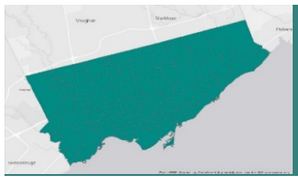
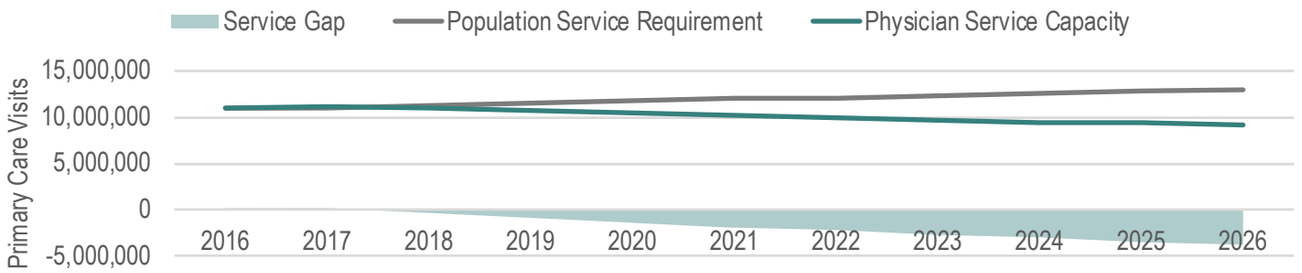


# Primary Care Workforce Planning

*City of Toronto Profile*

Ontario Health

uOttawa




**Need (2021)**
11,962,450 Visits

**Current State Gap (2021)**
-1,855,264 Visits

**Capacity (2021)**
10,107,186 Visits

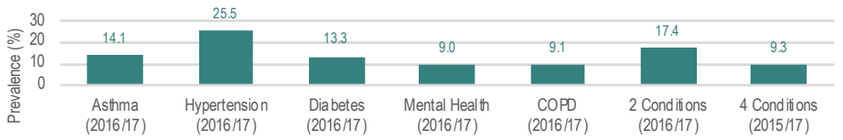
**Need (2026)**
12,959,410 Visits

**Future State Gap (2026)**
-3,808,772 Visits

**Capacity (2026)**
9,150,638 Visits

## Population Health Profile

| Population (2016) | | | |
|---|---|---|---|
| Children | Youth | Working Age | Seniors |
| 398,170 | 339,660 | 1,565,730 | 426,390 |
| 14.6% | 12.4% | 57.4% | 15.6% |




## Population Growth

| Year | Population Estimates (Low-High) | Estimated Yearly Growth |
|---|---|---|
| 2016 | 2,731,571 | |
| 2021 | 3,036,460 - 3,073,543 | 1.6 % - 2.5 % |
| 2026 | 3,341,349 - 3,415,455 | |

## Ontario Marginalization Index (2016)

| Indicator | Quintile | Score |
|---|---|---|
| Material Deprivation | 4 | 0.26 |
| Residential Instability | 5 | 0.78 |
| Dependency | 1 | -0.24 |
| Ethnic Concentration | 5 | 1.04 |

## Spatial Patterns of Utilization (2017)

**Yearly Incoming Demand:** 2.45M Non-Resident Visits

**Yearly Outgoing Demand:** 1.32M Resident Visits

## Unmet Need for Primary Care

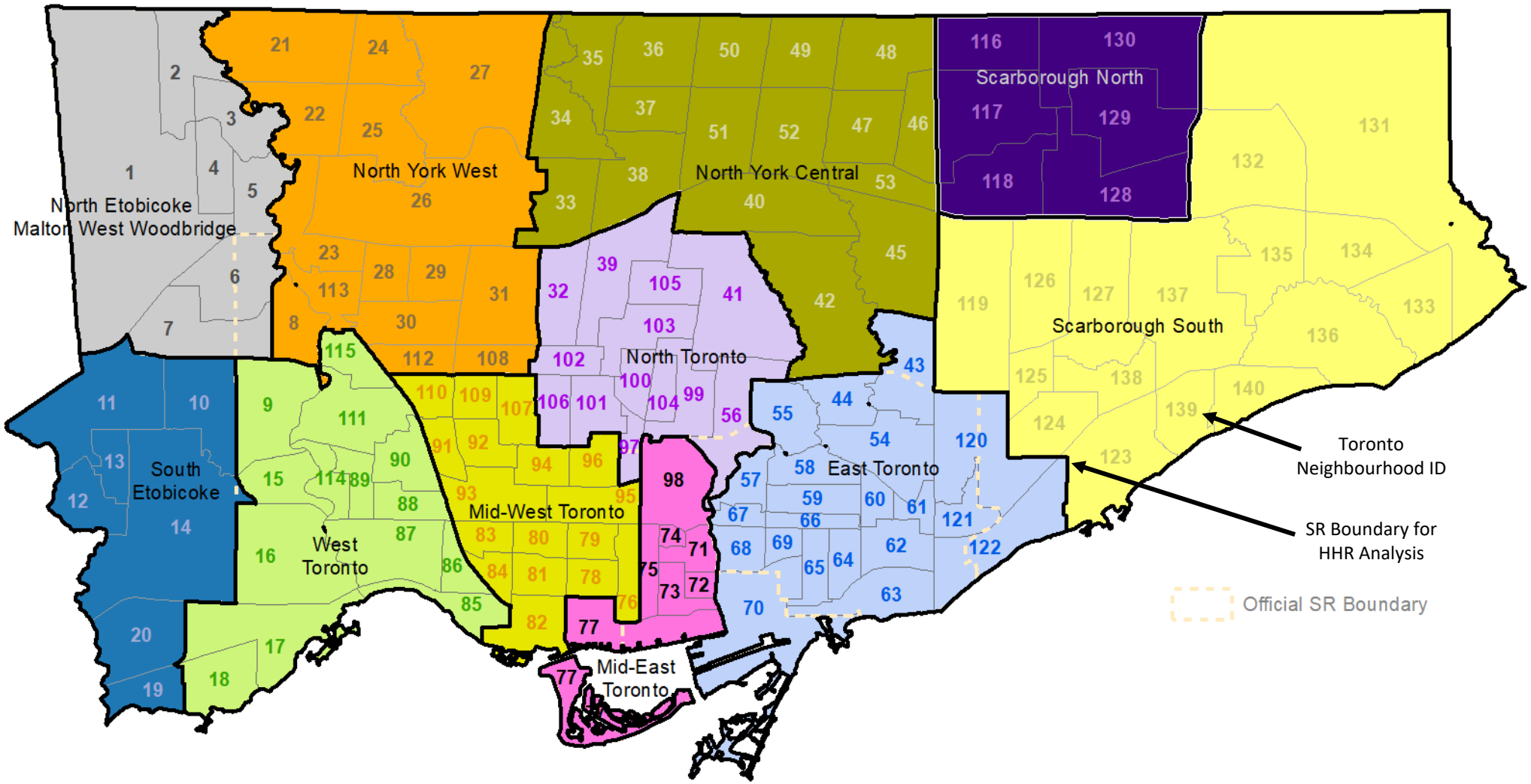
| Indicator | City |
|---|---|
| PEM Attachment (%) | 71.6 |
| ACSC Hospitalization / 100,000 | 244.4 |
| Low Urgency ED (%) | 81.5 |

## Primary Care Workforce Profile

| Number of Comprehensive Primary Care Physicians | 2016 | 2295 | 2017 | 2343 |
|---|---|---|---|---|

| Health Profession | Number of Professionals | | | Average Weekly Hours Available | | |
|---|---|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2016 | 2017 | 2018 |
| Chiropodists | 250 | 254 | 263 | 4,027 | 4,282 | 4,318 |
| Dieticians | 421 | 436 | 449 | 4,596 | 4,370 | 4,330 |
| Midwives | 138 | 166 | 153 | 3,248 | 3,495 | 4,057 |
| Nurse Practitioners | 267 | 294 | 321 | 3,968 | 4,273 | 4,885 |
| Optometrists | 554 | 571 | 607 | 5,556 | 5,332 | 5,692 |
| Occupational Therapists | 707 | 731 | 771 | N/A | 11,578 | 11,723 |
| Pharmacists | 3,226 | 3,297 | 2,695 | 55,598 | 57,188 | 26,155 |
| Psychologists | 563 | 589 | 613 | 19,244 | 19,379 | 9,578 |
| Physiotherapists | 1,384 | 1,313 | 910 | 5,543 | 5,942 | 6,330 |
| Registered Nurses | 4,853 | 4,806 | 4,741 | 57,894 | 56,231 | 56,906 |
| Registered Practical Nurses | 4,260 | 4,521 | 4,763 | 73,887 | 75,629 | 79,512 |
| Respiratory Therapists | 76 | 90 | 92 | N/A | 1,379 | 1,129 |
| Speech Language Pathologists | 359 | 387 | 390 | 3,650 | 3,802 | 3,721 |

