INTRODUCTION

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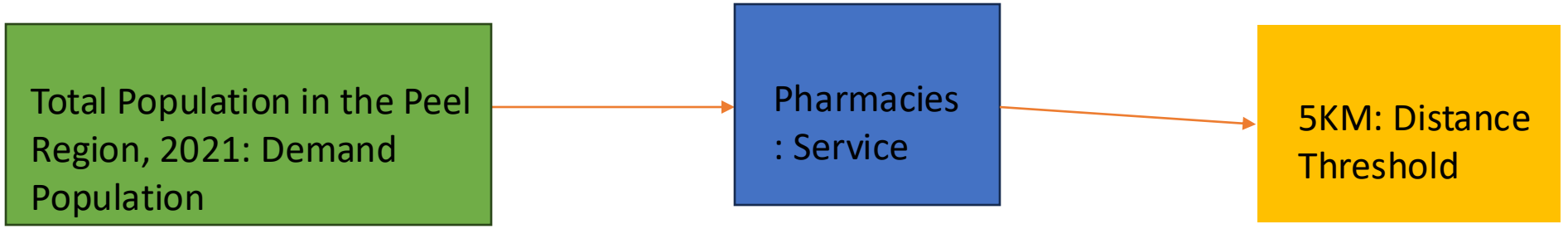
Project Title: Assessing Pharmacy Accessibility in the Peel Region Using the 2SFCA Method

Purpose and Elements

Pharmacies provide essential health services (supplies, checkups, lab tests), however there is uneven distribution of the facility in the peel region. Low- income population require shorter travel distance to reach the facilities



Data	Count Information	Data Source
Study Area	Peel Region (Dissemination Areas)	Peel Dissemination Areas and Peel Boundary Data Source: Statistics Canada, 2021
Demand Population (Total Population)	1451022	Total Population (Demand Population) Data Source: Statistics Canada, Census 2021 Accessed Through: CHASS Data Centre (University of Toronto)
Supply data (Pharmacies)	673	Pharmacies Data Source: North American Industry Classification System (NAICS), 2022 Accessed Through: SimplyAnalytics
Aspatial Group (Low-income population)	11380	Percentage and Total Low Income population (Aspatial Group) Data Source: Statistics Canada, Census 2021 Accessed Through: CHASS Data Centre (University of Toronto)

Methods

The spatial accessibility method used is: Two-Step Floating Catchment Area (2SFCA) method

Step 1 Equation:

$$R_j = S_j / P_k,$$

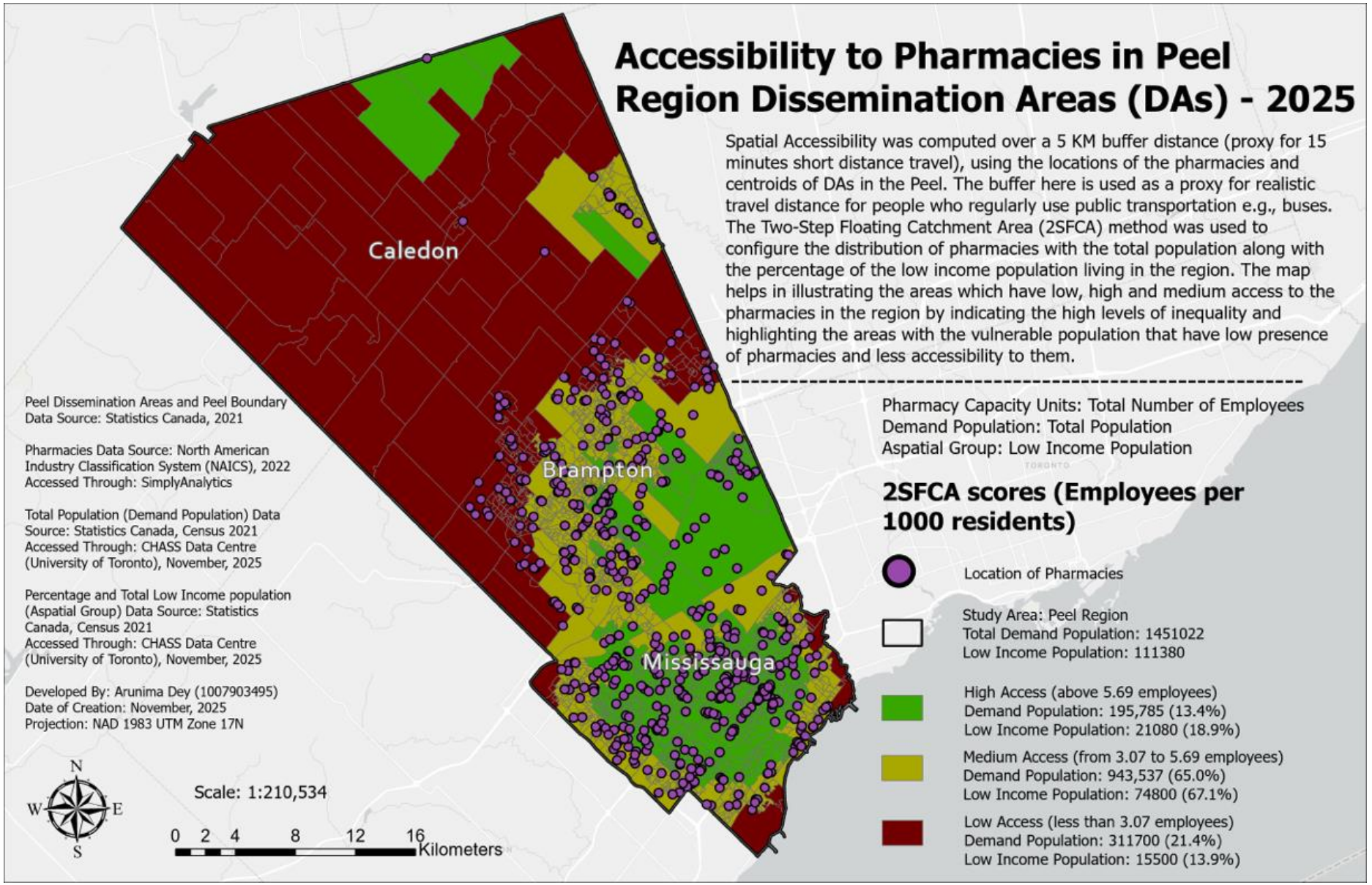
Where R_j is the supply to demand ratio for facility j (pharmacies), S_j is the supply capacity at facility (total employment at each pharmacy), P_k is the population in that Dissemination Area of the Peel Region

