Geographic Variation in Primary Care Need, Service Use and Providers in Ontario, 2015/16

August 2018

Ontario

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About the Organizations Involved in this Report

The Institute for Clinical Evaluative Sciences

The Institute for Clinical Evaluative Sciences (ICES) is an independent, not-for-profit corporation that uses population-based health information to produce knowledge on a broad range of health care issues. ICES' unbiased evidence provides measures of health system performance, a clearer understanding of the shifting health care needs of Ontarians, and a stimulus for discussion of practical solutions to optimize scarce resources.

Key to ICES' work is its ability to link population-based health information, at the patient level, in a way that ensures the privacy and confidentiality of personal health information. Linked databases reflecting 13 million of 34 million Canadians allow researchers to follow patient populations through diagnosis and treatment, and to evaluate outcomes.

ICES receives core funding from the Ontario Ministry of Health and Long-Term Care. In addition, ICES scientists and staff compete for peer-reviewed grants from federal funding agencies, such as the Canadian Institutes of Health Research, and project-specific funds from provincial and national organizations. ICES knowledge is highly regarded in Canada and abroad, and is widely used by government, hospitals, planners, and practitioners to make decisions about health care delivery and to develop policy.

Toronto Central Local Health Integration Network

The Toronto Central LHIN has the highest concentration of health services in Ontario with more than 170 health service providers delivering 210 programs. The Toronto Central LHIN is responsible for planning, integrating and funding local health services that meet the needs of 1.3 million residents and thousands of other Ontarians who come to Toronto for care. We deliver high quality home and community care services, and coordinate access to primary care providers and community-based services to help people come home from hospital or live independently at home.

St. Michael's Hospital

St. Michael's Hospital provides compassionate care to all who enter its doors. The hospital also provides outstanding medical education to future health care professionals in more than 29 academic disciplines. Critical care and trauma, heart disease, neurosurgery, diabetes, cancer care, care of the homeless and global health are among the hospital's recognized areas of expertise. Through the Keenan Research Centre and the Li Ka Shing International Healthcare Education Centre, which make up the Li Ka Shing Knowledge Institute, research and education at St. Michael's Hospital are recognized and make an impact around the world. Founded in 1892, the hospital is fully affiliated with the University of Toronto.

Centre for Urban Health Solutions

The Centre for Urban Health Solutions (founded in 1998 as the Centre for Research on Inner City Health) is an interdisciplinary research centre within St. Michael's Hospital in Toronto. The Centre seeks to improve health in cities, especially for those experiencing marginalization, and to reduce barriers to accessing factors essential to health, such as appropriate health care and quality housing. The centre is committed to developing and implementing concrete responses within health care and social service systems and at the level of public policy.

Contents

List of Abbreviations

ACG	Johns Hopkins Adjusted Clinical Groups
ACSC	Ambulatory care–sensitive conditions
CAPE	Client Agency Program Enrolment
CHC	Community Health Centre
CIHI	Canadian Institute for Health Information
CPDB	Corporate Provider Database
DAD	Discharge Abstract Database
FHT	Family Health Team
GIS	Geographic information system
ICD-10	International Classification of Diseases, 10th Revision
ICES	Institute for Clinical Evaluative Sciences
IPDB	ICES Physician Database
IRCC	Immigration, Refugees and Citizenship Canada
LHIN	Local Health Integration Network
LIM-AT	Low income measure–after tax
LISA	Local Indicators of Spatial Association
MOHLTC	Ministry of Health and Long-Term Care
NACRS	National Ambulatory Care Reporting System
OCHPP	Ontario Community Health Profiles Partnership
OHIP	Ontario Health Insurance Plan
OMHRS	Ontario Mental Health Reporting System
OPHRDC	Ontario Physician Human Resource Data Centre
PEM	Primary care enrolment model
RAI-MH	Resident Assessment Instrument–Mental Health
RPDB	Registered Persons Database
SAMI	Standardized ACG Morbidity Index

Executive Summary

Ontario's 14 Local Health Integration Networks (LHINs) have new responsibilities with respect to primary care planning, and the province's 76 sub-regions are in place to help the LHINs fulfill these responsibilities. This report was produced to provide the LHINs and sub-regions with the information they need to support their expanded roles. Although sub-regions are smaller geographic areas than LHINs, they are still relatively large and can be heterogeneous (e.g., ethnic diversity, urban/rural mix). The median population of a sub-region is about 140,000, and each one typically has at least one acute care hospital and an average of 150 primary care practices. Some cities routinely report health and social data for smaller geographic areas, such as neighbourhoods. The city of Toronto has been doing so for its 140 neighbourhoods for more than two decades.

The majority of Toronto's neighbourhoods are within the Toronto Central LHIN, but portions of the city lie within four other LHINs (the Central West, Mississauga Halton, Central and Central East LHINs).

The analyses that inform this report were undertaken at the request of the Toronto Central LHIN. Data on primary care need, service use, providers and teams, cross-LHIN care and gaps in care were analyzed at the level of Ontario's sub-regions and Toronto's neighbourhoods.

Primary Care Need

- There is considerable variation in health care need across Ontario, with the highest areas of need located in northern Ontario and in major urban centres across the province. Within Toronto, the neighbourhoods with the highest primary care need correspond with areas known to have low levels of income and high immigration rates.

Primary Care Use

- Patient enrolment in primary care enrolment models is associated with more comprehensive care. Enrolment is lowest in northern Ontario and in Toronto.

- Health care use is highly variable across Ontario, especially for interprofessional care received in the

context of Family Heath Teams and Community Health Centres where more than ten-fold variation is seen across sub-regions. The highest availability of interprofessional care is found in rural areas and in smaller urban centres across Ontario, and the lowest availability is seen in the sub-regions surrounding Toronto. Within Toronto, eastern and northwestern neighbourhoods have the lowest availability of interprofessional care.

- Avoidable hospital admissions for ambulatory care–sensitive conditions and emergency department visits are highest in rural areas, which is consistent with known patterns. The number of visits to specialist physicians per 1,000 population is highest in major urban centres and in high-income areas in Toronto.

Primary Care Providers and Teams

- The number of primary care physicians per 10,000 population is highest in major urban centres, but these estimates do not account for care provided to non-resident populations (i.e., cross-LHIN care). The northern part of the North East LHIN also has a high proportion of primary care physicians per 10,000 population, but available counts of the resident population and of physicians in that region may not be accurate.

- About one-third of primary care physicians across the province are not providing comprehensive primary care.

Cross-LHIN Care

- LHINs in the Greater Toronto Area (GTA) have substantial proportions of patients receiving cross-LHIN primary care; this includes both outflows of patients from their LHIN of residence in the GTA to care providers in other LHINs and inflows of patients from other LHINS to care providers in the GTA.

Gaps in Care

- Sub-regions with both low income levels and low numbers of primary care physicians per 10,000 population are in the largely rural areas of northeastern, southeastern and southwestern Ontario. In Toronto, these areas are found in low-income neighbourhoods outside the downtown core.

- Sub-regions in and around Toronto are areas with both low income and high primary care need, and also with low numbers of primary care physicians per 10,000 population and high primary care need. In Toronto, these areas of concern are found mainly in eastern and northwestern neighbourhoods.

The findings presented in this report have many key implications. There is high variability in primary care need across both Ontario and Toronto, with frequent mismatches between primary care need and availability of primary care providers and teams. Variability in access to interprofessional care is especially high, with more than a ten-fold variation across sub-regions and a six-fold variation across Toronto neighbourhoods. The degree of access to interprofessional care across sub-regions and neighbourhoods is related to the need for primary care in those areas—for Community Health Centres but not for Family Health Teams. Several initiatives are now underway to establish new primary care teams and satellites and new primary care models through which existing teams can support patient needs for community-based care. There are also gaps between the need for primary care and the availability of primary care providers, which are greatest in northern Ontario and in the GTA. Within Toronto, these gaps are largest in the eastern and northwestern parts of the city.

Health human resources planning in primary care often relies on counts of physicians per population. These counts could be misleading unless they take into account physician roles, as a substantial proportion of primary care physicians are not providing comprehensive primary care. The substantial flow of primary care patients across LHIN boundaries in the GTA also needs to be taken into account.

It is hoped that the information in this report will help LHINs and sub-regions with primary care planning, especially as they develop and implement strategies to provide services to those most in need.

Introduction

In recent years, increased attention has been focused on primary care as a key strategy for health systems to achieve the Triple Aim of improving population health and patient experience at a reasonable cost.[1,2] Primary care reforms in Ontario over the past 15 years have included formal patient enrolment, blended capitation (which has become the most common physician payment model) and the implementation of interprofessional teams. Many of these changes were voluntary and subject to self-selection by physicians and groups, and resulted in an uneven distribution of payment models and teams across Ontario.[3]

A more recent development has been the creation of 76 geographically defined sub-regions within Ontario's 14 Local Health Integration Networks (LHINs).[4] The LHINs have assumed responsibility for primary care planning and greater integration of primary care and public health. These changes have created a new imperative for LHINs and sub-regions: to understand primary care services and capacity in local areas and the degree to which they address population health needs. Even at the sub-region level, the large number and diverse roles of primary care providers, as well as variation in population health care needs, make planning challenging. Primary care providers include Family Health Teams, Community Health Centres, Nurse Practitioner–Led Clinics and Aboriginal Healing and Wellness Centres, as well as family physicians and general practitioners (most of whom are organized into a variety of primary care enrolment models).

Population health care needs vary according to geographic location, demographic factors (e.g., age and sex), health status (e.g., multimorbidity) and social determinants of health (e.g., socioeconomic status, immigration, languages spoken). The geographic distribution of comprehensive primary care physicians in Ontario and their participation in different primary care enrolment models was the focus of a 2017 report, published by the Institute for Clinical Evaluative Sciences, that used many of the same data sources as the current report.[5]

In late 2016, the Toronto Central LHIN requested analyses of primary care access, attachment, continuity and mental health and of interprofessional teams. This report provides a comprehensive overview of those analyses. The results are organized into five main sections:

1. **Primary care need**
2. **Primary care service use**
3. **Primary care providers and teams**
4. **Cross-LHIN care**
5. **Gaps in care**

Data are presented at the level of Ontario's 76 LHIN sub-regions[6] and Toronto's 140 neighbourhoods.[7] Using these geographic analyses provides a valuable approach for understanding access to care. However, additional information is needed in order to better understand and meet population health needs. For example, data on languages spoken, hours of operation, status of accepting new patients, waiting lists, accommodation of people with disabilities, cultural safety, population growth, provider roles, and the availability and integration of services in other sectors would provide essential information to further inform planning, implementing and evaluating improvement initiatives.

This report was produced to provide Ontario's 14 LHINs and 76 sub-regions with the information they need to support their expanded roles in primary care planning, especially as they develop and implement strategies to provide services to those most in need.

Data Sources and Methods

Data Sources

A number of data sources, all held at ICES, were used to prepare this report.

- **Census of Canada (2016)** from Statistics Canada is a reliable source of data on population and dwelling counts, as well as demographic and socioeconomic characteristics.[8]
- **Client Agency Program Enrolment (CAPE)** tables identify patients enrolled in different primary care enrolment models over time. A separate file provided by the Ontario Ministry of Health and Long-Term Care identifies physicians that are part of a Family Health Team (FHT).
- **Community Health Centre (CHC)** data are extracted from the electronic records of all patient-level encounters with physicians and nurse practitioners in Ontario CHCs. These data are sent to ICES annually.
- **Corporate Provider Database (CPDB)** includes physician birth date, gender, school of graduation, year of graduation, reported specialties and postal code of practice. The CPDB library also includes FHT data.
- **Discharge Abstract Database (CIHI-DAD)**, compiled by the Canadian Institute for Health Information (CIHI), includes data on hospital admissions, procedures and transfers, and identifies the most responsible diagnosis for length of stay, secondary diagnosis codes, comorbidities present upon admission, complications occurring during hospital stays and attending physician identifiers.
- **ICES Physician Database (IPDB)** contains information about physicians practicing in Ontario. It is created and maintained by ICES using data from several sources including: Ontario Physician Human Resources Data Centre, CPDB and Ontario Health Insurance Plan. The IPDB includes demographic information about each

physician (e.g., age, sex), practice location, physician specialty, services provided, location of physician training and year of graduation.

- **Immigration, Refugees and Citizenship Canada (IRCC)**, formerly Citizenship and Immigration Canada, provides data on permanent and temporary residents, as well as immigration and citizenship programs.
- **National Ambulatory Care Reporting System (NACRS)**, maintained by CIHI, contains data for all hospital- and community-based ambulatory care, such as day surgery, outpatient clinics and emergency department visits.
- **Ontario Health Insurance Plan (OHIP)** for physician billings includes diagnostic codes and procedures, location of visits and out-of-hospital laboratory tests.
- **Ontario Mental Health Reporting System (OMHRS)** collects data on patients in adult-designated inpatient mental health beds that are in general, provincial psychiatric or specialty psychiatric facilities. The Resident Assessment Instrument–Mental Health (RAI–MH) is used to collect OMHRS data.
- **Registered Persons Database (RPDB)** includes the resident population of Ontario eligible for health coverage—by age, sex and residential address. Residents are eligible for health coverage if they are Canadian citizens, landed immigrants or convention refugees, make their permanent and principal home in Ontario, and are physically present in Ontario 153 days in any 12-month period.

Methods

Geographic Levels of Analysis

There were four geographic levels of analysis used in this report.

- **14 Local Health Integration Networks (LHINs) in Ontario:** LHINs are the health authorities responsible for regional administration of public health care services in the province.
- **76 LHIN sub-regions in Ontario:** The sub-regions are smaller geographic planning units within each LHIN that were adopted to help LHINs better understand and address patient needs at a local level.
- **140 neighbourhoods in Toronto:** Neighbourhoods were defined using Statistics Canada census tracts to develop meaningful geographic areas for planning and service delivery. The population of each neighbourhood is at least 7,000 to 10,000.
- **Toronto Central LHIN:** The Toronto Central LHIN is responsible for planning, funding and integrating local health services that meet the needs of 1.2 million residents and tens of thousands of others who travel to Toronto for care.