Modified Sub-Region Boundaries for HHR Analysis

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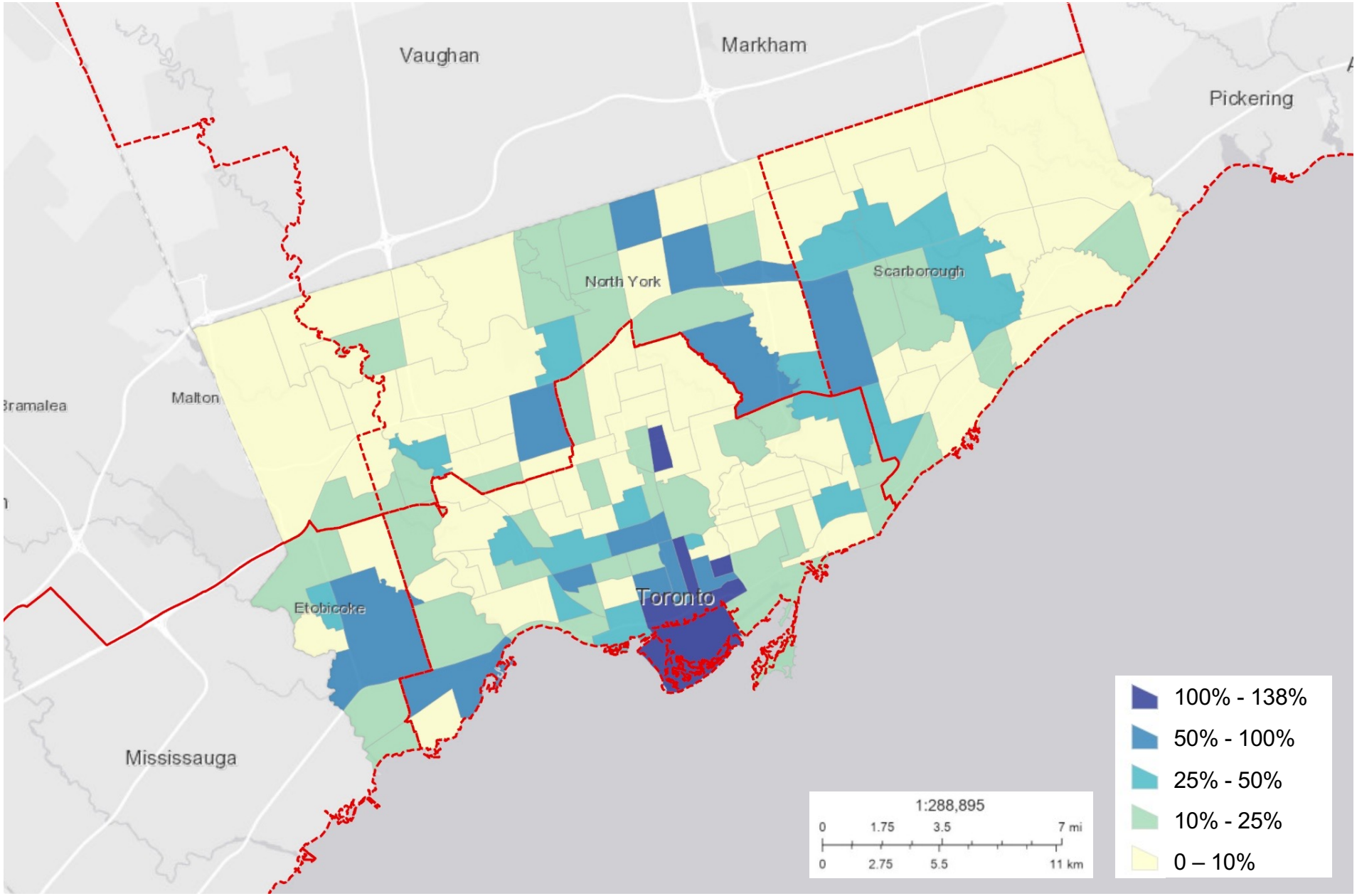
21 June 2021

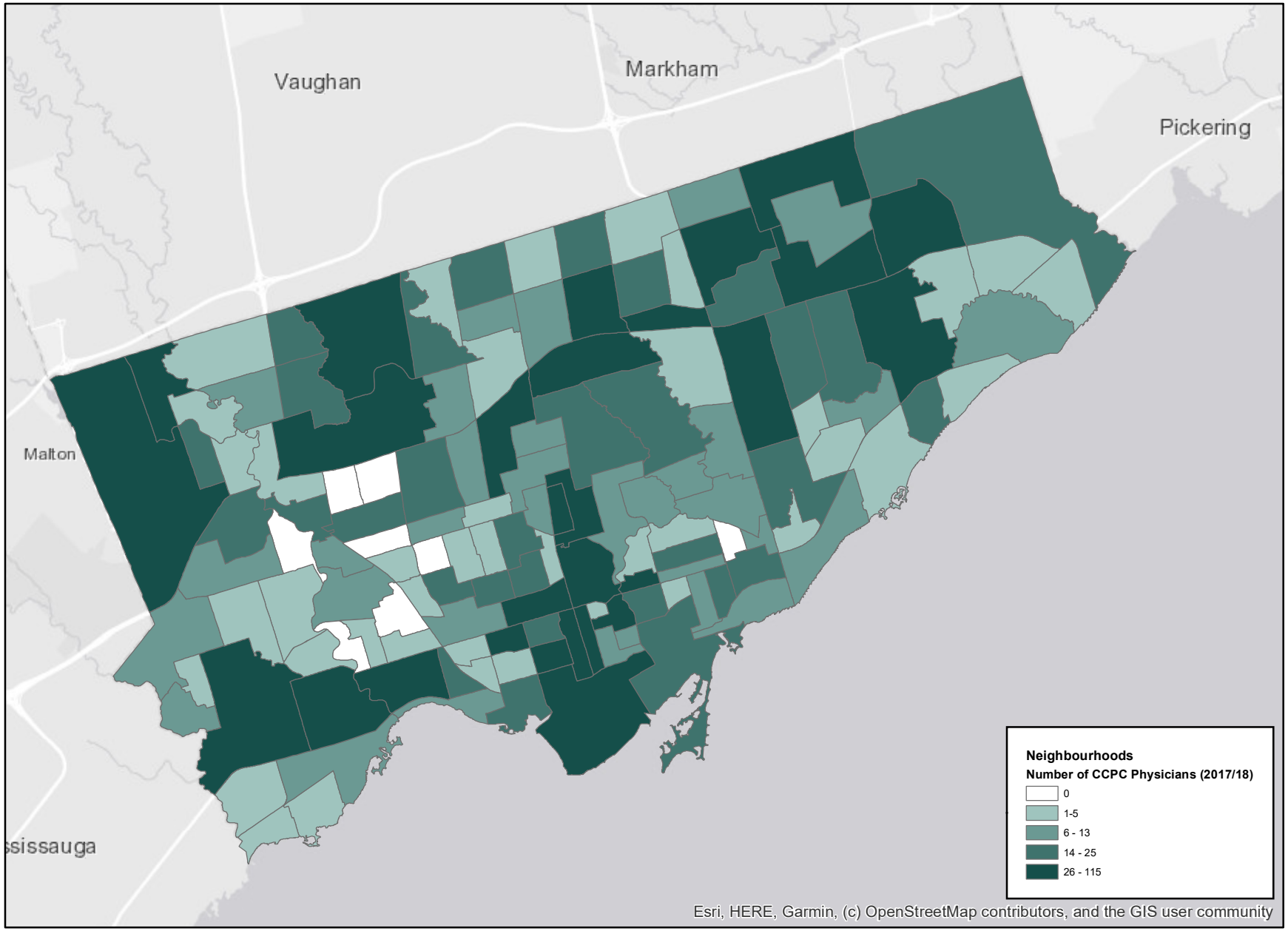
# Medium Growth Population Estimate (vs. 2016 Census) – 10 Year Horizon

Data sources: Base Year / Actuals: Census of Canada 2016, Statistics Canada;
Population Estimates: Development Project data from Land Use Information System II, City of Toronto.
Development Pipeline base data current to Q4 2019.

