community. Medium and high-density dwellings include town or row houses, low-rise apartments (four or less stories) and high-rise apartments (five+ stories).

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## Indicator methodology:

This indicator is calculated by dividing the total number of multi-unit residential dwellings (row house, high rise apartment, low rise apartment) within the census tract (CT) by the total residential dwellings in the CT.

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## Limitations:

The indicator cannot provide a measure of the percent of only single-detached and semi-detached housing units within an area, or the total mix of existing housing in that area.

# Interactive PWCI Tool

The background features a solid blue color with a large, stylized graphic on the right side. This graphic consists of several overlapping, rounded rectangular shapes in various shades of blue, creating a sense of depth and movement. The shapes are arranged in a way that suggests a modern, digital interface or a complex data structure.

# 2021 PWCI Comparison Tool

## Peel Walkability Composite Index (PWCI)

Comparison Tool



Census Tracts

Select a feature(s)



Municipalities

Select a feature(s)

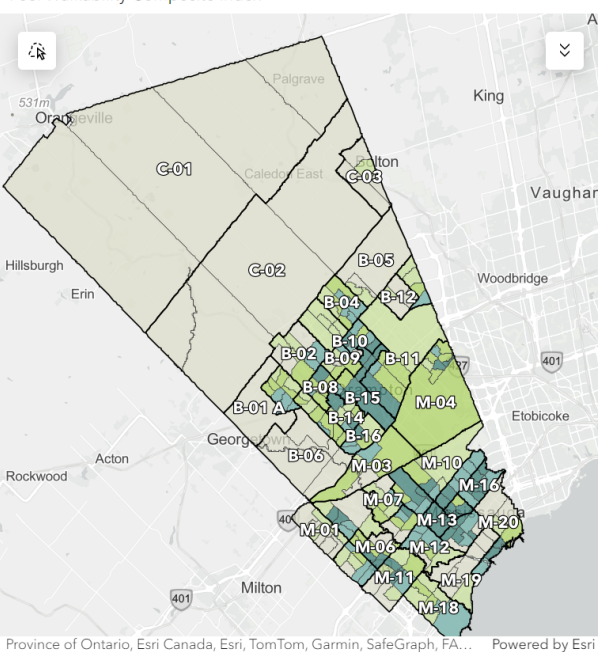
### Peel Walkability Index

The Peel Walkability Composite Index was created to understand the spatial distribution of walkability in Peel Region. 'Walkability' refers to the capacity of the built environment to facilitate walking for utilitarian purposes. The Peel Walkability Composite Index contains the equal weighted average of the normalized scores of eight indicators. A principal component analysis (PCA) was completed on all indicators with residential land uses to determine which components of the built environment facilitate walking for multiple purposes. Three components were identified by the PCA:

### Access to Retail and Service Outlets:

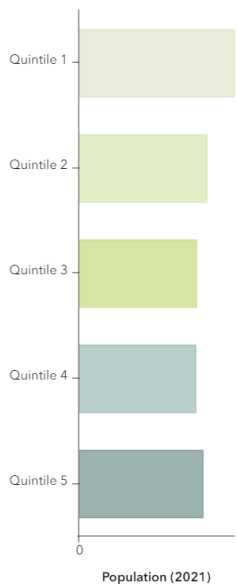
- Proximity of Residents to Food Stores
- Proximity of Residents to five or more unique Community and Retail Services

### Peel Walkability Composite Index



### Population by PWCI Quintiles

Quintile 5 is the most supportive of utilitarian walking.



### PWCI (2021)

**56.0**  
Average

Residential density (+/-)  
**0.25/ha**  
Average

Access to green space (+/-)  
**1.1 %**  
Average

Access to schools (+/-)  
**0.0%**  
Average

Land use diversity (+/-)  
**0.00**  
Average

### PWCI (+/-)

**0.4**  
Average

Access to transit (+/-)  
**-1.5%**  
Average

Access to food stores (+/-)  
**6.3%**  
Average

Access to services (+/-)  
**-2.9%**  
Average

Housing diversity (+/-)  
**-0.2%**  
Average

PWCI

Residential Density

Frequent Transit

Green Space

Food Stores

Schools

Services

Land Use Diversity

Housing Diversity

**Questions?**

**Thank you!**