Measures and Analyses

This report focuses on five categories of measures: primary care need, primary care service use, primary care providers and teams, cross-LHIN care and gaps in care. Key to the analyses of these measures was the ability to link provincial, population-based health information at the individual level with administrative data on physicians, practice locations and primary care enrolment models. Ontario's administrative health databases were linked using unique, encoded identifiers and analyzed at ICES. (See **Appendix B** for a detailed description of the study measures and analyses.)

Cohort

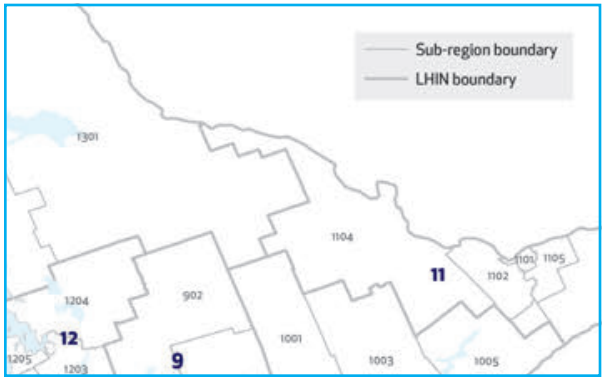
Measures of low income, disability and living alone were derived from the 2016 Census of Canada. For all other measures of primary care need and service use, the study population was derived from the RPDB, and included all residents of Ontario who had a valid health card number and were alive on March 31, 2016. Individuals were excluded if they were older than 105 years on March 31, 2016, had no contact with the health care system within the eight years prior to March 31, 2016, or lived in long-term care or complex continuing care facilities at any time between April 1, 2015, and March 31, 2016.

Time Frame

The study period for most measures was from April 1, 2015, to March 31, 2016. The number of visits to primary care physicians, continuity of care to physicians and cross-LHIN care were measured from April 1, 2014, to March 31, 2016. Numbers and distribution of Family Health Teams (FHTs) and their patients, and Community Health Centres and their clients, were measured as of March 31, 2016. New enrolment in primary care enrolment models was based on data from five years prior to 2015/16. Recent immigration status was based on data from ten years prior to 2012. Measures from the 2016 Census of Canada (e.g., low income prevalence, living alone) were based on information from the 2015 calendar year.

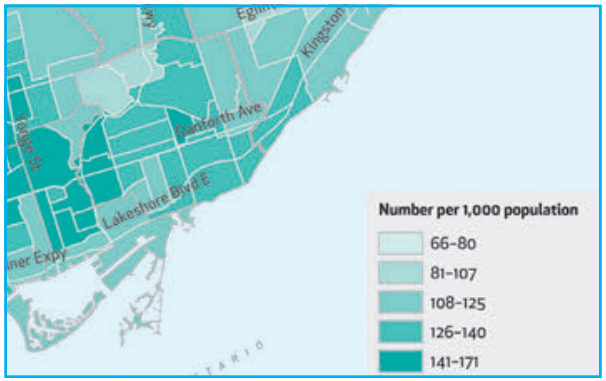
Map Types

1. Reference



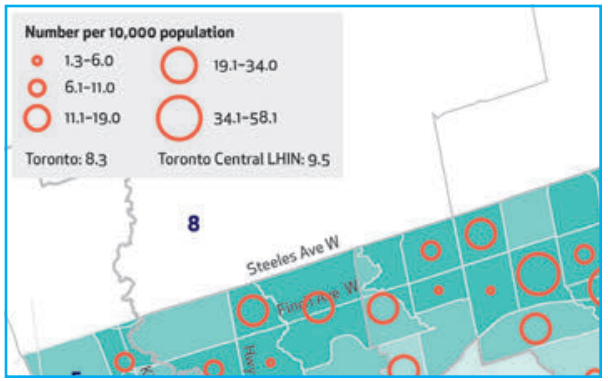
Reference maps provide location and boundaries for sub-regions across Ontario and neighbourhoods in Toronto. They do not depict quantitative values.

2. Choropleth



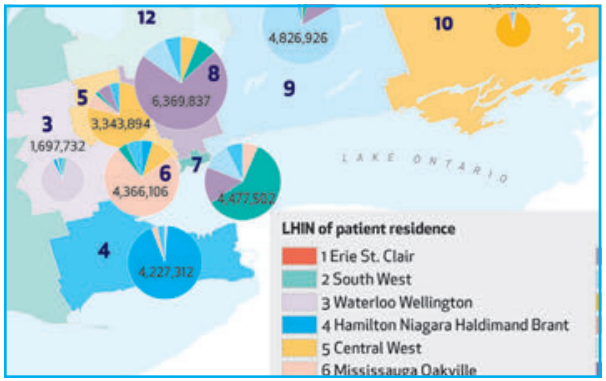
Choropleth maps are used to depict rate and ratio indicators. Numerators and denominators are summed to area units, such as sub-regions or neighbourhoods, and combined into rate or ratio values. The values are then sorted and divided into classes, which are shown on the map using unique shades of color. Darker shades typically indicate a higher rate or ratio for a given indicator. Although shades appear to change abruptly across geographical boundaries, the actual values may change gradually across these boundaries.

3. Proportional symbol



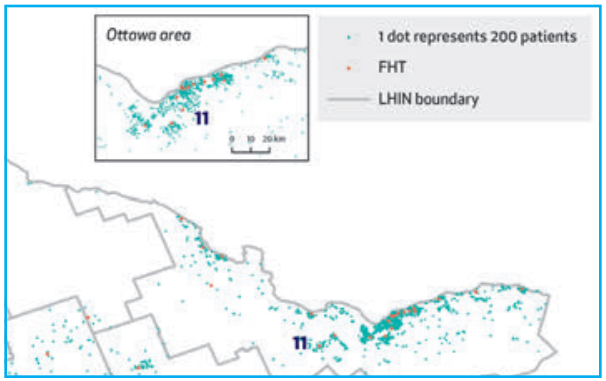
Proportional symbol maps are used to depict either count, rate or ratio indicators. Values of the depicted variable are summed into geographic units, such as sub-regions or neighbourhoods, and then sorted and divided into classes. The classes are represented on the map by circles or other graphic symbols. Larger circles represent higher values of a given indicator.

4. Pie chart



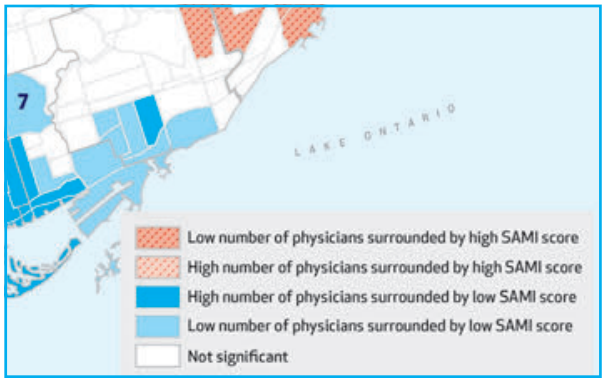
Pie chart maps are a special variation of proportional symbol maps. As with proportional symbol maps, the size of the circle, or pie, is proportional to the value of the variable (e.g., number of primary care visits in a given LHIN). In addition, the pie is subdivided into slices whose relative size depicts the proportion of a sub-category of the main variable (i.e., the proportion of those primary care visits in a given LHIN that were made by residents of other LHINs).

5. Dot density



Dot density maps are used to depict counts of frequency-type variables. One dot usually represents a specified number of the variable (e.g., 200 patients). The counts are summed into geographic areas and placed randomly within the boundaries of those areas, such that they do not indicate exact locations of the patients they represent. In order to increase the spatial proximity of the dots to the regions where they should occur, the counts are summed and displayed within the smallest possible statistical unit (i.e., census dissemination area). The boundaries of these dissemination areas are not shown on the map.

6. Spatial correlation



Spatial correlation maps use the bivariate Local Indicators of Spatial Association (LISA) method[9] to identify clusters of high or low values of one variable (i.e., variable A) in a given area that are surrounded by high or low values of another variable (i.e., variable B). There are four clusters presented in each map: high rates of variable A (e.g., number of primary care physicians) surrounded by high rates of variable B (e.g., primary care need), low rates of variable A surrounded by low rates of variable B, low rates of variable A surrounded by high rates of variable B, and high rates of variable A surrounded by low rates of variable B. Each cluster is checked for statistical significance at the level of $p \leq 0.05$ using a reference distribution of variable B that is based on a large number of random permutations of that variable. Non-significant outcomes are shown on the maps as white spaces. This type of analysis is very helpful for health and social planning.

List of Exhibits

REFERENCE MAPS

PRIMARY CARE NEED

Ontario

Toronto

PRIMARY CARE SERVICE USE

Ontario

EXHIBIT 40 Number of emergency department (ED) visits per 1,000 population, by sub-region, in Ontario, 2015/16

EXHIBIT 41 Number of visits to specialist physicians per 1,000 population, by sub-region, in Ontario, 2015/16

Toronto

EXHIBIT 42 Mean annual number of visits to primary care physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

EXHIBIT 43 Percentage of the population with at least three primary care visits who had low continuity to any primary care physician, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

EXHIBIT 44 Percentage of the population with at least three primary care visits who had low continuity to their own primary care physician, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

EXHIBIT 45 Percentage of the population with at least three primary care visits who had low continuity to a physician in a primary care enrolment model (PEM), by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

EXHIBIT 46 Number of people newly enrolled in a primary care enrolment model (PEM) in the previous five years per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 47 Number of after-hours visits to primary care physicians, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 48 Number of after-hours visits to primary care physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 49 Percentage of visits to primary care physicians that were after-hours visits, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 50 Number of avoidable hospitalizations for ambulatory care–sensitive conditions (ACSCs) per 100,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 51 Number of emergency department (ED) visits per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

EXHIBIT 52 Number of visits to specialist physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

PRIMARY CARE PROVIDERS AND TEAMS

Ontario

EXHIBIT 53 Number of primary care physicians per 10,000 population, by sub-region, in Ontario, 2015/16

EXHIBIT 54 Number of comprehensive primary care physicians per 10,000 population, by sub-region, in Ontario, 2015/16

EXHIBIT 55 Percentage of primary care physicians who were comprehensive primary care physicians, by sub-region, in Ontario, 2015/16

EXHIBIT 56 Percentage of comprehensive primary care physicians who were aged 65 and older, by sub-region, in Ontario, 2015/16

EXHIBIT 57 Distribution of Family Health Teams (FHTs) and their patients, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

EXHIBIT 58 Distribution of Family Health Teams (FHTs) and number of FHT patients per 1,000 population, by sub-region, in Ontario, March 31, 2016

Toronto

CROSS-LHIN CARE

EXHIBIT 77 Mean annual proportion of primary care visits made by residents of a given Local Health Integration Network (LHIN) that were in their LHIN of residence or in other LHINs (includes outflow of primary care visits to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

EXHIBIT 78 Proportion of Family Health Team (FHT) patients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of FHT patients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

EXHIBIT 79 Proportion of Family Health Team (FHT) patients who visited an FHT in their Local Health Integration Network (LHIN) of residence or in other LHINs (includes outflow of FHT patients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

EXHIBIT 80 Proportion of Community Health Centre (CHC) clients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of CHC clients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

EXHIBIT 81 Proportion of Community Health Centre (CHC) clients who visited a CHC in their Local Health Integration Network (LHIN) of residence or in other LHINs (includes outflow of CHC clients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

GAPS IN CARE

Ontario

EXHIBIT 82 Prevalence of low income (%LIM-AT) in 2016 and number of comprehensive primary care physicians per 10,000 population in 2015/16, by sub-region, in Ontario

EXHIBIT 83 Spatial relationship between prevalence of low income (%LIM-AT) in 2016 and primary care need (SAMI score) in 2015/16, by sub-region, in Ontario

EXHIBIT 84 Spatial relationship between number of comprehensive primary care physicians per 10,000 population and primary care need (SAMI score), by sub-region, in Ontario, 2015/16

EXHIBIT 85 Spatial relationship between number of people diagnosed with a mental health (MH) disorder and number who had access to a MH worker, both per 1,000 population, by sub-region, in Ontario, 2015/16

Toronto

EXHIBIT 86 Prevalence of low income (%LIM-AT) in 2016 and number of comprehensive primary care physicians per 10,000 population in 2015/16, by neighbourhood, in Toronto, Ontario

EXHIBIT 87 Spatial relationship between prevalence of income (%LIM-AT) in 2016 and primary care need (SAMI score) in 2015/16, by neighbourhood, in Toronto, Ontario

EXHIBIT 88 Spatial relationship between number of comprehensive primary care physicians per 10,000 population and primary care need (SAMI score), by neighbourhood, in Toronto, Ontario, 2015/16