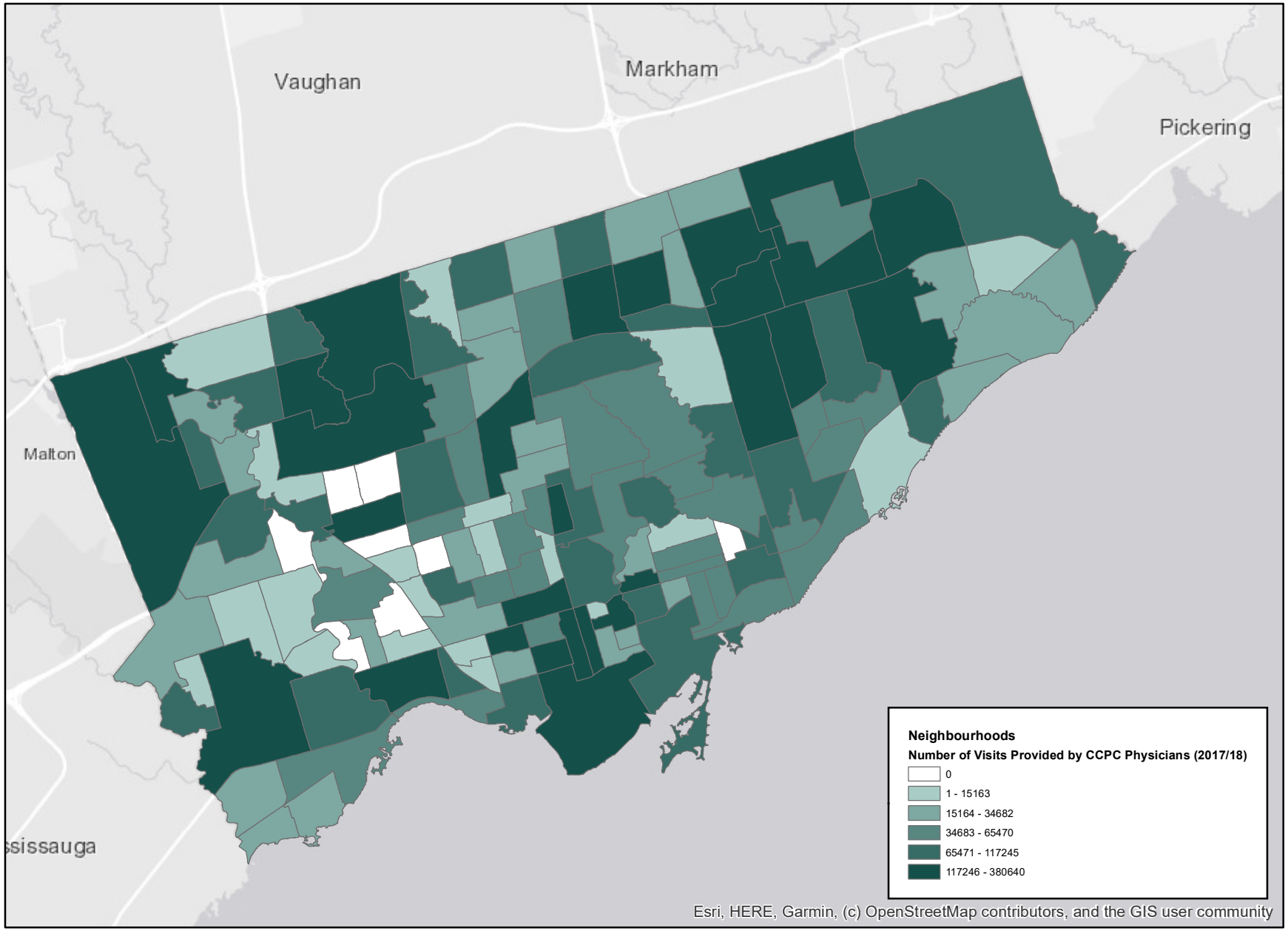
Ontario Health
Toronto



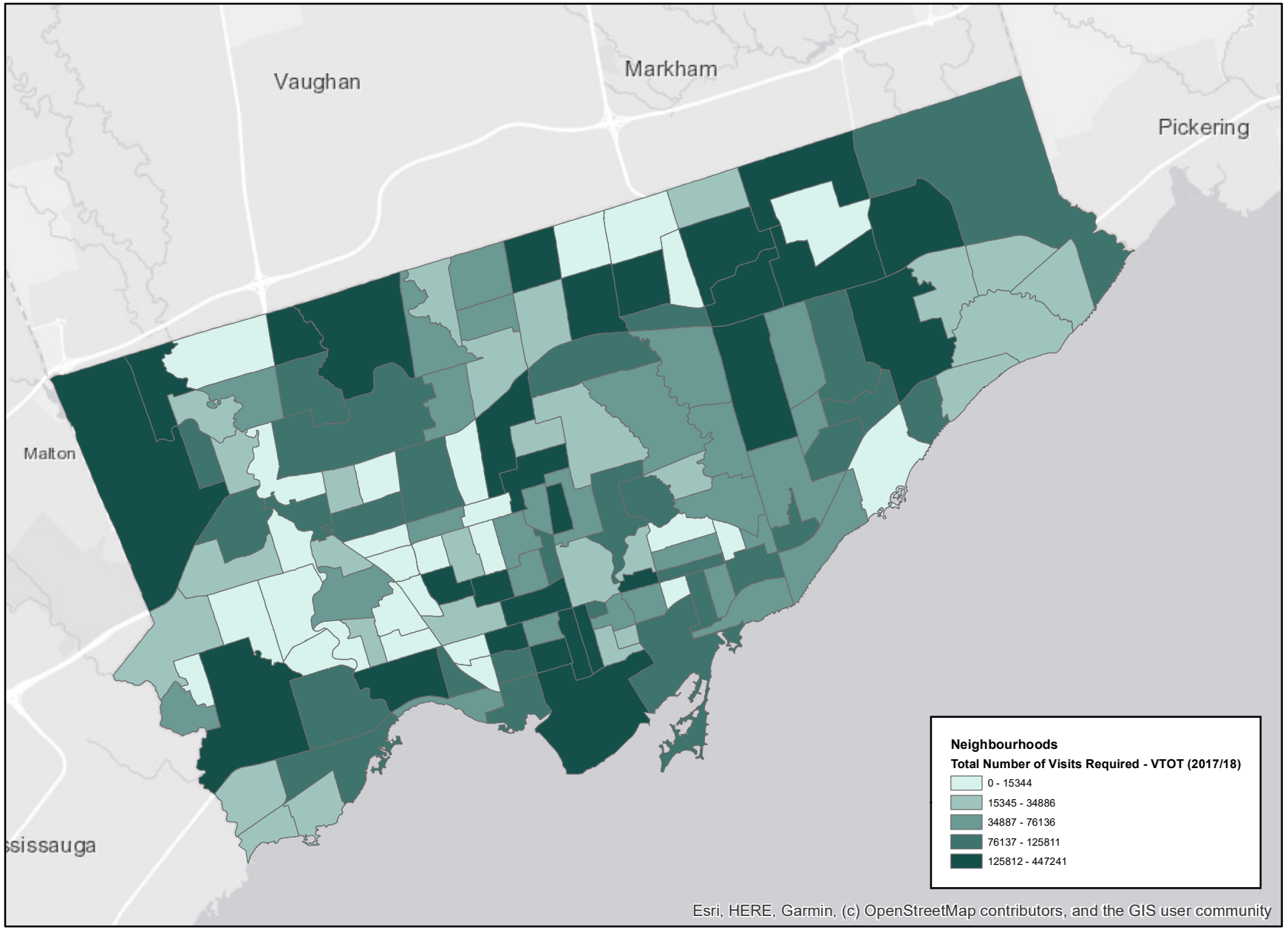
**Number of Comprehensive Primary Care Physicians**



Number of Visits Provided by Comprehensive Primary Care



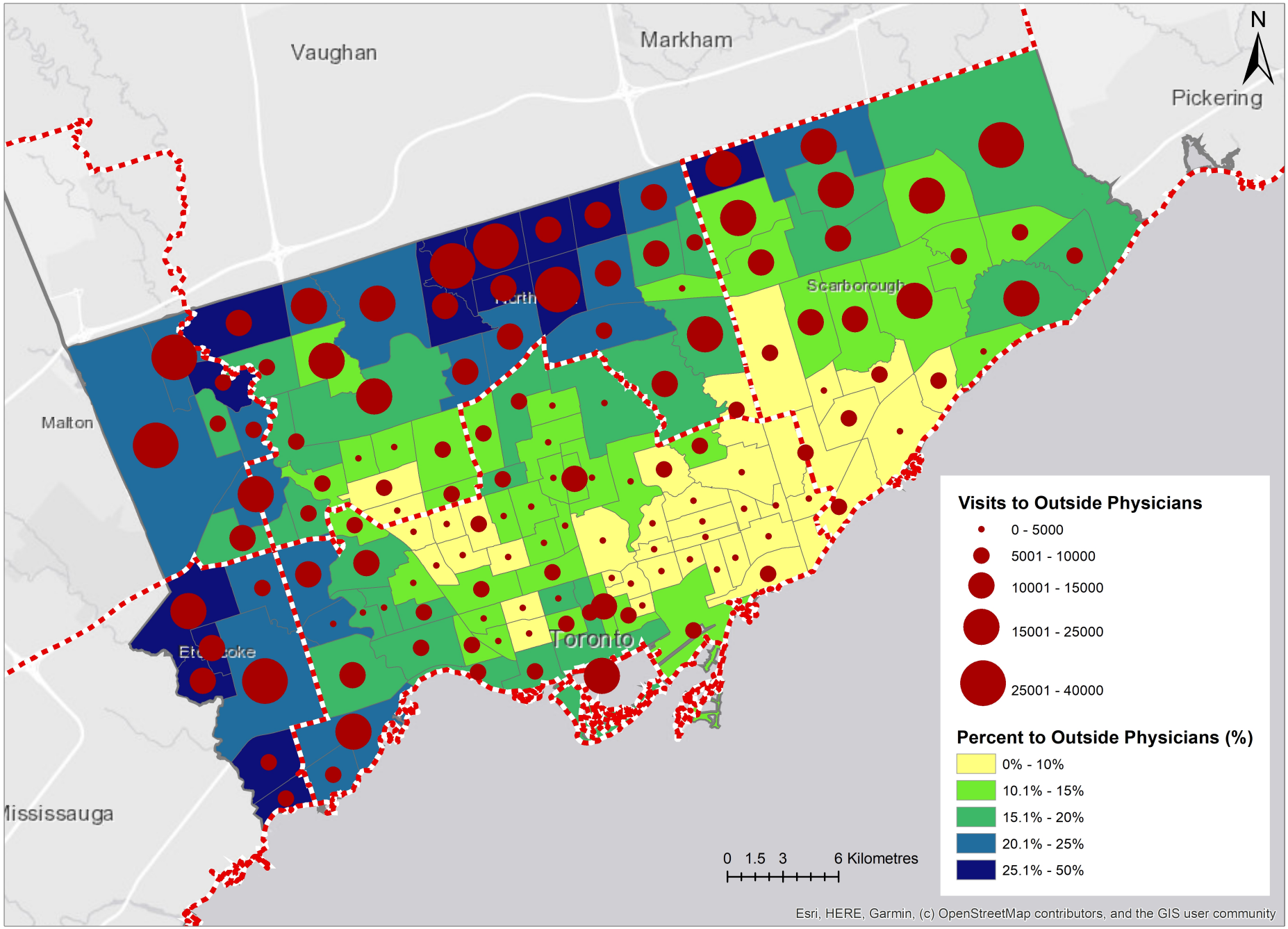
**Service Requirements: Number of Primary Care Visits Required**