Step 2 Equation:

$$A_i = \text{summation of } R_j$$

Where A_i is the spatial index at residential area i

Results


Accessibility to Pharmacies in Peel Region Dissemination Areas (DAs) - 2025
Spatial Accessibility was computed over a 5 KM buffer distance (proxy for 15 minutes short distance travel), using the locations of the pharmacies and centroids of DAs in the Peel. The buffer here is used as a proxy for realistic travel distance for people who regularly use public transportation e.g., buses. The Two-Step Floating Catchment Area (2SFCA) method was used to configure the distribution of pharmacies with the total population along with the percentage of the low income population living in the region. The map helps in illustrating the areas which have low, high and medium access to the pharmacies in the region by indicating the high levels of inequality and highlighting the areas with the vulnerable population that have low presence of pharmacies and less accessibility to them.
Caledon
Brampton
Mississauga
Peel Dissemination Areas and Peel Boundary
Data Source: Statistics Canada, 2021
Pharmacies Data Source: North American Industry Classification System (NAICS), 2022
Accessed Through: SimplyAnalytics
Total Population (Demand Population) Data Source: Statistics Canada, Census 2021
Accessed Through: CHASS Data Centre (University of Toronto), November, 2025
Percentage and Total Low Income population (Aspatial Group) Data Source: Statistics Canada, Census 2021
Accessed Through: CHASS Data Centre (University of Toronto), November, 2025
Developed By: Arunima Dey (1007903495)
Date of Creation: November, 2025
Projection: NAD 1983 UTM Zone 17N
N
W
E
S
Scale: 1:210,534
0 2 4 8 12 16
Kilometers
Pharmacy Capacity Units: Total Number of Employees
Demand Population: Total Population
Aspatial Group: Low Income Population
2SFCA scores (Employees per 1000 residents)
Location of Pharmacies
Study Area: Peel Region
Total Demand Population: 1451022
Low Income Population: 111380
High Access (above 5.69 employees)
Demand Population: 195,785 (13.4%)
Low Income Population: 21080 (18.9%)
Medium Access (from 3.07 to 5.69 employees)
Demand Population: 943,537 (65.0%)
Low Income Population: 74800 (67.1%)
Low Access (less than 3.07 employees)
Demand Population: 311700 (21.4%)
Low Income Population: 15500 (13.9%)

Limitations and Interventions

Limitations:
-The method uses centroids which can further lead to distortion of real travel distances.
-The problem with the pharmacy data is that it only consists of information about the total number of employees and nothing about the working hours, service load etc.

Interventions:
-Caledon and North Brampton need intervention as they have low accessibility index and has around 13.9% of low-income population by expanding more pharmacy services, increasing operational hours and improving the transit system.