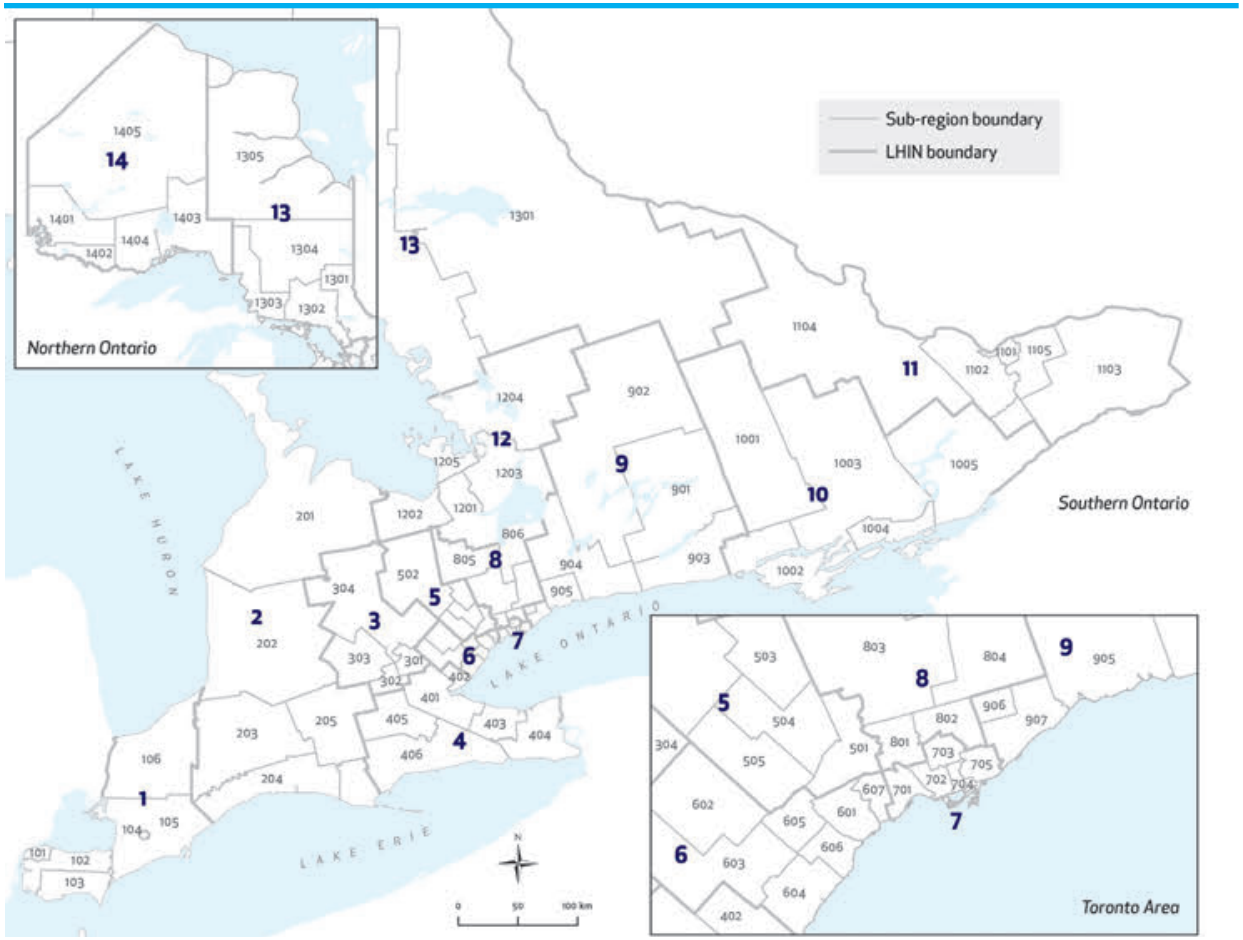
EXHIBIT 89 Spatial relationship between number of people diagnosed with a mental health (MH) disorder and number who had access to a MH worker, both per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Results

Results, including data tables and maps, are also available on the Ontario Community Health Profiles Partnership website at **http://www.ontariohealthprofiles.ca**

Reference Maps

EXHIBIT 1 Local Health Integration Network (LHIN) sub-regions in Ontario, 2016



LHIN	Sub-region	
1 Erie St. Clair	101	Windsor
	102	Tecumseh Lakeshore Amherstburg LaSalle
	103	Essex South Shore
	104	Chatham City Centre
	105	Rural Kent
	106	Lambton
2 South West	201	Grey Bruce
	202	Huron Perth
	203	London Middlesex
	204	Elgin
	205	Oxford
3 Waterloo Wellington	301	Guelph-Puslinch
	302	Cambridge-North Dumfries
	303	Kitchener-Waterloo-Wellesley-Wilmot-Woolwich
	304	Wellington
4 Hamilton Niagara Haldimand Brant	401	Hamilton
	402	Burlington
	403	Niagara North West
	404	Niagara
	405	Brant
	406	Haldimand Norfolk

Source: Ontario Ministry of Health and Long-Term Care

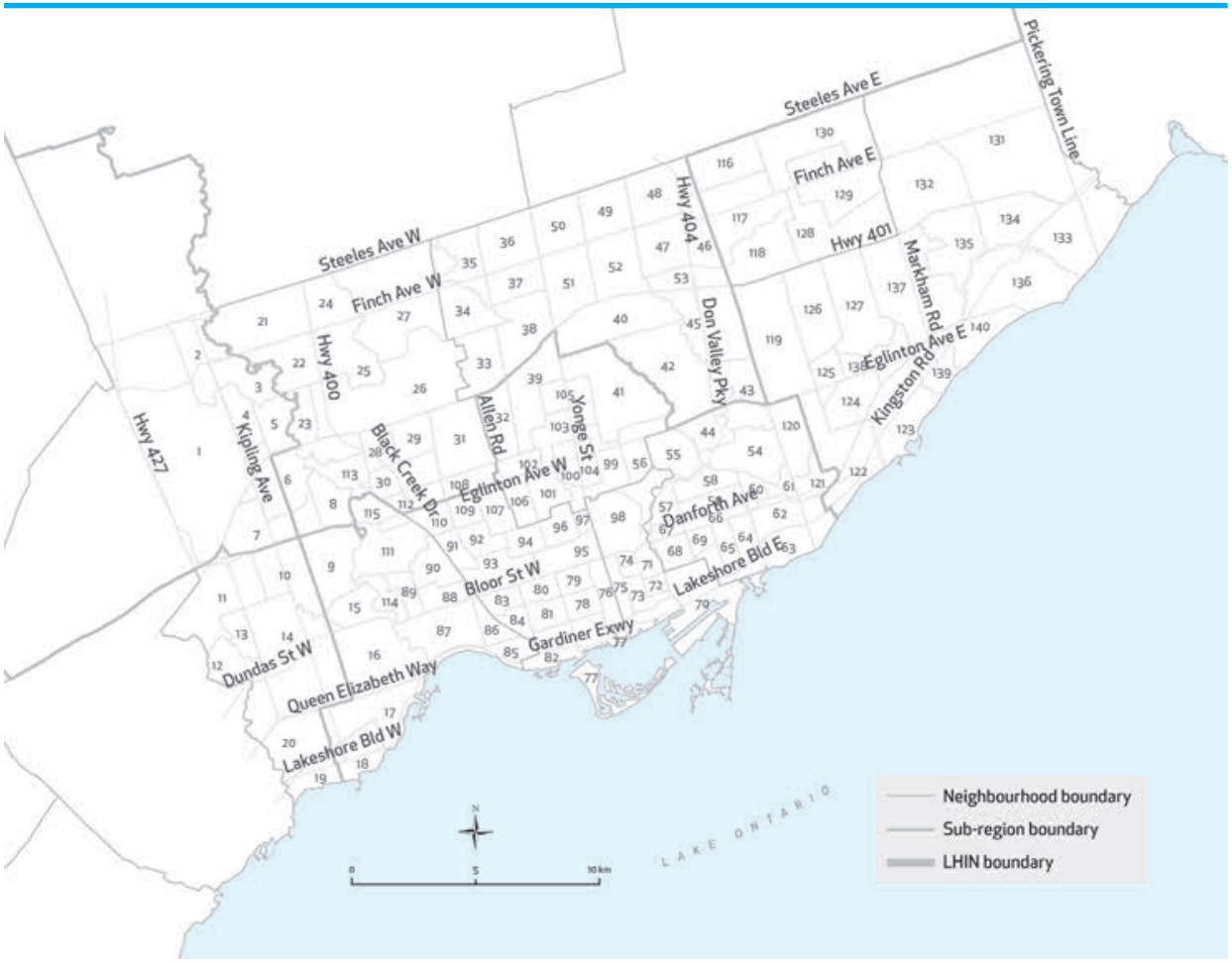
EXHIBIT 1 Continued

LHIN	Sub-region	
5 Central West	501	North Etobicoke Malton West Woodbridge
	502	Dufferin
	503	Bolton-Caledon
	504	Bramalea
	505	Brampton
6 Mississauga Halton	601	East Mississauga
	602	Halton Hills
	603	Milton
	604	Oakville
	605	North West Mississauga
	606	South West Mississauga
	607	South Etobicoke
7 Toronto Central	701	West Toronto
	702	Mid-West Toronto
	703	North Toronto
	704	Mid-East Toronto
	705	East Toronto
8 Central	801	North York West
	802	North York Central
	803	Western York Region
	804	Eastern York Region
	805	South Simcoe
	806	Northern York Region

LHIN	Sub-region	
9 Central East	901	Peterborough City and County
	902	Haliburton County and City of Kawartha Lakes
	903	Northumberland County
	904	Durham North East
	905	Durham West
	906	Scarborough North
	907	Scarborough South
10 South East	1001	Rural Hastings
	1002	Quinte
	1003	Rural Frontenac, Lennox & Addington
	1004	Kingston
	1005	Leeds, Lanark & Granville
11 Champlain	1101	Central Ottawa
	1102	Western Ottawa
	1103	Eastern Champlain
	1104	Western Champlain
	1105	Eastern Ottawa
12 North Simcoe Muskoka	1201	Barrie and Area
	1202	South Georgian Bay
	1203	Couchiching
	1204	Muskoka
	1205	North Simcoe

LHIN	Sub-region	
13 North East	1301	Nipissing-Temiskaming
	1302	Sudbury-Manitoulin-Parry Sound
	1303	Algoma
	1304	Cochrane
	1305	James and Hudson Bay Coasts
14 North West	1401	District of Kenora
	1402	District of Rainy River
	1403	District of Thunder Bay
	1404	City of Thunder Bay
	1405	Northern

EXHIBIT 2 Neighbourhoods in Toronto, Ontario, 2016



Source: City of Toronto

	Neighbourhood
1	West Humber-Clairville
2	Mount Olive-Silverstone-Jamestown
3	Thistletown-Beaumond Heights
4	Rexdale-Kipling
5	Elms-Old Rexdale
6	Kingsview Village-The Westway
7	Willowridge-Martingrove-Richview
8	Humber Heights-Westmount
9	Edenbridge-Humber Valley
10	Princess-Rosethorn
11	Eringate-Centennial-West Deane
12	Markland Wood
13	Etobicoke West Mall
14	Islington-City Centre West
15	Kingsway South
16	Stonegate-Queensway
17	Mimico (includes Humber Bay Shores)
18	New Toronto
19	Long Branch
20	Alderwood
21	Humber Summit
22	Humbermede
23	Pelmo Park-Humberlea
24	Black Creek
25	Glenfield-Jane Heights
26	Downsview-Roding-CFB
27	York University Heights
28	Rustic

EXHIBIT 2 Continued

	Neighbourhood
29	Maple Leaf
30	Brookhaven-Amesbury
31	Yorkdale-Glen Park
32	Englemount-Lawrence
33	Clanton Park
34	Bathurst Manor
35	Westminster-Branson
36	Newtonbrook West
37	Willowdale West
38	Lansing-Westgate
39	Bedford Park-Nortown
40	St. Andrew-Windfields
41	Bridle Path-Sunnybrook-York Mills
42	Banbury-Don Mills
43	Victoria Village
44	Flemingdon Park
45	Parkwoods Donalda
46	Pleasant View
47	Don Valley Village
48	Hillcrest Village
49	Bayview Woods-Steeles
50	Newtonbrook East
51	Willowdale East
52	Bayview Village
53	Henry Farm
54	O'Connor-Parkview
55	Thorncliffe Park
56	Leaside Bennington

	Neighbourhood
57	Broadview North
58	Old East York
59	Danforth-East York
60	Woodbine-Lumsden
61	Taylor-Massey
62	East End-Danforth
63	The Beaches
64	Woodbine Corridor
65	Greenwood-Coxwell
66	Danforth
67	Playter Estates-Danforth
68	North Riverdale
69	Blake-Jones
70	South Riverdale
71	Cabbagetown-South St. James Town
72	Regent Park
73	Moss Park
74	North St. James Town
75	Church-Yonge Corridor
76	Bay Street Corridor
77	Waterfront Communities-The Island
78	Kensington-Chinatown
79	University
80	Palmerston-Little Italy
81	Trinity-Bellwoods
82	Niagara
83	Dufferin Grove
84	Little Portugal

	Neighbourhood
85	South Parkdale
86	Roncesvalles
87	High Park-Swansea
88	High Park North
89	Runnymede-Bloor West Village
90	Junction Area
91	Weston-Pellam Park
92	Corso Italia-Davenport
93	Dovercourt-Wallace Emerson-Junction
94	Wychwood
95	Annex
96	Casa Loma
97	Yonge-St. Clair
98	Rosedale-Moore Park
99	Mount Pleasant East
100	Yonge-Eglinton
101	Forest Hill South
102	Forest Hill North
103	Lawrence Park South
104	Mount Pleasant West
105	Lawrence Park North
106	Humewood-Cedarvale
107	Oakwood Village
108	Briar Hill-Belgravia
109	Caledonia-Fairbank
110	Keelesdale-Eglinton West
111	Rockcliffe-Smythe
112	Beechborough-Greenbrook

	Neighbourhood
113	Weston
114	Lambton Baby Point
115	Mount Dennis
116	Steeles
117	L'Amoreaux
118	Tam O'Shanter-Sullivan
119	Wexford-Maryvale
120	Clairlea-Birchmount
121	Oakridge
122	Birchcliffe-Cliffside
123	Cliffcrest
124	Kennedy Park
125	Ionview
126	Dorset Park
127	Bendale
128	Agincourt South-Malvern West
129	Agincourt North
130	Milliken
131	Rouge
132	Malvern
133	Centennial Scarborough
134	Highland Creek
135	Morningside
136	West Hill
137	Woburn
138	Eglinton East
139	Scarborough Village
140	Guildwood