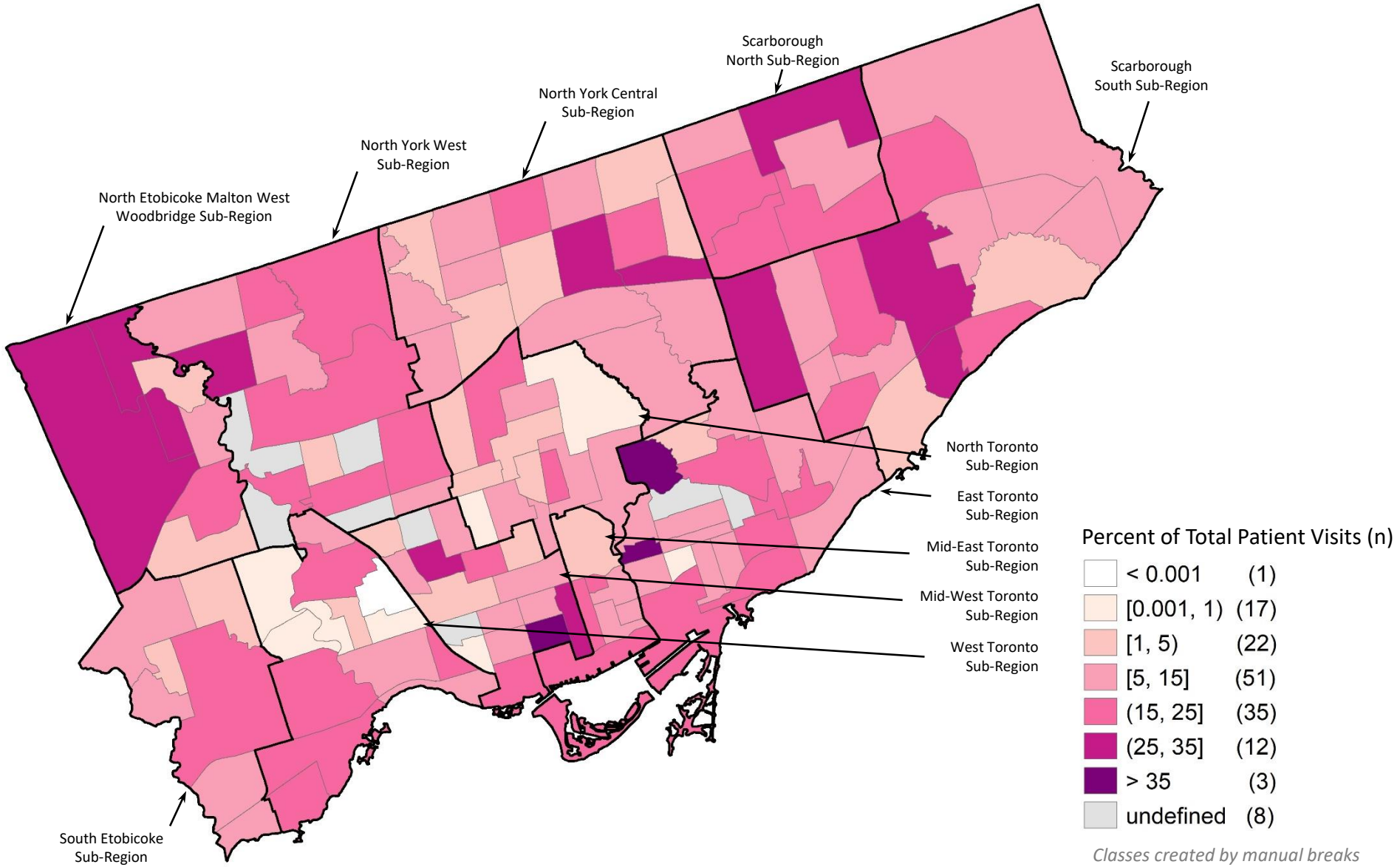
## Primary Care Visits to Outside Toronto Physicians by Toronto Neighbourhood Residents

Primary care encounters occurring in office-based locations in Ontario, Canada (April 1, 2017 - March 31, 2018)

Ontario Health
Toronto



Percent (%) of Total Patient Visits made to Primary Care Physicians who practice within the same neighbourhood where the patient resides (TC LHIN)

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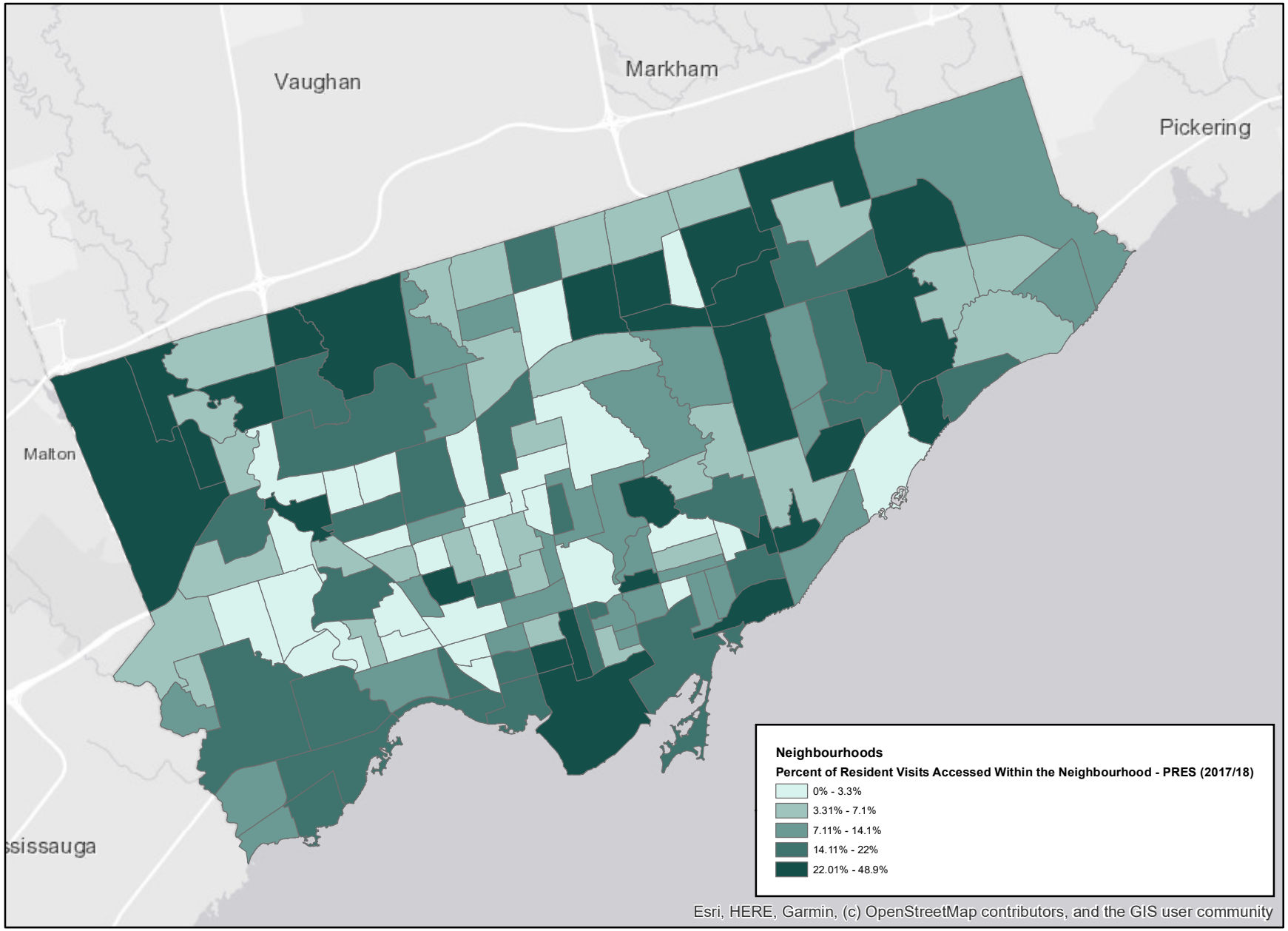
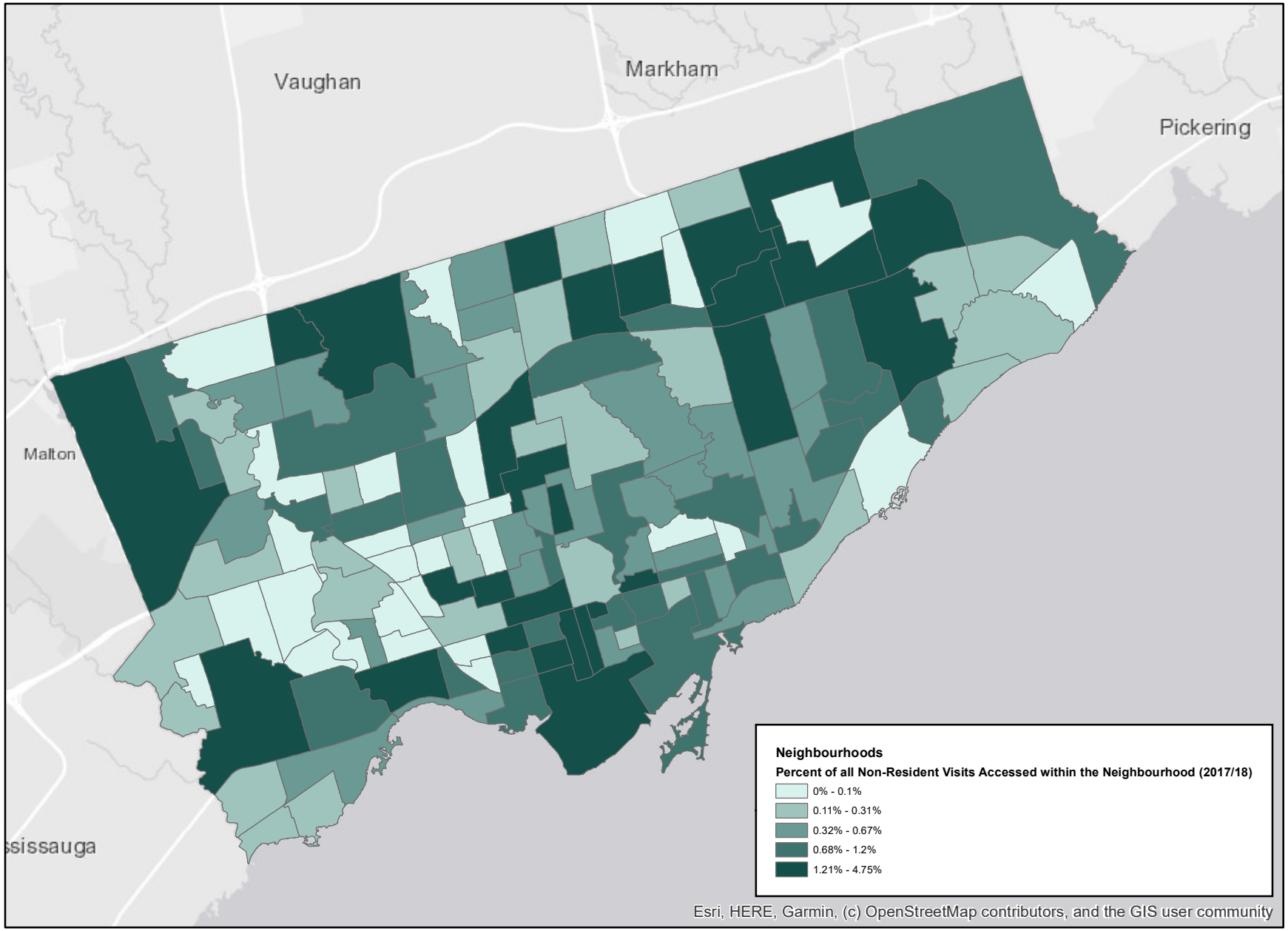
14 March 2022