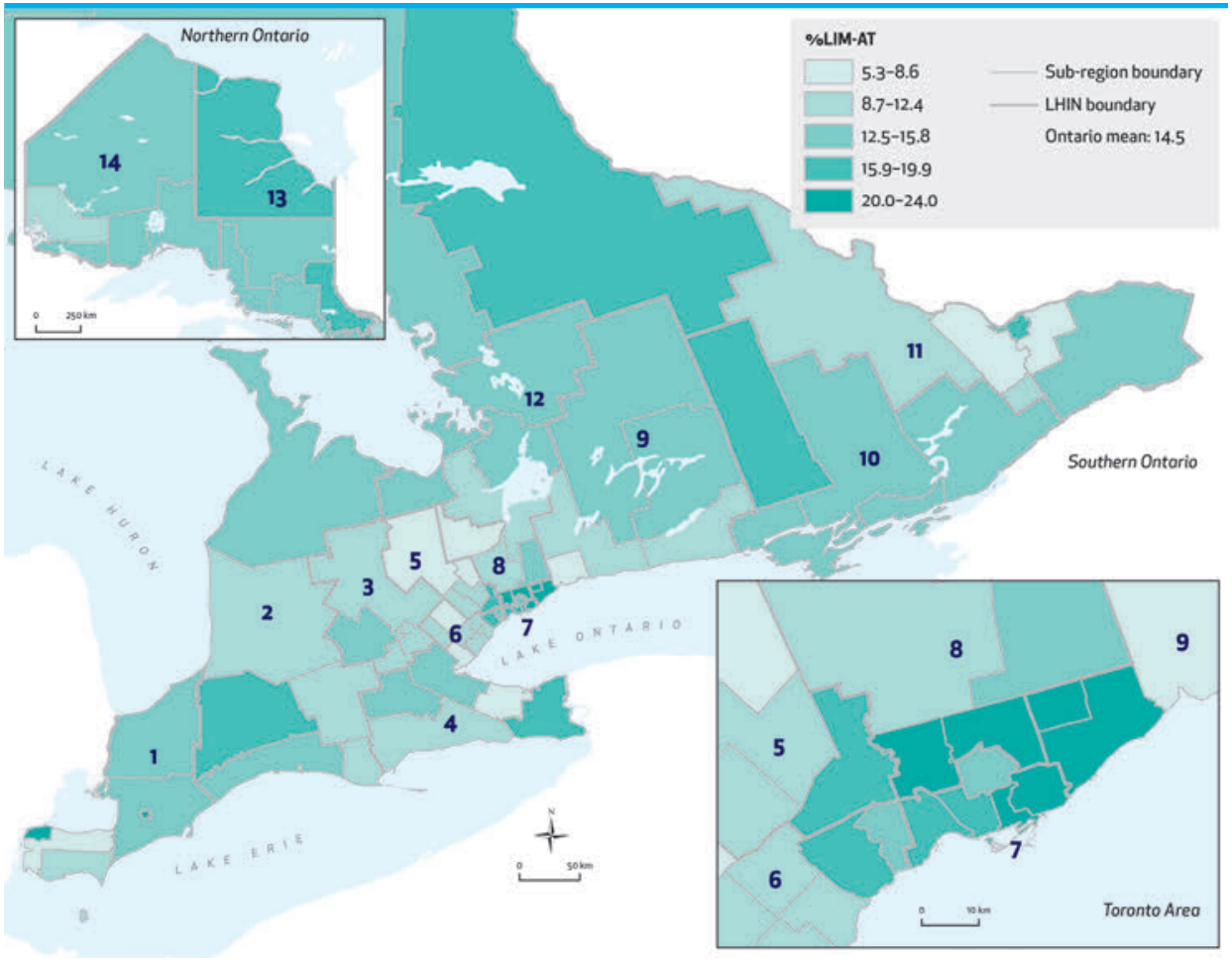
Primary Care Need

Ontario

EXHIBIT 3 Prevalence of low income (%LIM-AT),* by sub-region, in Ontario, 2016

Key Message

- Sub-regions with the lowest income were in the Greater Toronto Area, including the Mid-East Toronto, East Toronto, North York Central, North York West, Scarborough North and Scarborough South sub-regions.

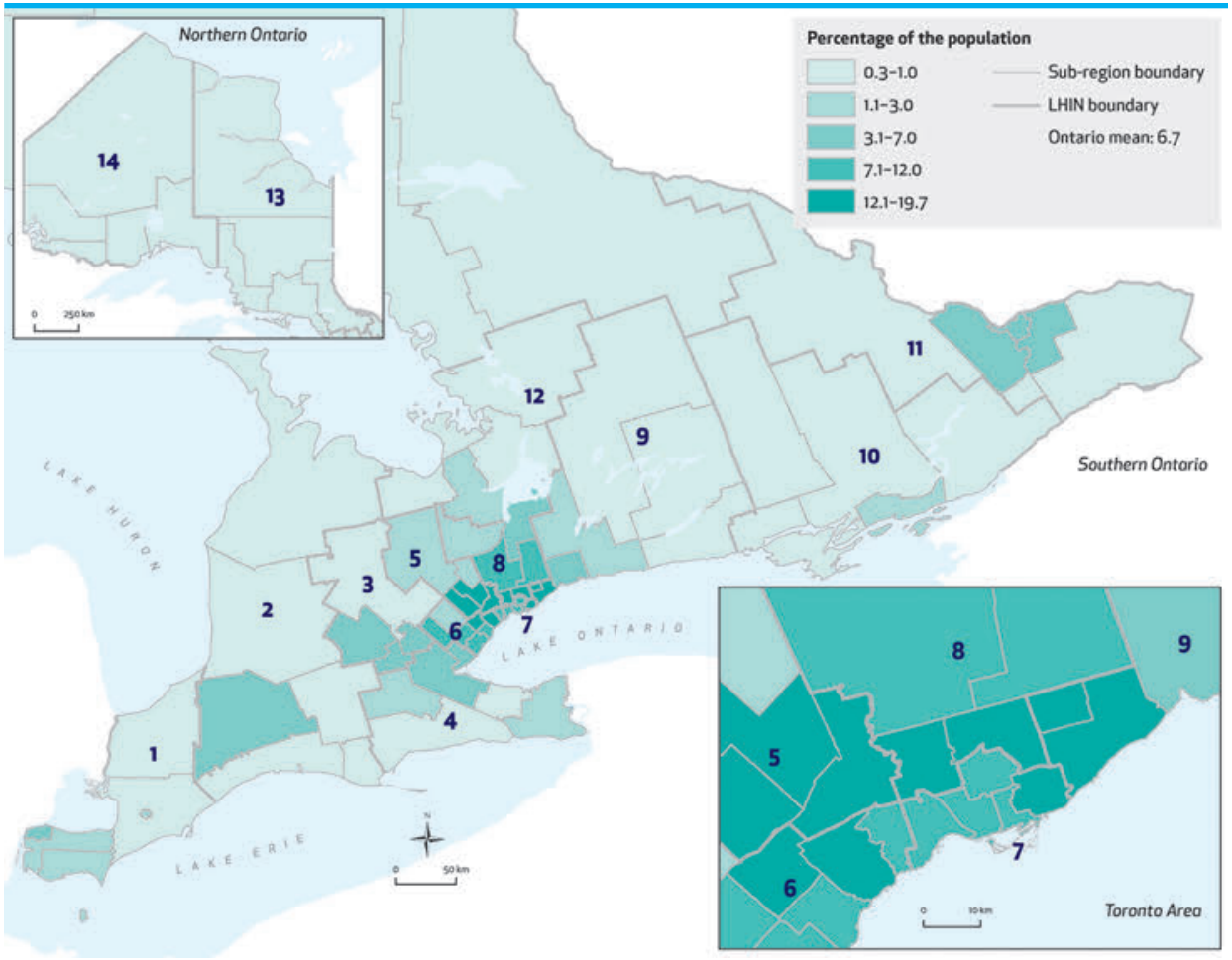


Data source: 2016 Census of Canada.
*Low socioeconomic status is strongly related to poor health. The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.

EXHIBIT 4 Percentage of the population who immigrated to Canada in the previous 10 years, by sub-region, in Ontario, 2012

Key Message

- Sub-regions with the highest percentage of recent immigrants were in the Greater Toronto Area, as well as in Hamilton, London Middlesex, Windsor and Ottawa.

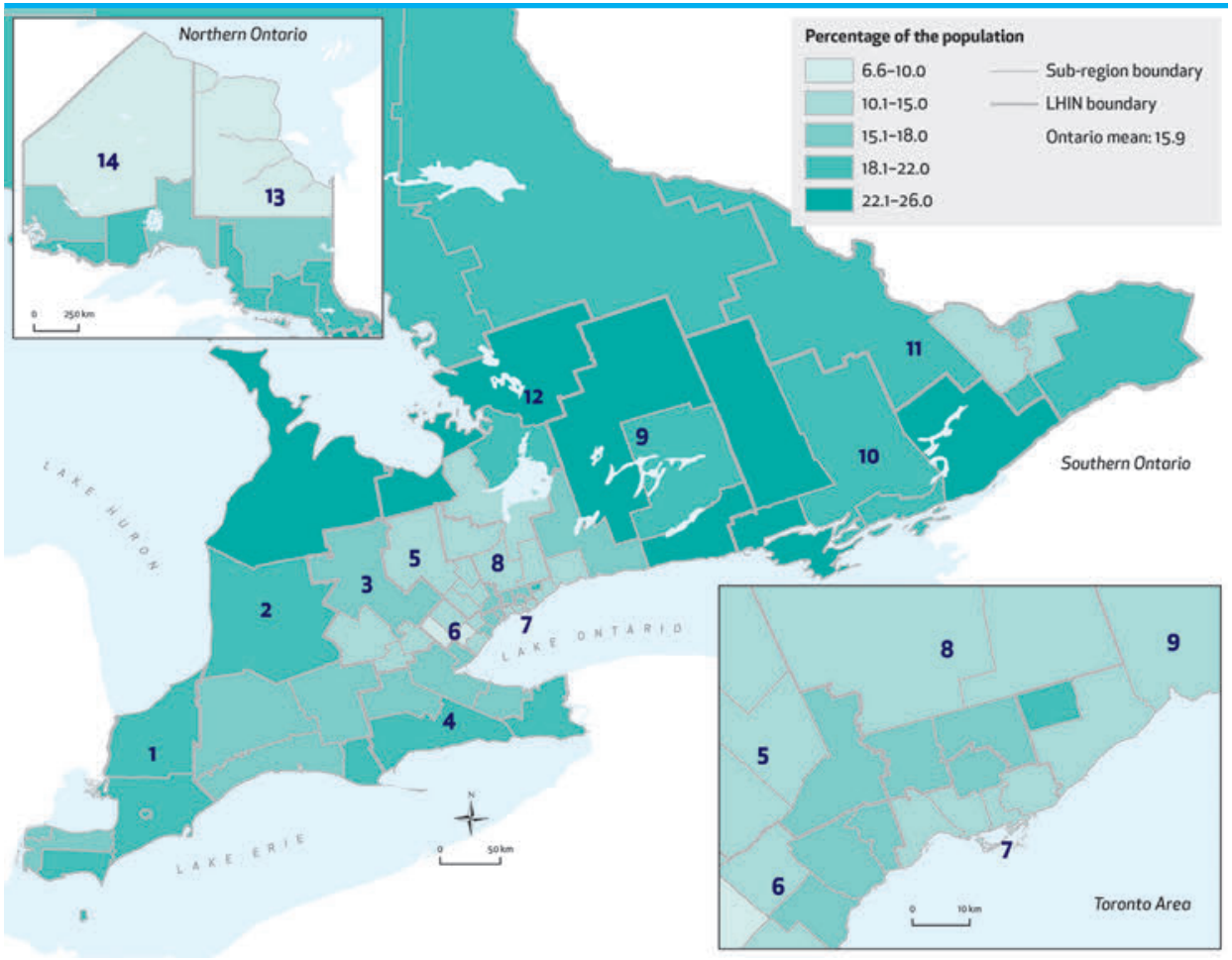


Data sources: IRCC, RPDB.
Note: Recent immigrants are highly heterogeneous and include some who are healthier than those who are Canadian-born (the healthy immigrant effect),[10] and others who face serious health challenges. Recent immigrants commonly experience more difficult navigation within the health care system and a lower standard of living, which may in themselves lead to adverse health outcomes over time.

EXHIBIT 5 Percentage of the population aged 65 and older, by sub-region, in Ontario, 2016

Key Messages

- Sub-regions with the highest percentage of people aged 65 and older were in the rural areas of the South West, Central, Central East, South East and North Simcoe Muskoka LHINs.
- Sub-regions with the lowest percentage of people aged 65 and older were in the urban areas of southern Ontario, including those in the Greater Toronto Area, Ottawa, London and Windsor, and in the two northern sub-regions of the North East and North West LHINs.