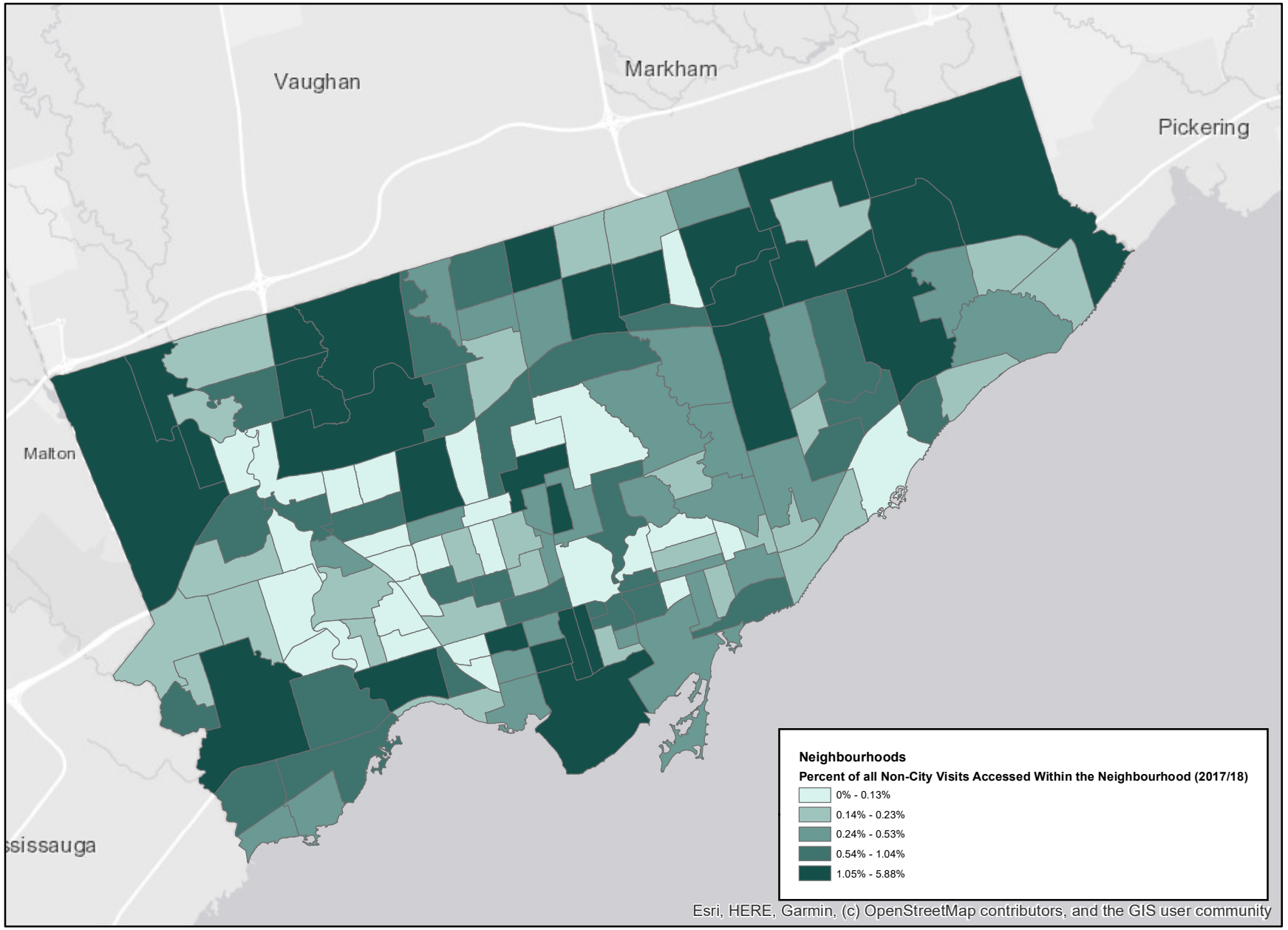
**Spatial Patterns of Utilization: Percent of Primary Care Accessed by Neighbourhood Residents in Home Neighbourhood**



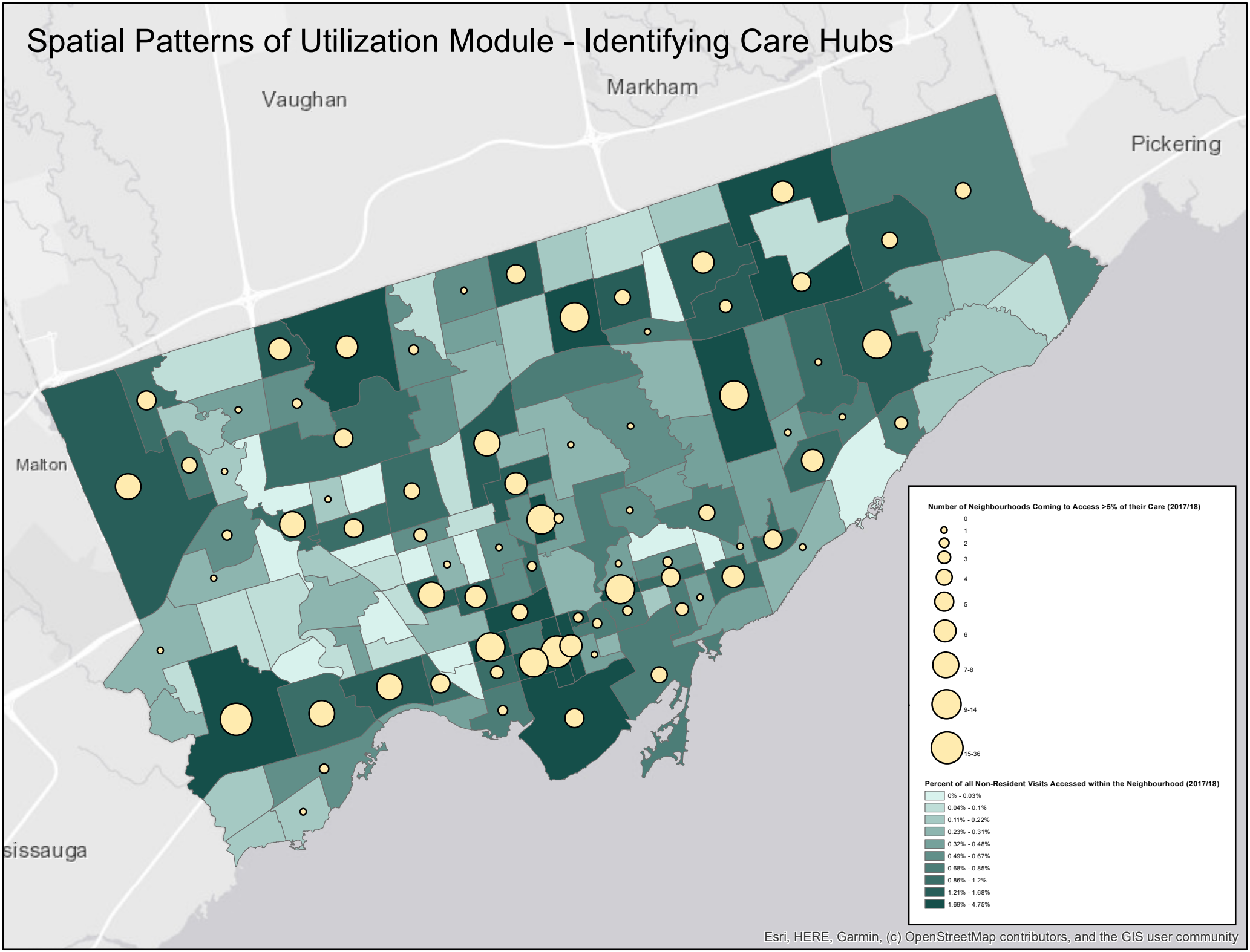
**Spatial Patterns of Utilization: Percent of Primary Care Accessed by Residents of Other Neighbourhoods**