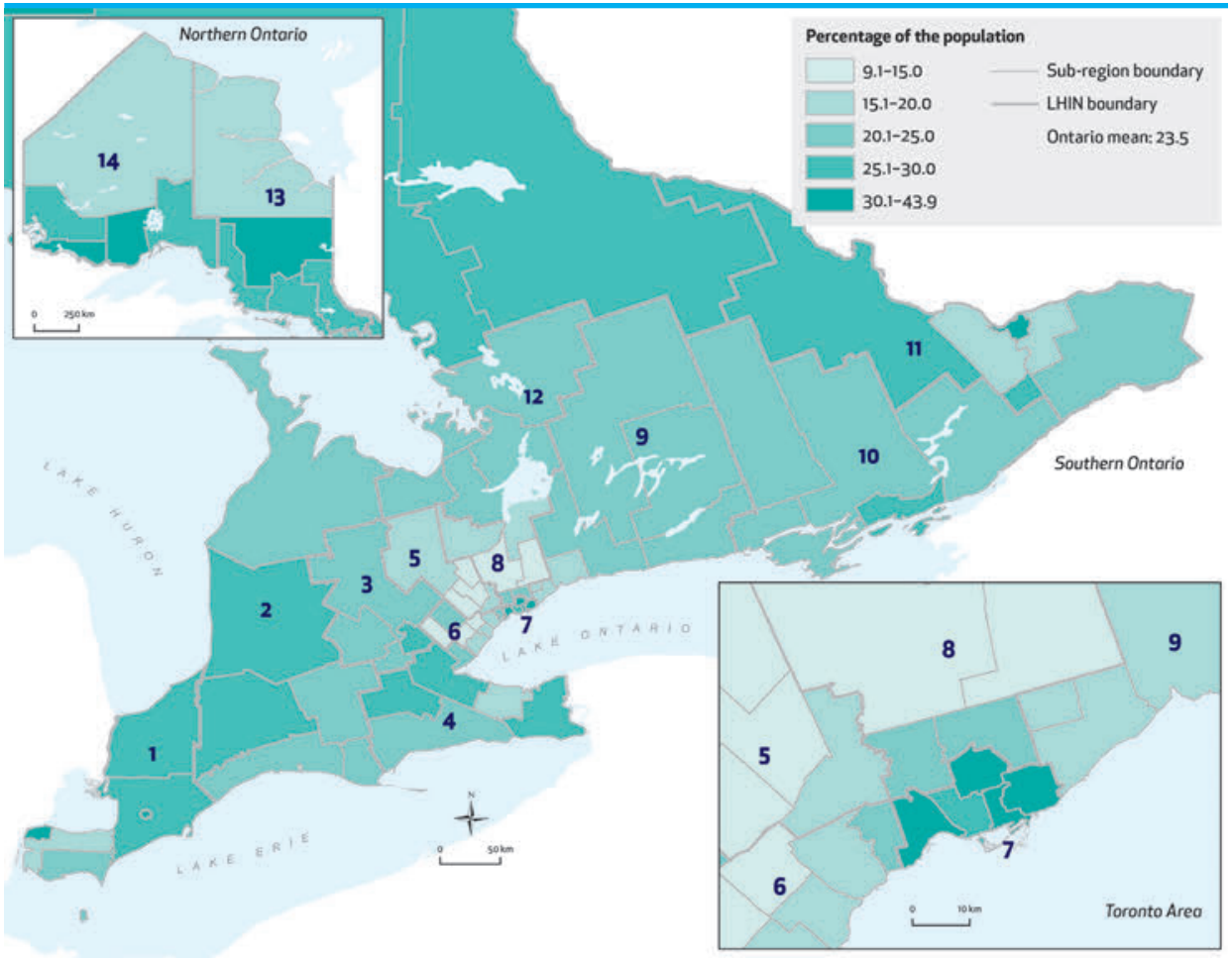


Data source: 2016 Census of Canada.
Note: A high percentage of seniors living in a given area may be related to increased health care needs and service use in that area.

EXHIBIT 6 Percentage of the population aged 65 and older who lived alone, by sub-region, in Ontario, 2016

Key Message

- Sub-regions with the highest proportion of seniors living alone were in the urban areas of southern Ontario (Toronto, Windsor, Ottawa), as well as in the southern areas of the North East and North West LHINs.

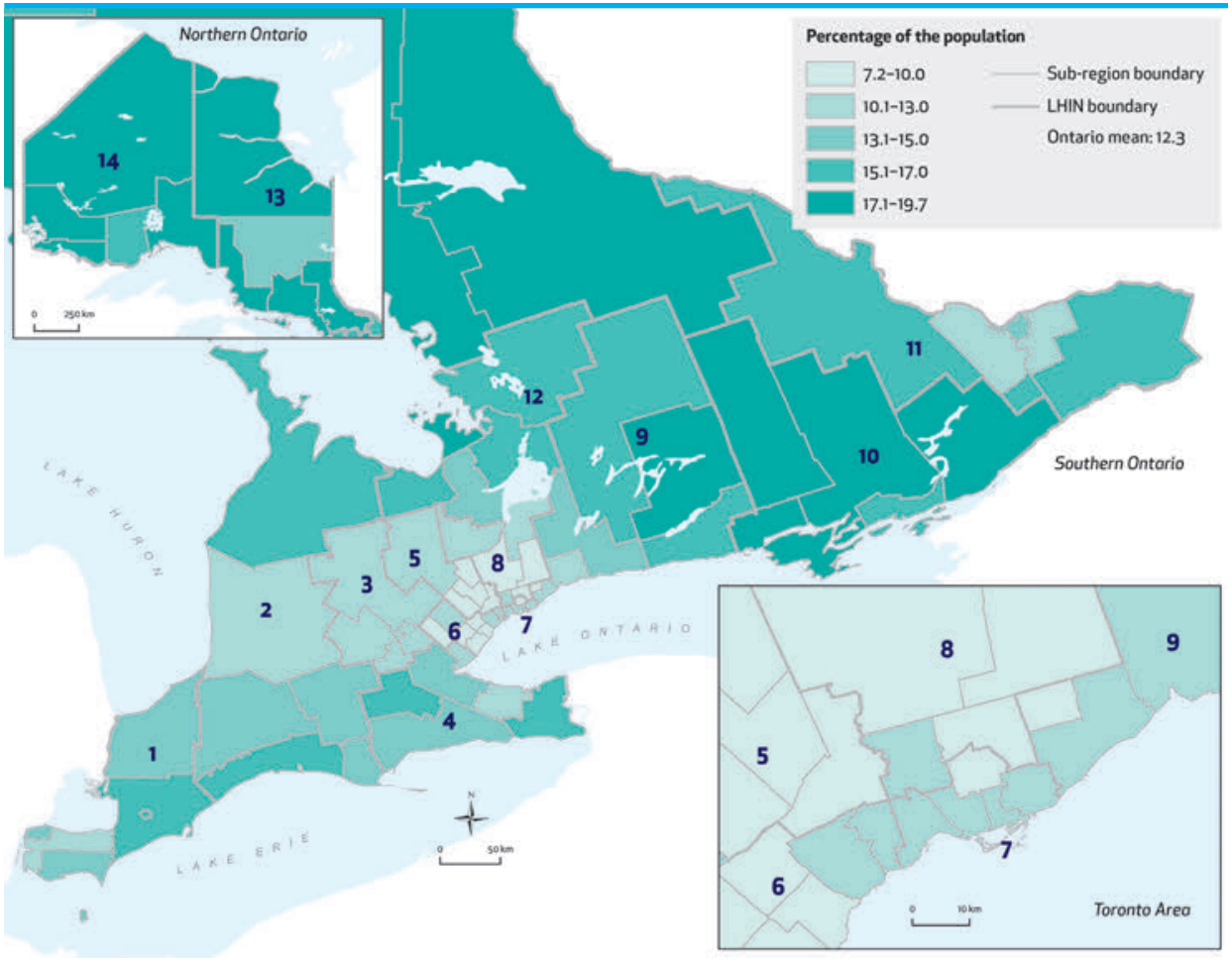


Data source: 2016 Census of Canada.
Note: Seniors living alone can have increased support needs in the face of deteriorating health and function, especially following discharge from inpatient and rehabilitation care facilities

EXHIBIT 7 Percentage of the population who always experienced difficulties with activities of daily living, by sub-region, in Ontario, 2016

Key Message

- Sub-regions with the highest proportion of people who always experienced difficulties with activities of daily living were in the South East, North East and North West LHINs, and in the rural areas of eastern and northern Ontario.

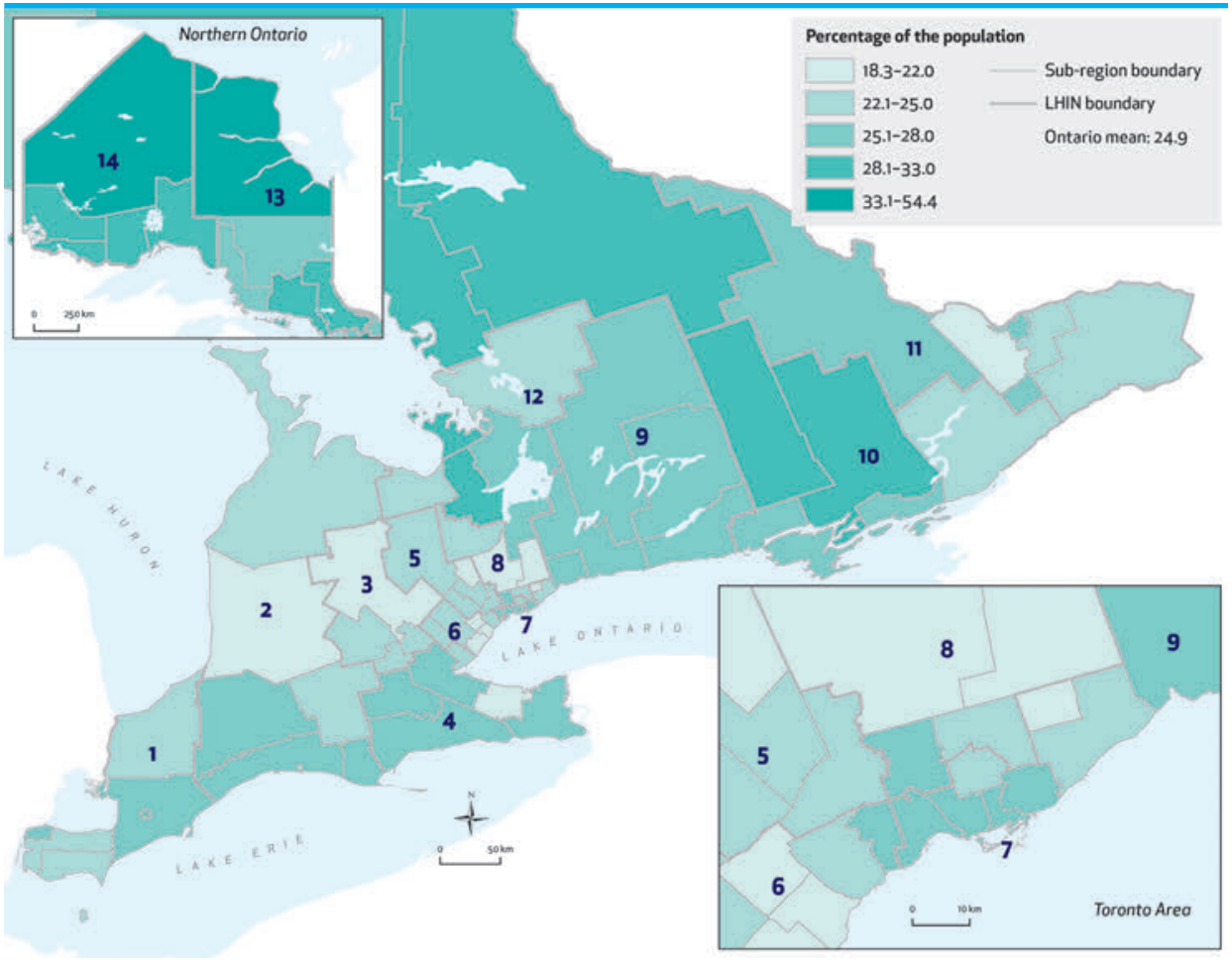


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. People with persistent limitations in activities of daily living usually have greater health care needs and difficulty accessing health care services.

EXHIBIT 8 Percentage of the population aged 65 and older who always experienced difficulties with activities of daily living, by sub-region, in Ontario, 2016

Key Message

- Sub-regions with the highest proportion of seniors who always experienced difficulties with activities of daily living were in the South East, North East and North West LHINs, and in the rural areas of eastern and northern Ontario. (This is similar to the pattern described in Exhibit 7.)

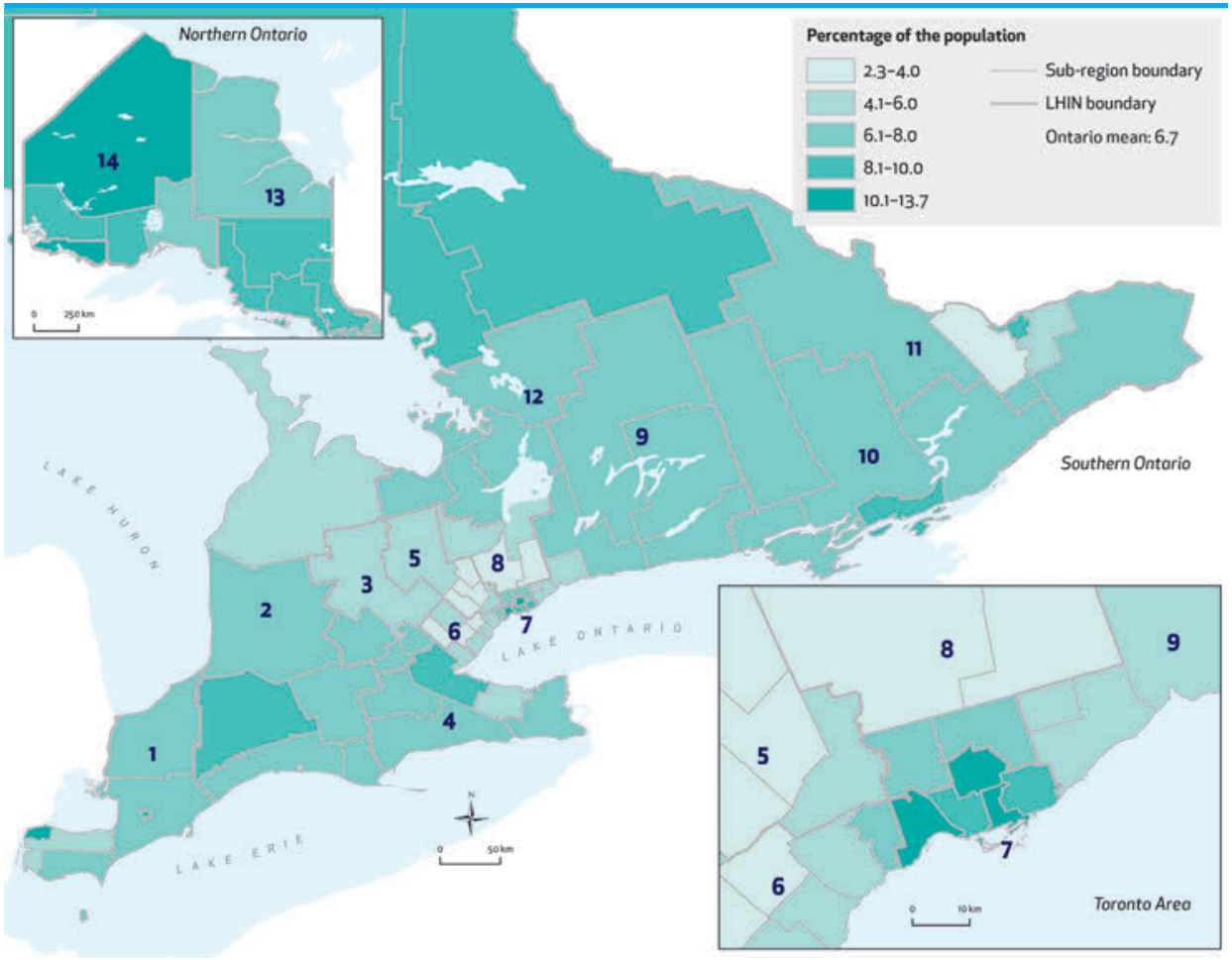


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. Seniors with limitations in activities of daily living may experience higher health care needs and more difficult access to health care services than those aged younger than 65.