Spatial Patterns of Utilization: Percent of Primary Care Accessed by Patients from Outside Toronto

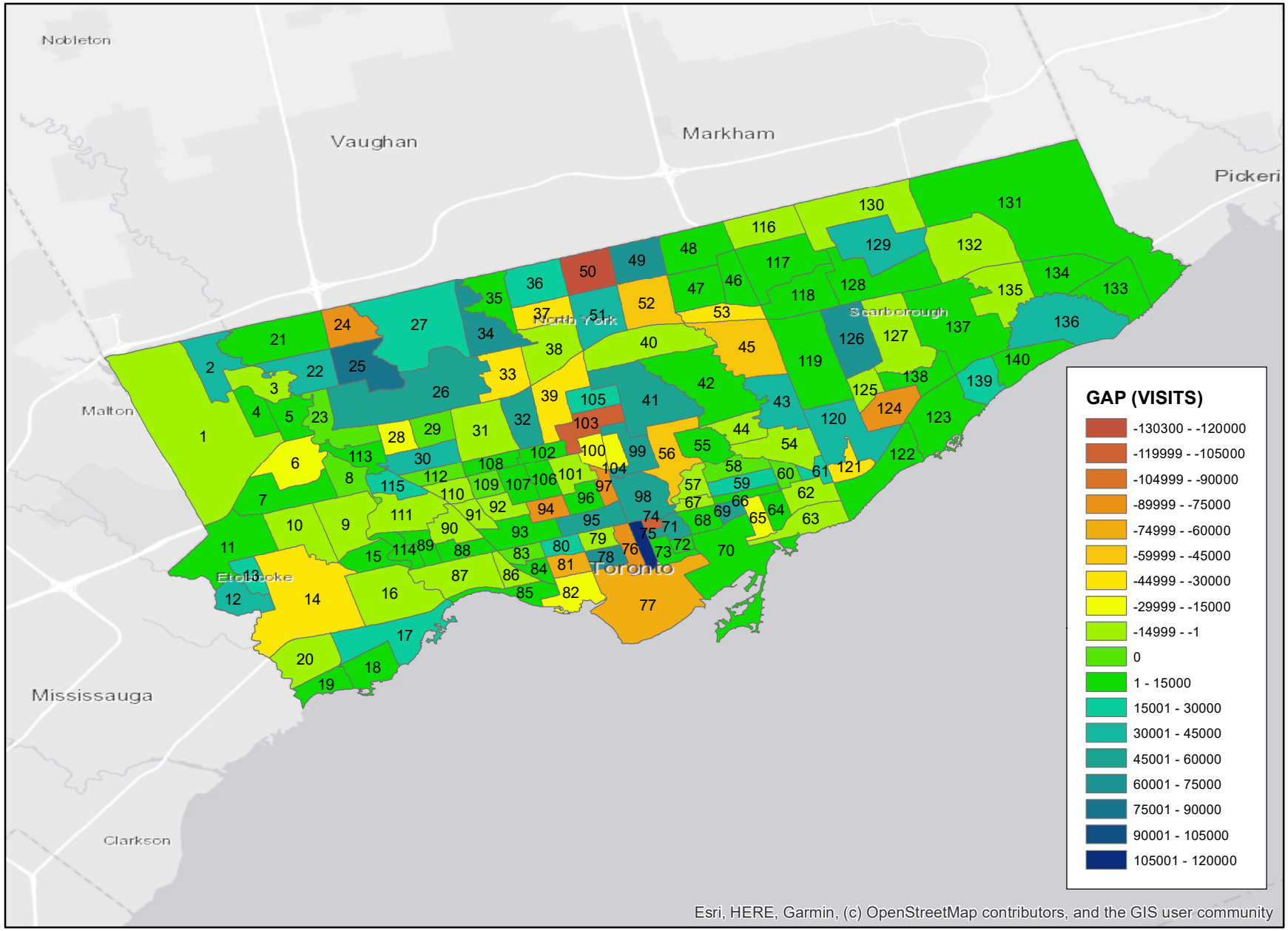


# Spatial Patterns of Utilization Module - Identifying Care Hubs

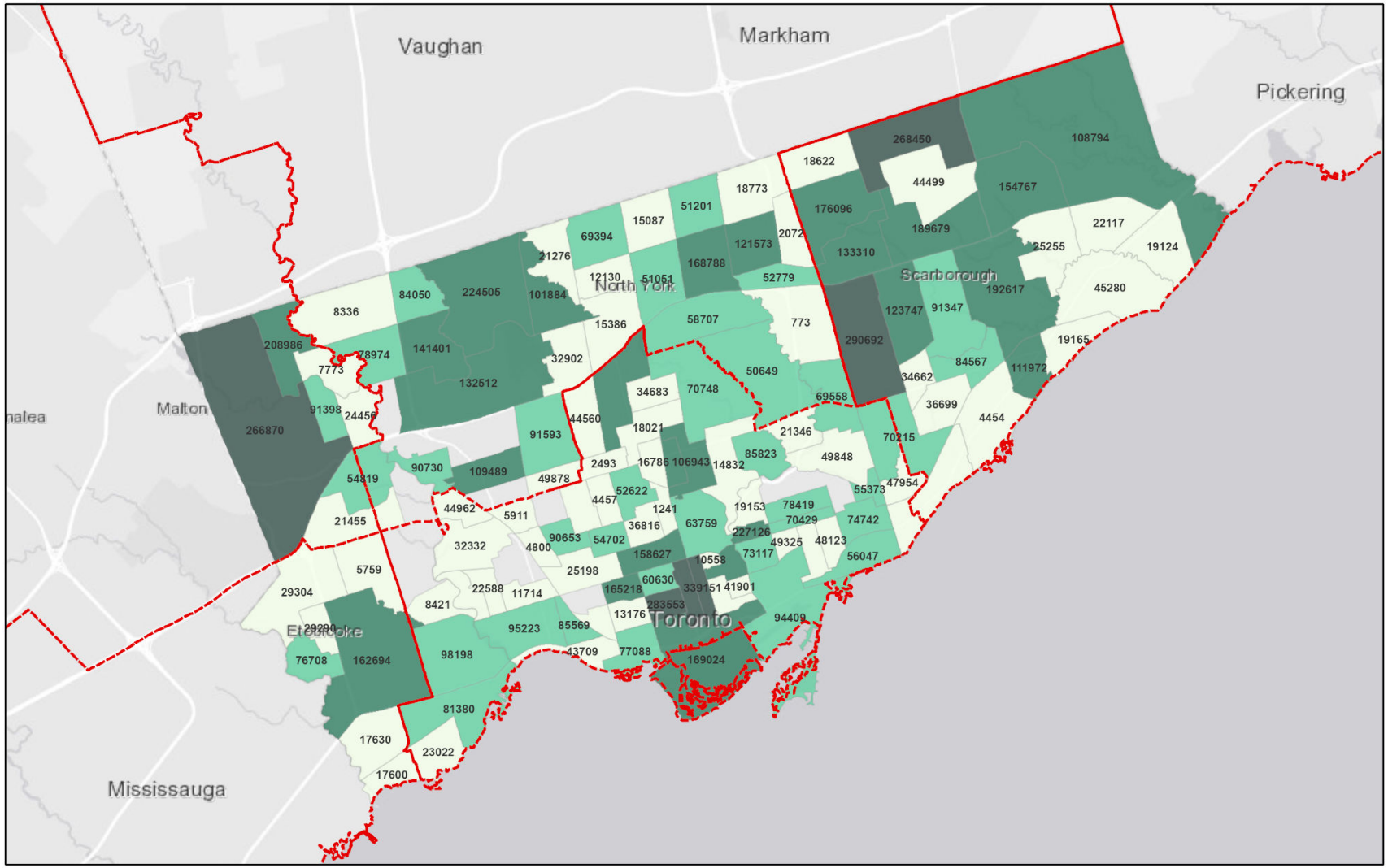



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

# GAP BETWEEN SERVICE CAPACITY AND SERVICE REQUIREMENTS (2017)



# Retirement Model Capacity Planning: Total Service Capacity




3/10/2022

LHIN Boundary

Retirement_Total_Service_Capacity

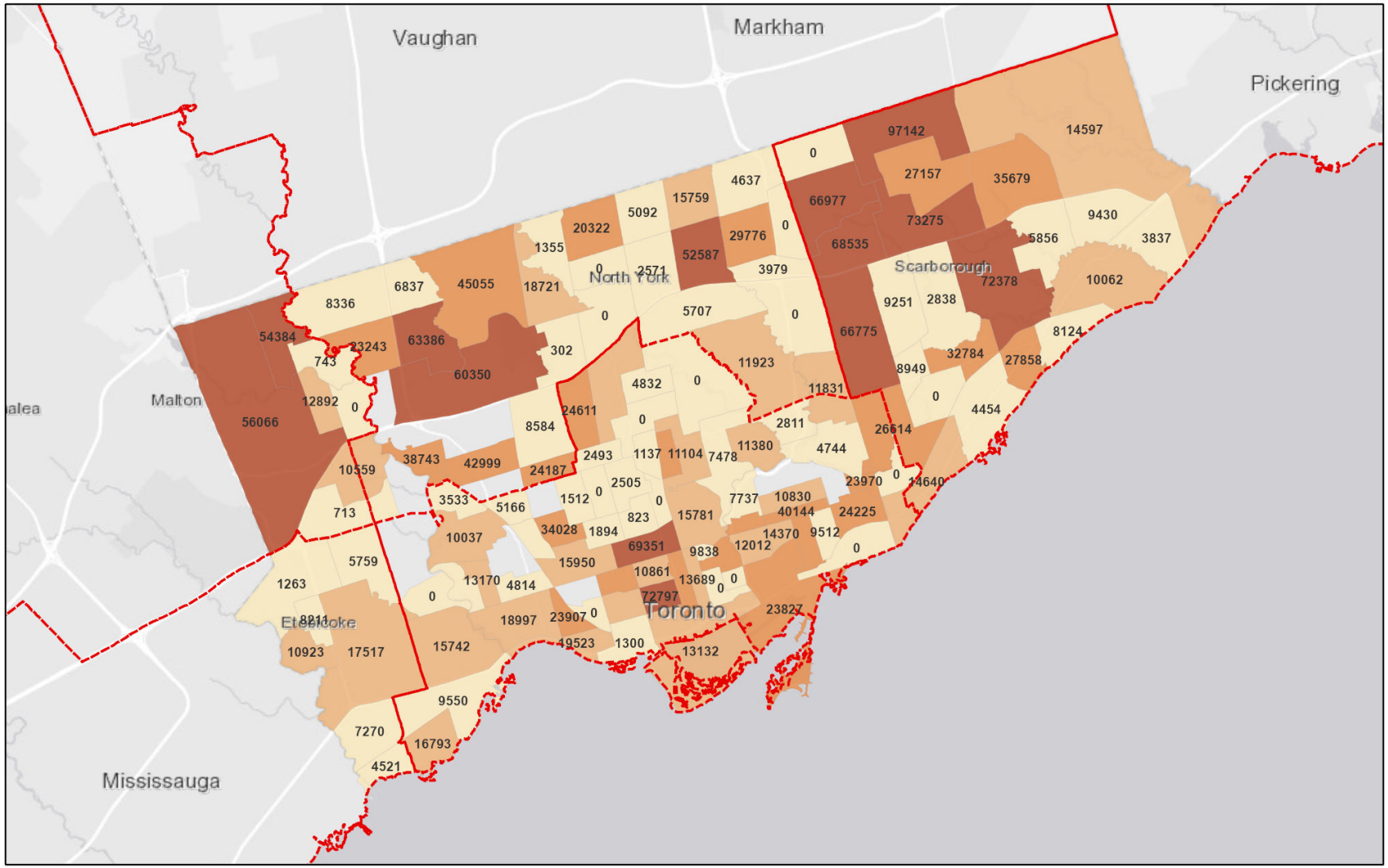
0 – 50,000

> 50,000 – 100,000

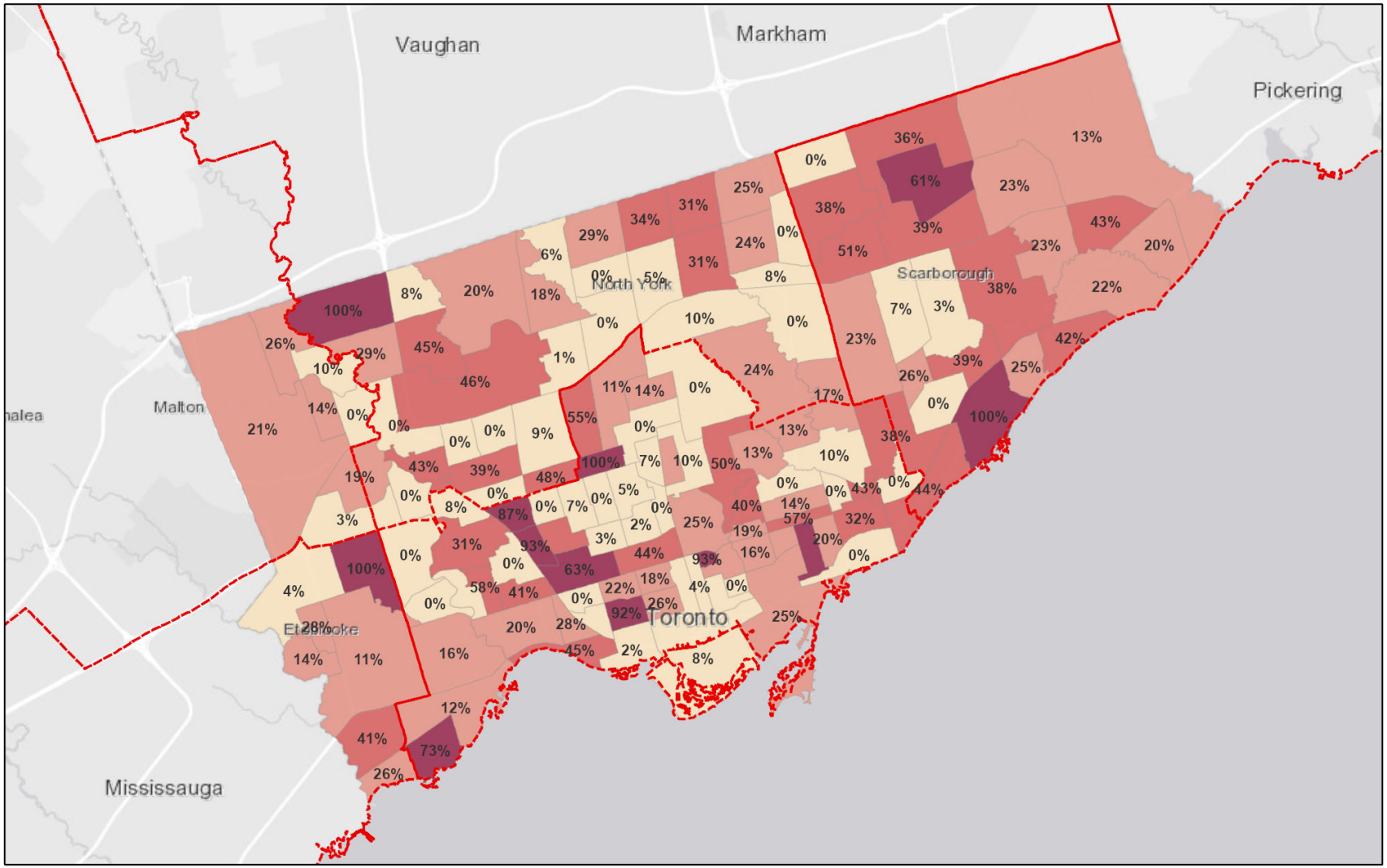
> 100,000 – 250,000

> 250,000 – 400,000

# Retirement Model Capacity Planning: Visits at Risk



# Retirement Model Capacity Planning: Visits at Risk as a Percentage of Total Service Capacity



# Toronto Region Primary Care Workforce Planning Toolkit

## Technical Notes – City Package

### Project Description

The Toronto Region Primary Care Workforce Planning Toolkit is a fit-for-purpose toolkit to support integrated primary care workforce planning in the Toronto Region. The toolkit is the result of a collaboration between the Health Analytics team at Ontario Health Toronto and consultants from the Canadian Health Workforce Network. A partnership with the City of Toronto, as well as extensive consultation with stakeholders, decision-makers, leaders, and frontline workers in Toronto, informed the development of the toolkit.

The toolkit provides a body of evidence around the current (and projected future) states of population health needs and primary care service provision at a neighbourhood level within the City of Toronto. The goal of the toolkit is to support evidence-based decision-making, particularly with regards to deployment of the primary care workforce and other health system resources. The toolkit looks at population needs and workforce capacity at the neighbourhood, sub-region, and whole city levels. It takes into account variations in population needs, workforce service capacity, and existing assets, and also addresses challenges specific to Toronto, such as patient mobility, anticipated rapid population growth, and physician retirement.