EXHIBIT 9 Percentage of the population aged 65 and older who lived alone and always experienced difficulties with activities of daily living, by sub-region, in Ontario, 2016

Key Message

- Areas with the highest proportion of seniors living alone who always experienced difficulties with activities of daily living included the Windsor sub-region, as well as sub-regions in the Toronto Central LHIN, southern Ontario (urban areas) and northern Ontario.

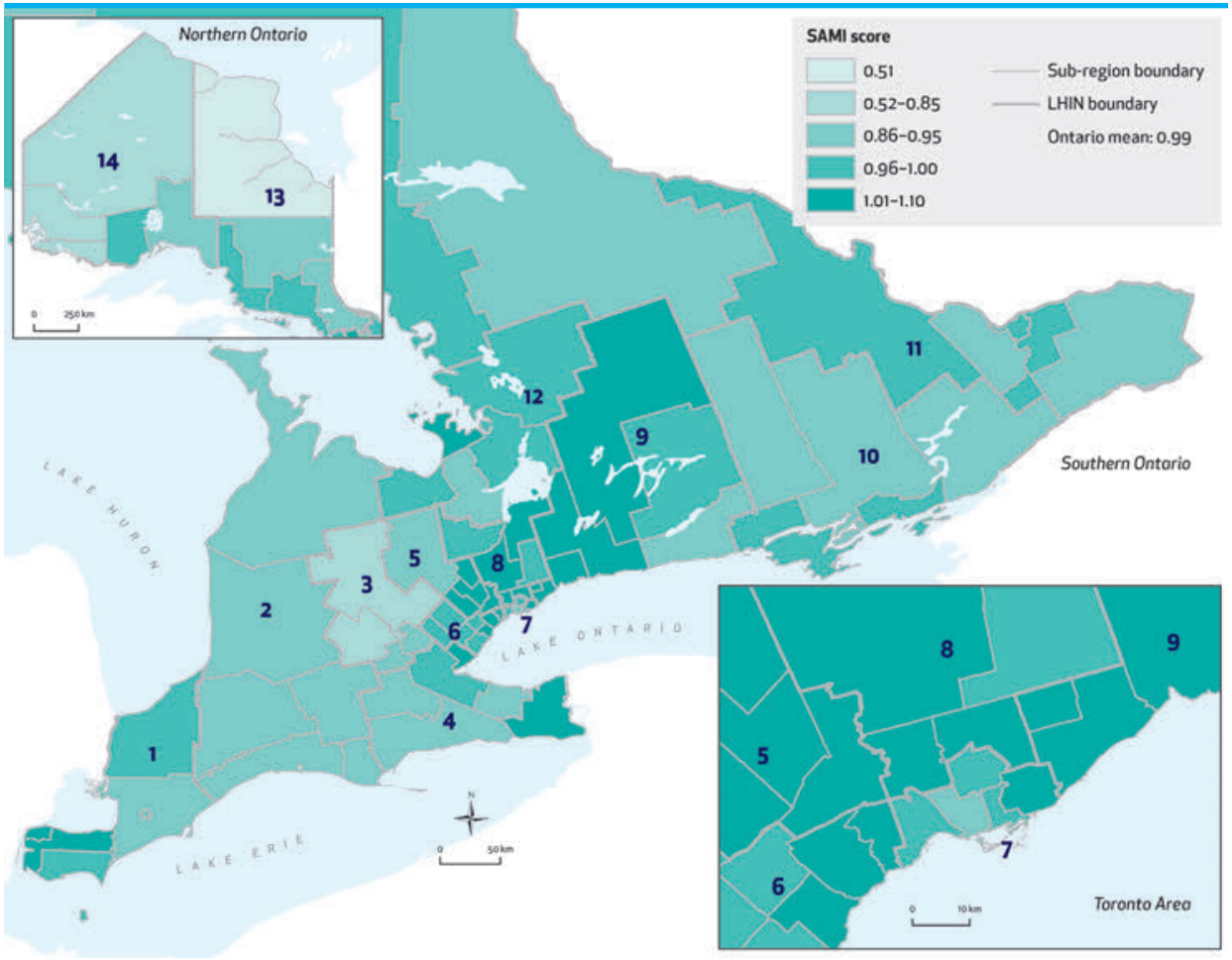


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. Seniors with limitations in activities of daily living may experience higher health care needs and more difficult access to health care services than those aged younger than 65, especially when they live alone.

EXHIBIT 10 Primary care need (SAMI score),* by sub-region, in Ontario, 2015/16

Key Messages

- Sub-regions with the highest primary care need (highest SAMI score) were concentrated in the south-central part of Ontario, especially in the Greater Toronto Area, as well as in the Windsor, Tecumseh Lakeshore Amherstburg LaSalle, Niagara, Haliburton County and City of Kawartha Lakes, Peterborough City and County, and North Simcoe sub-regions.
- The James and Hudson Bay Coasts sub-region had the lowest primary care need (lowest SAMI score). Many northern sub-regions use federal health services instead of provincial OHIP services, such that primary care need using available provincial data may be greatly underestimated in those sub-regions.

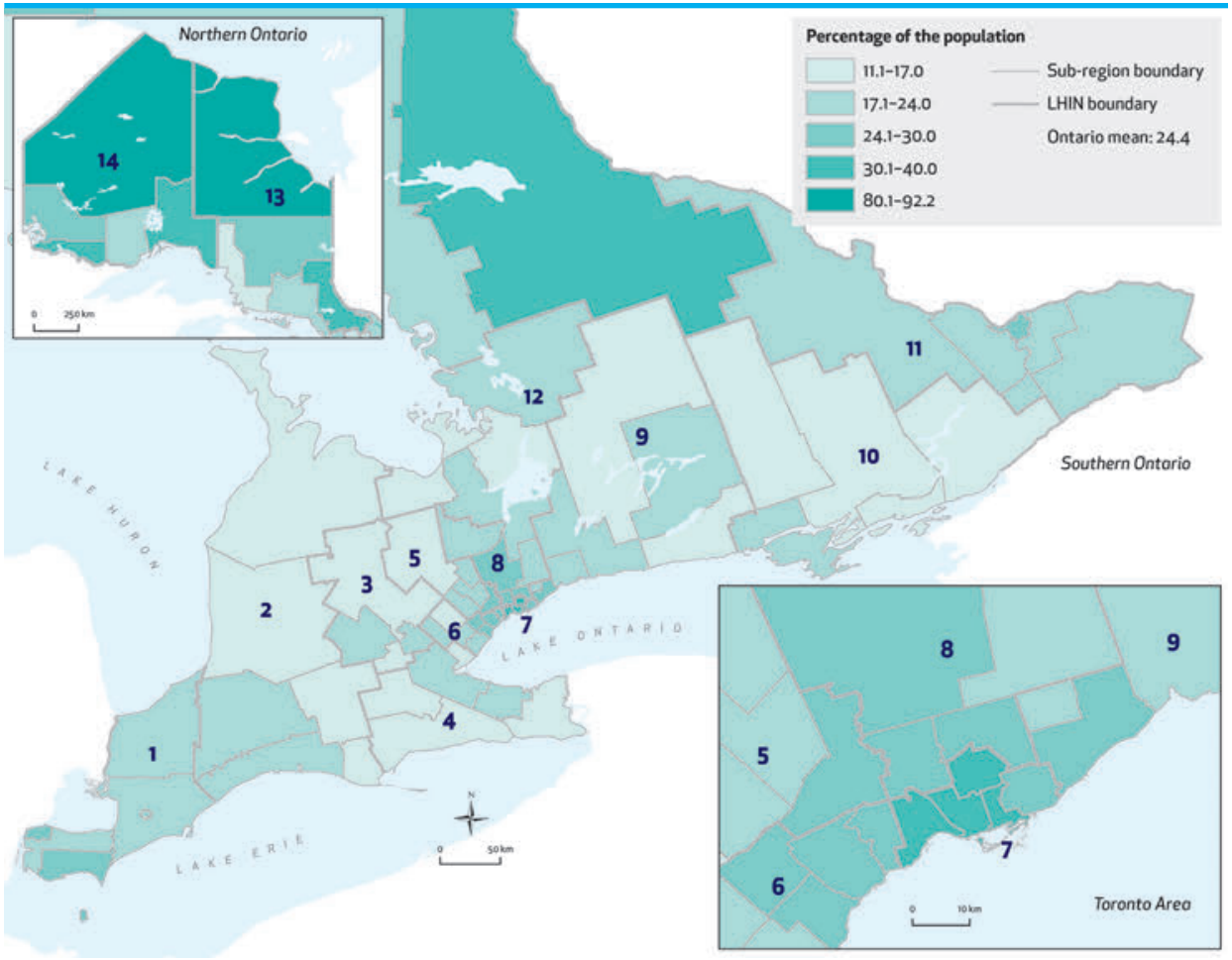


Data sources: CIHI-DAD, OHIP, OMHRS, RPDB.
*Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A sub-region SAMI score of 0.8 means that the sub-region had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the sub-region had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.

EXHIBIT 11 Percentage of the population not in a primary care enrolment model (PEM), by sub-region, in Ontario, 2015/16

Key Messages

- The Northern and James and Hudson Bay Coasts sub-regions had the highest percentage of non-enrolled patients. There are fewer PEMs and more federal health services in those sub-regions.
- There was also a high proportion of non-enrolled patients in northern Ontario (the District of Rainy River and District of Thunder Bay sub-regions) and southern Ontario (West Toronto, Mid-West Toronto, Mid-East Toronto and North Toronto sub-regions).

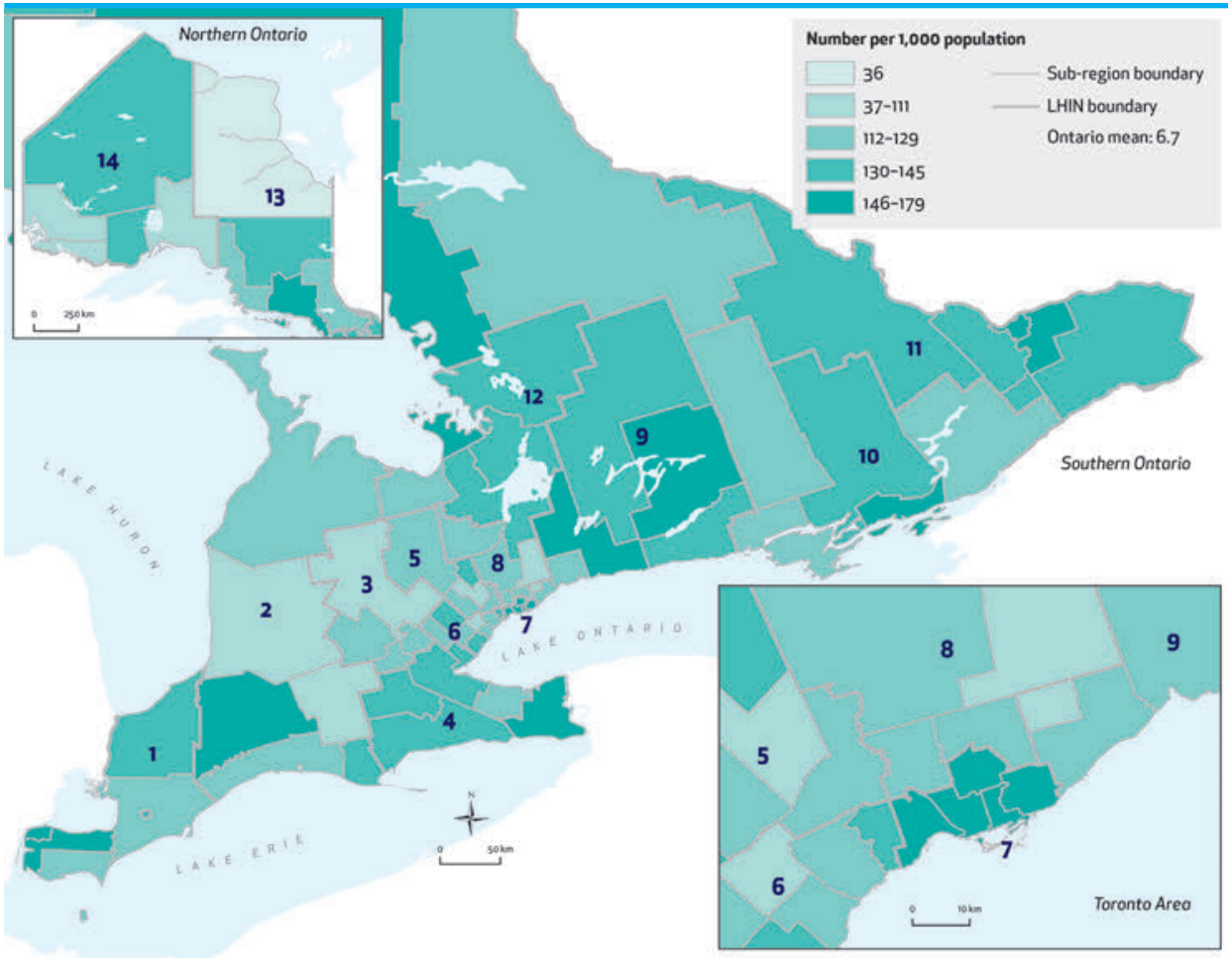


Data sources: CAPE, RPDB.
Note: Patients not enrolled in a PEM receive care from physicians in fee-for-service practices, where both preventive health care and chronic disease management occur at lower levels.[11] Due to data limitations, clients of Community Health Centres and Aboriginal Healing and Wellness Centres and patients of Nurse Practitioner–Led Clinics were included among those not in a PEM.