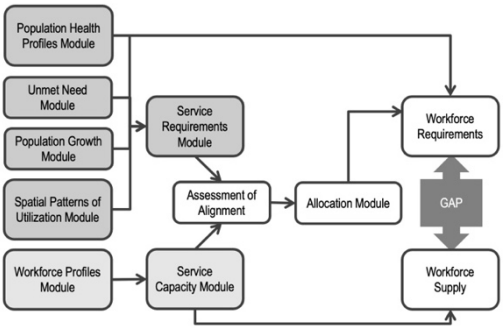
### Methodology

The toolkit is composed of a series of modules that assemble information about primary care in the City of Toronto:

- The **Population Health Profiles Module** captures characteristics of the population that impact the need for primary care services.
- The **Population Growth Module** captures neighbourhood-level population growth projections generated by the City of Toronto, allowing us to adjust service requirements to account for anticipated population growth.
- The **Spatial Patterns of Utilization Module** captures a snapshot of primary care utilization patterns and allows us to adjust service requirements to account for patients' care-seeking behaviours.
- The **Unmet Need Module** captures information related to neighbourhood-level unmet healthcare need, which can contribute to an adjustment of service requirements.
- The **Service Requirements Module** estimates primary care service requirements using the CIHI Population Grouping Methodology.
- The **Workforce Profiles Module** captures information about the primary care workforce – including physicians and chiropodists, dieticians, midwives, nurse practitioners, optometrists, occupational therapists, pharmacists, psychologists, physiotherapists, registered nurses, registered practical nurses, respiratory therapists, and speech-language pathologists – practicing in each neighbourhood.
- The **Service Capacity Module** estimates the capacity of the workforce to provide primary care services.

Outputs from these modules are synthesized and summarized in a static city-level dashboard and a series of maps.

This information is a starting point for local stakeholders wishing to better understand the primary care landscape across the city. Interpretation of these outputs should consider the local context (factors related to both the community and the local workforce). Engagement and consultation with local stakeholders and frontline healthcare providers are essential parts of the planning process.



**List of Outputs**

1. **City Profile:** A snaphot of the primary care landscape in the City of Toronto; includes information about alignment between physician service requirements and service capacity, age distribution of residents and the prevalence of key health conditions, estimated population growth, spatial patterns of utilization, Ontario Marginalization Index scores, indicators of unmet need for primary care, and a profile of the primary care workforce in the neighbourhood.
2. **Map – Modified Subregion Boundaries:** Map showing the boundaries used for this analysis and where they differ from official subregion boundaries.
3. **Map – Population Growth Estimate:** Estimated neighbourhood-level population growth rates under a Medium growth scenario with a 10-year planning horizon.
4. **Map – Primary Care Physicians:** Neighbourhood-level representation of the number of comprehensive primary care physicians practicing in the neighbourhood.
5. **Map – Primary Care Visits:** Neighbourhood-level representation of the number of visits provided by comprehensive primary care physicians practicing in the neighbourhood.
6. **Map – Service Requirements:** Neighbourhood-level representation of the total estimated number of primary care visits required in this neighbourhood.
7. **Map – Primary Care Visits Outside Toronto:** Neighbourhood-level representation of the number and percent of resident primary care visits to physicians outside Toronto.
8. **Map – Spatial Patterns of Utilization:** Neighbourhood-level representation of percent of primary care visits accessed by neighbourhood residents in home neighbourhood (8 categories).
9. **Map – Spatial Patterns of Utilization:** Neighbourhood-level representation of percent of primary care visits accessed by neighbourhood residents in home neighbourhood (5 categories).
10. **Map – Spatial Patterns of Utilization:** Neighbourhood-level representation of percent of all primary care visits used by residents of other neighbourhoods that are accessed within each neighbourhood.
11. **Map – Spatial Patterns of Utilization:** Neighbourhood-level representation of percent of all primary care visits used by patients from outside Toronto that are accessed within each neighbourhood.
12. **Map – Care Hubs:** Neighbourhood-level representation of the percent of all primary care visits used by residents of other neighbourhoods that are accessed within each neighbourhood, and the number of Neighbourhoods whose residents access >5% of their care within the neighbourhood.
13. **Map – Alignment:** Neighbourhood-level representation of the gap between estimated service capacity and estimated service requirements for 2017.
14. **Map – Total Service Capacity (Physician Visits):** Neighbourhood-level representation of the total number of physicians service capacity available within the neighbourhood in 2023.
15. **Map – Visits at Risk:** Neighbourhood-level representation of the total number of comprehensive primary care physician visits at risk of loss due to retirement as of 2023 with a 20% retirement probability threshold scenario.
16. **Map – Visits at Risk as a Percentage of Total Service Capacity:** Neighbourhood-level representation of the percent of all comprehensive primary care physician visits that are at risk of loss due to retirement as of 2023 with a 20% retirement probability threshold scenario.

**Definitions**

**Neighbourhoods:** The 140 City of Toronto neighbourhoods were built by the Social Development, Finance & Administration department at the City of Toronto using Statistics Canada Census Tracts. More information about neighbourhoods is available at https://www.toronto.ca/city-government/data-research-maps/neighbourhoods-communities/neighbourhood-profiles/.

**Comprehensive primary care physician:** Primary care physicians who provide comprehensive care according to the algorithm developed at ICES (https://www.cmajopen.ca/content/5/4/E856).

**Non-comprehensive care physician:** Primary care physicians who practice less than 44 days per year or who otherwise do not meet the criteria to be characterized as providing comprehensive primary care according to the algorithm developed at ICES (https://www.cmajopen.ca/content/5/4/E856).

**Individual-level Service Requirements:** Predicted number of visits to a primary care physician based on clinical and demographic profiles generated by the CIHI Population Grouping Methodology (https://www.cihi.ca/sites/default/files/document/infosheet_popgroupmethod_en_web_0.pdf).

**Neighbourhood-level Service Requirements**: Neighbourhood-level service requirements are a function of the number of visits to a primary care physician required by neighbourhood residents and by residents of other neighbourhoods in the City, adjusted for spatial patterns of utilization and population growth, along with the number of visits utilized by patients from outside the City of Toronto.

**Total Service Capacity:** Neighbourhood-level service capacity is a function of the estimated number of visits provided by comprehensive care physicians who are not expected to exit the workforce, plus the estimated number of visits provided by comprehensive care physicians who are considered to be at risk of retirement, plus the estimated number of visits provided by non-comprehensive care physicians.

**Physician Service Capacity:** Physician service capacity is estimated on an individual level (based on the total number of visits provided in 2017 (from IPDB)) with adjustment for age-based changes in workload (from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6516703/) and aggregated to the neighbourhood level.

**At-risk Service Capacity:** Visits associated with physicians whose age-based risk of retirement is at least 20%.

**Allied Health Provider:** Allied health providers include Chiropodists, Dieticians, Midwives, Nurse Practitioners, Optometrists, Occupational Therapists, Pharmacists, Psychologists, Physiotherapists, Registered Nurses, Registered Practical Nurses, Respiratory Therapists, and Speech-Language Pathologists.

**Primary Care Activities:** Activities relating directly to primary care include General Service Provision, Continuing Care, Comprehensive Primary Care, Chronic Disease Prevention and Management, Public Health, Mental Health and Addiction, Primary Maternity Care, Geriatric Care, Infectious Disease Prevention and Control, and Palliative Care.

**Average Weekly Hours Available:** The average weekly hours of direct professional services in activities identified as relating directly to primary care, estimated based on past hours worked. Note that this estimate represents normal hours of service that the workforce undertook, not "potential" or "extra" available hours. These are descriptive estimates, not projections, and may not represent future workforce service capacity.

**Sources of Data**

- **Population Health Profiles:** Ontario Community Health Profiles Partnership (OCHPP)
- **Ontario Marginalization Index:** OCHPP
- **Population Growth:** City of Toronto Planning Department
- **Unmet Need:** OCHPP
- **Spatial Patterns of Utilization:** Utilization Matrix generated using data from ICES through an AHRQ request
- **Service Requirements:** CIHI Population Grouping Methodology outputs provided by the Ontario Ministry of Health
- **Primary Care Workforce Profile & Service Capacity (Physicians):** ICES Physician Database (IPDB) accessed through OCHPP
- **Primary Care Workforce Profile & Service Capacity (Other Health Professionals):** Health Professions Database (HPDB) outputs provided by the Ontario Ministry of Health

**Assumptions**

Service requirements are estimated assuming a Medium population growth scenario and a 10-year horizon.

We assume linear residential development and population growth between the base year and the horizon year.

In our baseline scenario, we assume that new residents of a neighbourhood will have a similar profile and service requirements to those currently residing within the neighbourhood.

We adjust for population mobility using a snapshot of spatial patterns of utilization observed in FY 2017/18.

We assume that providers' age-based changes in workload and retirement probabilities will be consistent with those observed in comprehensive primary care physicians practicing in Ontario between 1992 and 2013 (from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6516703/).

**Limitations**

Neighbourhood geographies are not specifically designed for primary care health workforce planning.

Some neighbourhoods are split between subregions. In these cases, neighbourhoods have been assigned to a single subregion as follows:

| Neighbourhood Name (Number) | Split Between Sub-Regions | Assigned To |
|---|---|---|
| Kingsview Village-The Westway (6) | North Etobicoke Malton West Woodbridge & North York West | North Etobicoke Malton West Woodbridge |
| Willowridge-Martingrove-Richview (7) | North Etobicoke Malton West Woodbridge & North York West | North Etobicoke Malton West Woodbridge |
| Islington-City Centre West (14) | South Etobicoke & West Toronto | South Etobicoke |
| Victoria Village (43) | North York Central & East Toronto | East Toronto |
| Leaside-Bennington (56) | North Toronto & Mid-East Toronto | North Toronto |
| South Riverdale (70) | Mid-East Toronto & East Toronto | East Toronto |
| Waterfront Communities-The Island (77) | Mid-West Toronto & Mid-East Toronto | Mid-East Toronto |
| Yonge-St.Clair (97) | Mid-West Toronto & North Toronto | North Toronto |
| Clairlea-Birchmount (120) | East Toronto & Scarborough South | East Toronto |
| Birchcliffe-Cliffside (122) | East Toronto & Scarborough South | East Toronto |

Sub-Region boundaries do not equate to Ontario Health Team (OHT) boundaries, but are used as a proxy to show the approximate catchment area served by OHTs.

Unmet need is currently not accounted for in the estimate of Service Requirements. A process to define quantitative estimates of unmet need through engagement with local stakeholders is in development for operationalization during the next phase of planning.

Estimates of service capacity for physicians are in *visits*, while estimates of service capacity for allied health providers are in *hours per week*.

The information in the HPDB was provided on an "as-is" basis. The data were originally obtained by the Ministry of Health directly from health regulatory Colleges. The Ministry therefore cannot and does not warrant or represent that the information is accurate, complete, reliable or current.

Spatial patterns of utilization and the primary care workforce are not independent; there is an interaction and observed patterns can change over time. For more information about the neighbourhood- and sub-region-level spatial patterns of utilization methodology, results, and visualizations, please contact Ontario Health Toronto.

Due to the data lags associated with the use of administrative data for planning, the most recent year of data input into this planning exercise is for FY 2018/19 and trends that have since emerged are not reflected in our analysis.

Our workforce model projects forward current capacity available within the system and does not model the impact of entry of new health care providers into the workforce. The neighbourhood-level gaps between service capacity and service requirements illustrated in our outputs can be used to identify neighbourhoods where additional resources are required to meet primary care needs.

**Abbreviations**

ACSC – Ambulatory Care Sensitive Condition
AHRQ – Applied Health Research Question
CIHI – Canadian Institute for Health Information
COPD – Chronic Obstructive Pulmonary Disease
ED – Emergency Department
FY – Fiscal Year
OCHPP – Ontario Community Health Profiles Partnership
OHT – Ontario Health Teams
PEM – Patient Enrolment Model

**Contact**

For more Information, please contact:
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Healthanalytics@tc.lhins.on.ca

V1 May 2022