EXHIBIT 12 Number of people diagnosed with a mental health disorder* per 1,000 population, by sub-region, in Ontario, 2015/16

Key Message

- Areas with the highest number of people diagnosed with a mental health disorder per 1,000 population were spread across the province, and included the Windsor, Tecumseh Lakeshore Amherstburg LaSalle, London Middlesex, Niagara, Durham North East, Peterborough City and County, Kingston, Central Ottawa, Eastern Ottawa, North Simcoe, and Sudbury-Manitoulin-Parry Sound sub-regions, as well as sub-regions in the Toronto Central LHIN.

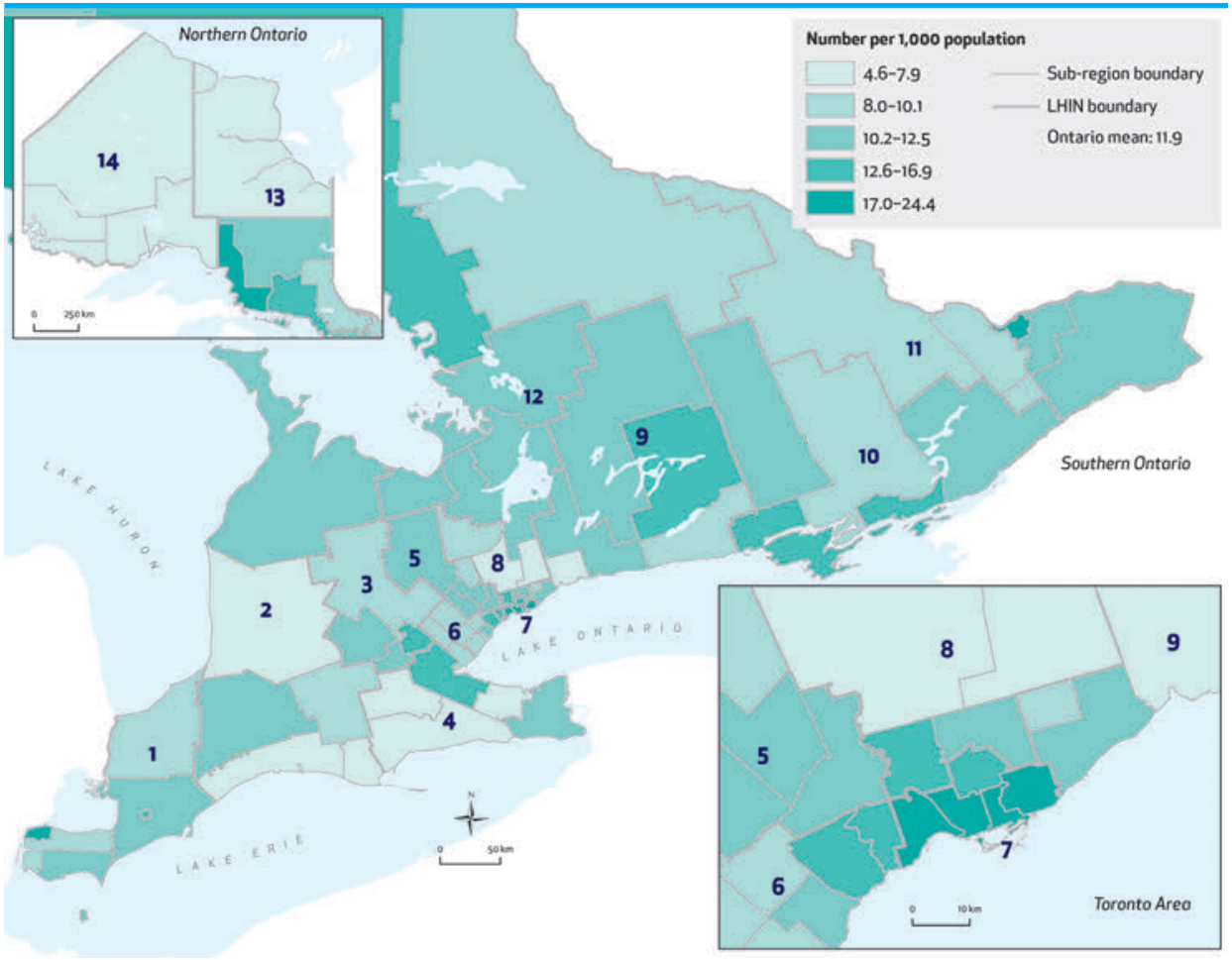


Data sources: OHIP, RPDB.
*Mental health disorders include psychotic disorders (e.g., schizophrenia), non-psychotic disorders (e.g., anxiety, depression, personality disorders), substance-use disorders (e.g., alcoholism and drug dependence), and social, family or occupational issues.

EXHIBIT 13 Number of people diagnosed with a psychotic mental health disorder per 1,000 population, by sub-region, in Ontario, 2015/16

Key Message

- The Windsor, West Toronto, Mid-West Toronto, Mid-East Toronto, West Toronto, Central Ottawa and Algoma sub-regions had the highest number of people diagnosed with a psychotic mental health disorder (e.g., schizophrenia) per 1,000 population.

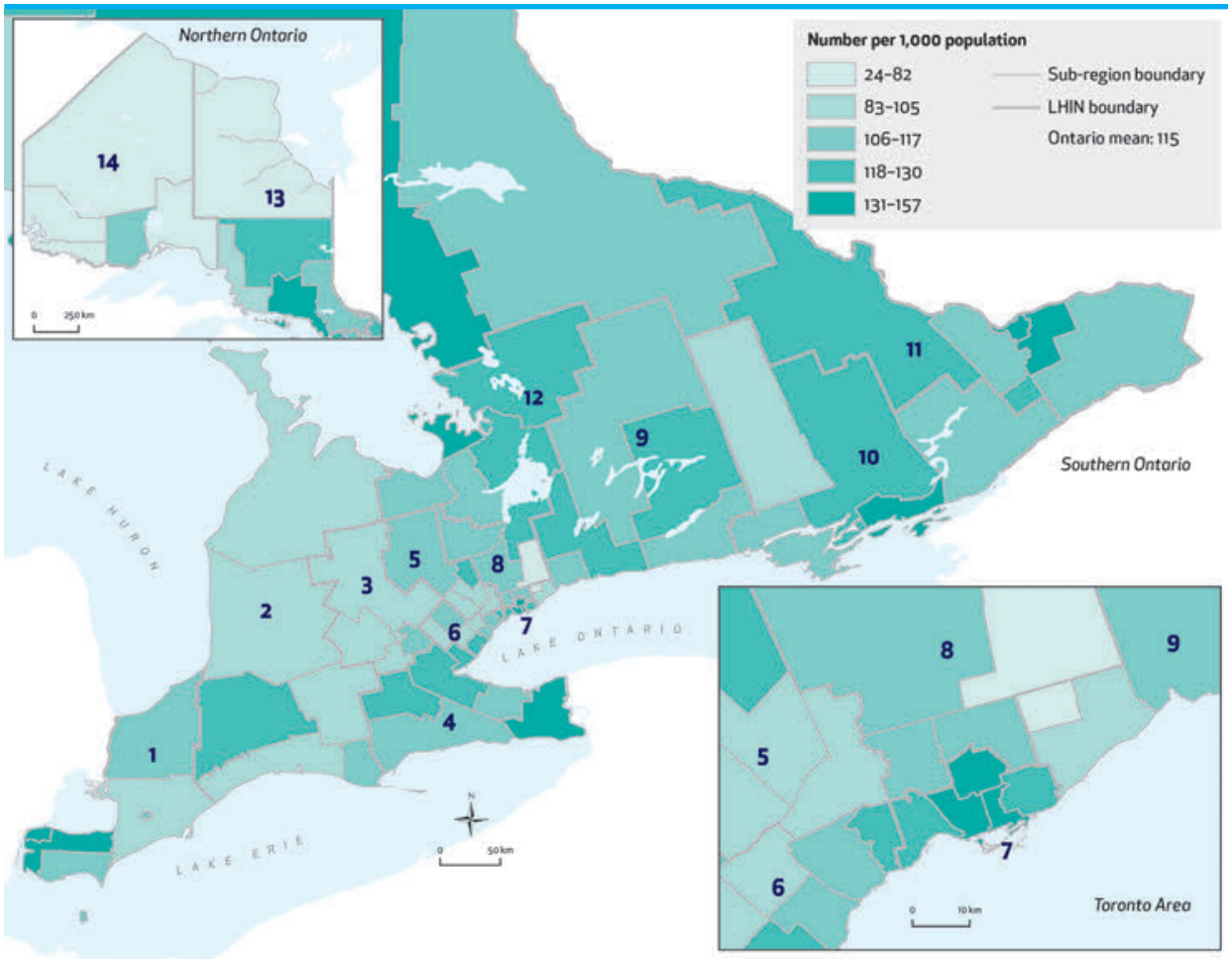


Data sources: OHIP, RPDB.

EXHIBIT 14 Number of people diagnosed with a non-psychotic mental health disorder per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- Non-psychotic mental health disorders (e.g., anxiety, depression, personality disorders) are among the most prevalent of all mental health disorders. It is not surprising that the distribution of patients with these disorders across the province was similar to the distribution for all mental health disorders (see Exhibit 12).
- Areas with the highest number of people diagnosed with a non-psychotic mental health disorder per 1,000 population were spread across the province, and included the Windsor, Tecumseh Lakeshore Amherstburg LaSalle, London Middlesex, Niagara, Durham North East, Peterborough City and County, Kingston, Central Ottawa, Eastern Ottawa, North Simcoe and Sudbury-Manitoulin-Parry Sound sub-regions, as well as sub-regions in the Toronto Central LHIN.

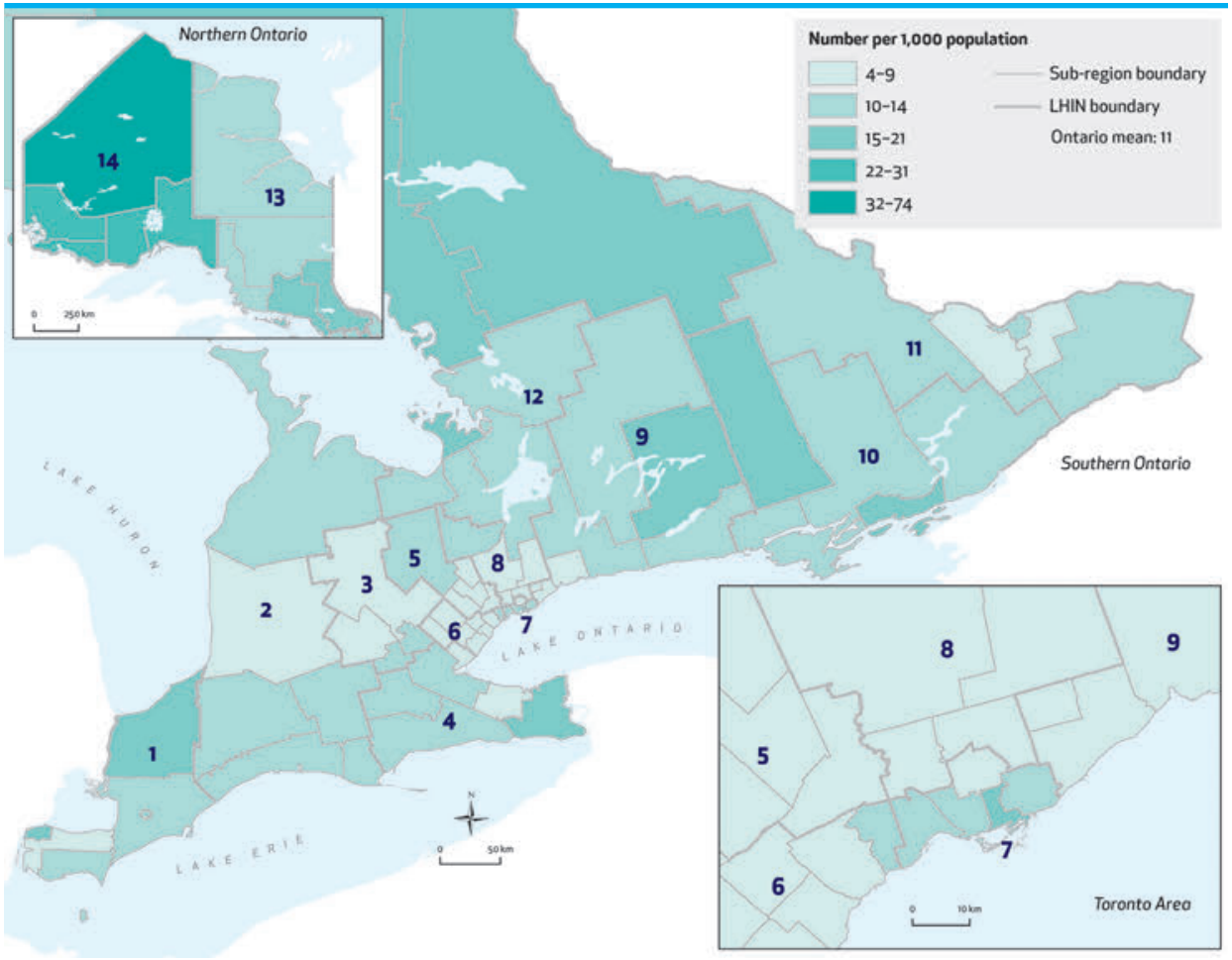


Data sources: OHIP, RPDB.

EXHIBIT 15 Number of people diagnosed with a substance-use disorder per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- Areas with the highest number of people diagnosed with a substance-use disorder (e.g., alcoholism, drug dependence) per 1,000 population included the Northern sub-region and sub-regions in the North West LHIN.
- The Nipissing-Temiskaming, Sudbury-Manitoulin-Parry Sound, Windsor, Lambton, Niagara, Mid-East Toronto, Peterborough City and County, Rural Hastings, Kingston and Central Ottawa sub-regions also had a high number of people diagnosed with a substance-use disorder per 1,000 population.

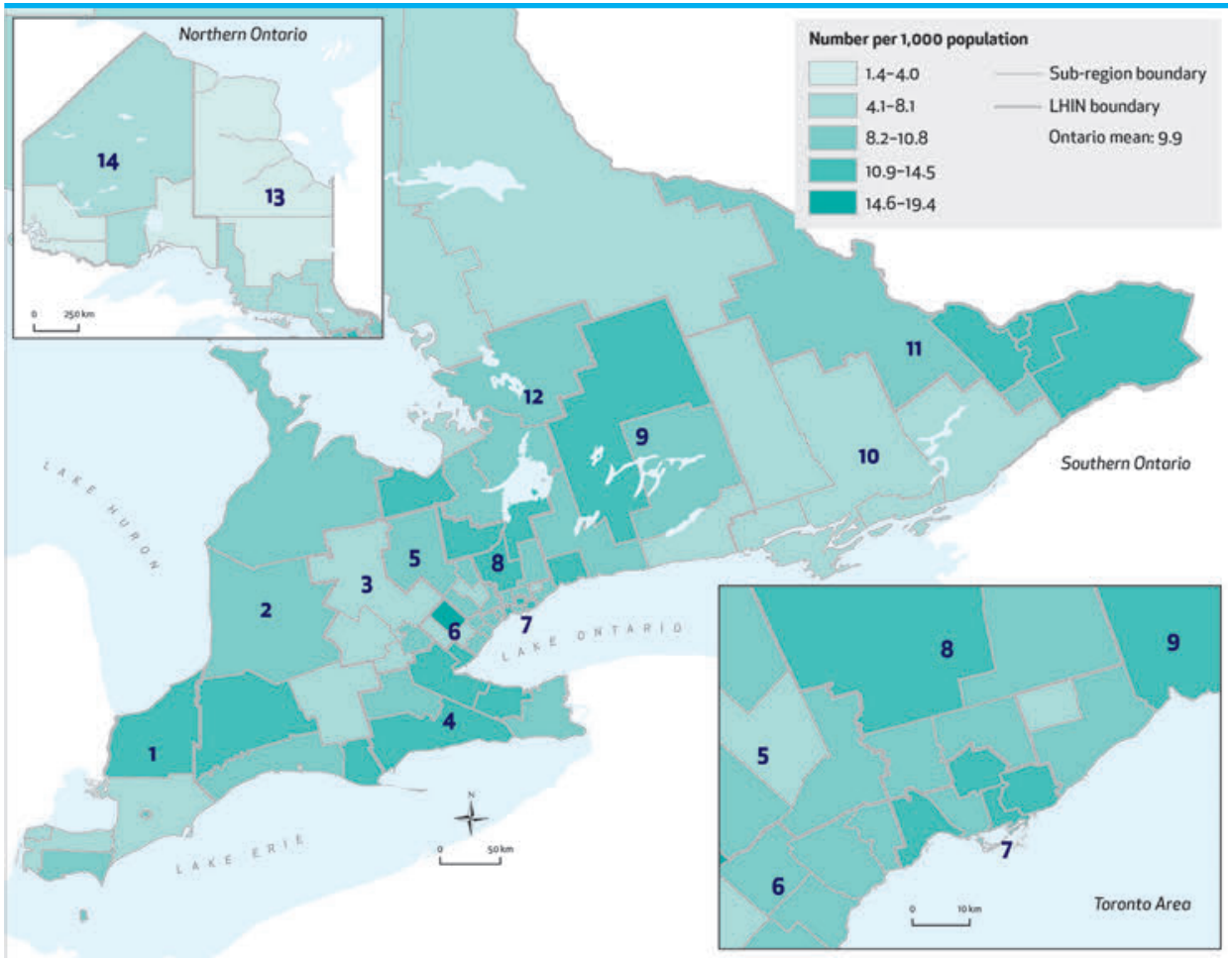


Data sources: OHIP, RPDB.

EXHIBIT 16 Number of people diagnosed with a social, family or occupational issue* per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- The Halton Hills sub-region had the highest number of people diagnosed with a social, family or occupational issue per 1,000 population.
- Many sub-regions across southern Ontario also had a high proportion of people diagnosed with these issues.



Data sources: OHIP, RPDB.
*Social, family or occupational issues include economic problems, marital difficulties, parent-child problems, problems with aged parents or in-laws, family disruption/divorce, education problems, social maladjustment, occupational problems, legal problems and other problems of social adjustment.

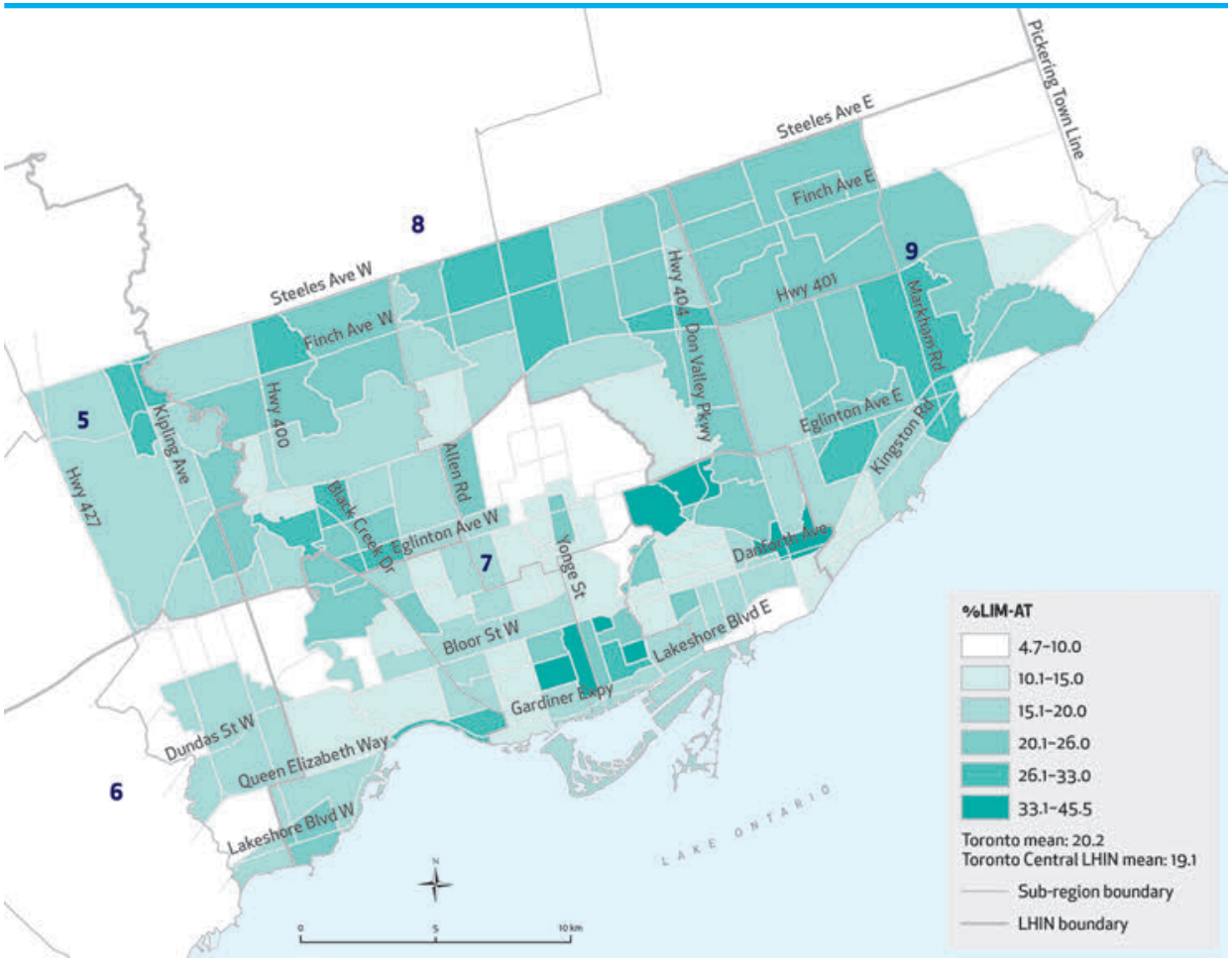
Primary Care Need

Toronto

EXHIBIT 17 Prevalence of low income (%LIM-AT),* by neighbourhood, in Toronto, Ontario, 2016

Key Messages

- Neighbourhoods with the lowest income were in the east, centre, west and south of the city. This pattern has been previously described as a donut pattern,[12] where areas characterized by low income levels follow a circular pattern around the city (the donut), and areas characterized by high income levels are more predominant in the central (the hole of the donut) and peripheral parts of the city.
- Neighbourhoods with low income also included those in the Toronto Central LHIN, and those in the Mid-West Toronto (southern parts), Mid-East Toronto (southern parts) and East Toronto (northern and eastern parts) sub-regions.

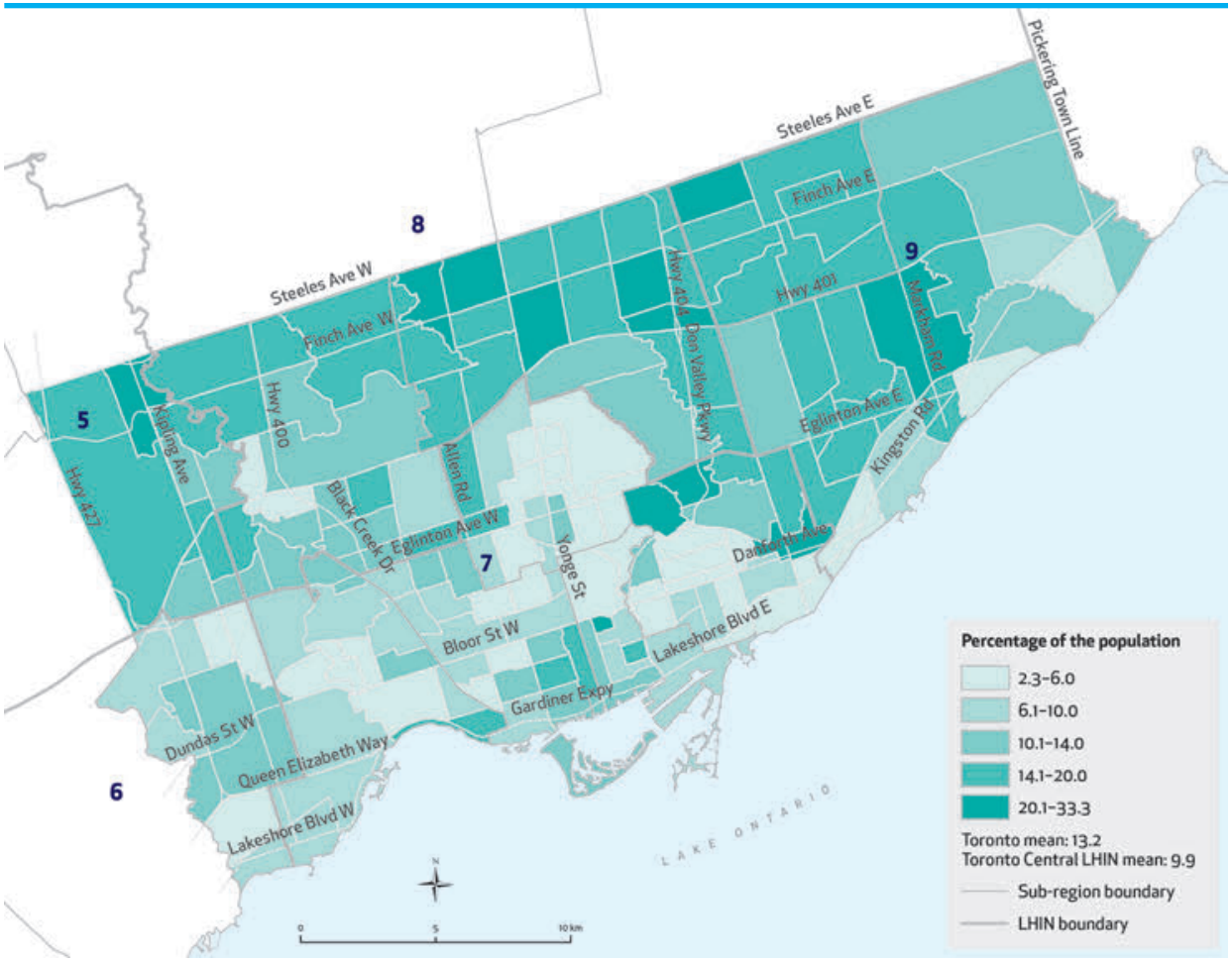


Data source: 2016 Census of Canada.
*Low socioeconomic status is strongly related to poor health. The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.

EXHIBIT 18 Percentage of the population who immigrated to Canada in the previous 10 years, by neighbourhood, in Toronto, Ontario, 2012

Key Message

- Neighbourhoods with the highest percentage of recent immigrants included those in the eastern part of the Toronto Central LHIN and in the eastern, northern and northwestern parts of the city.

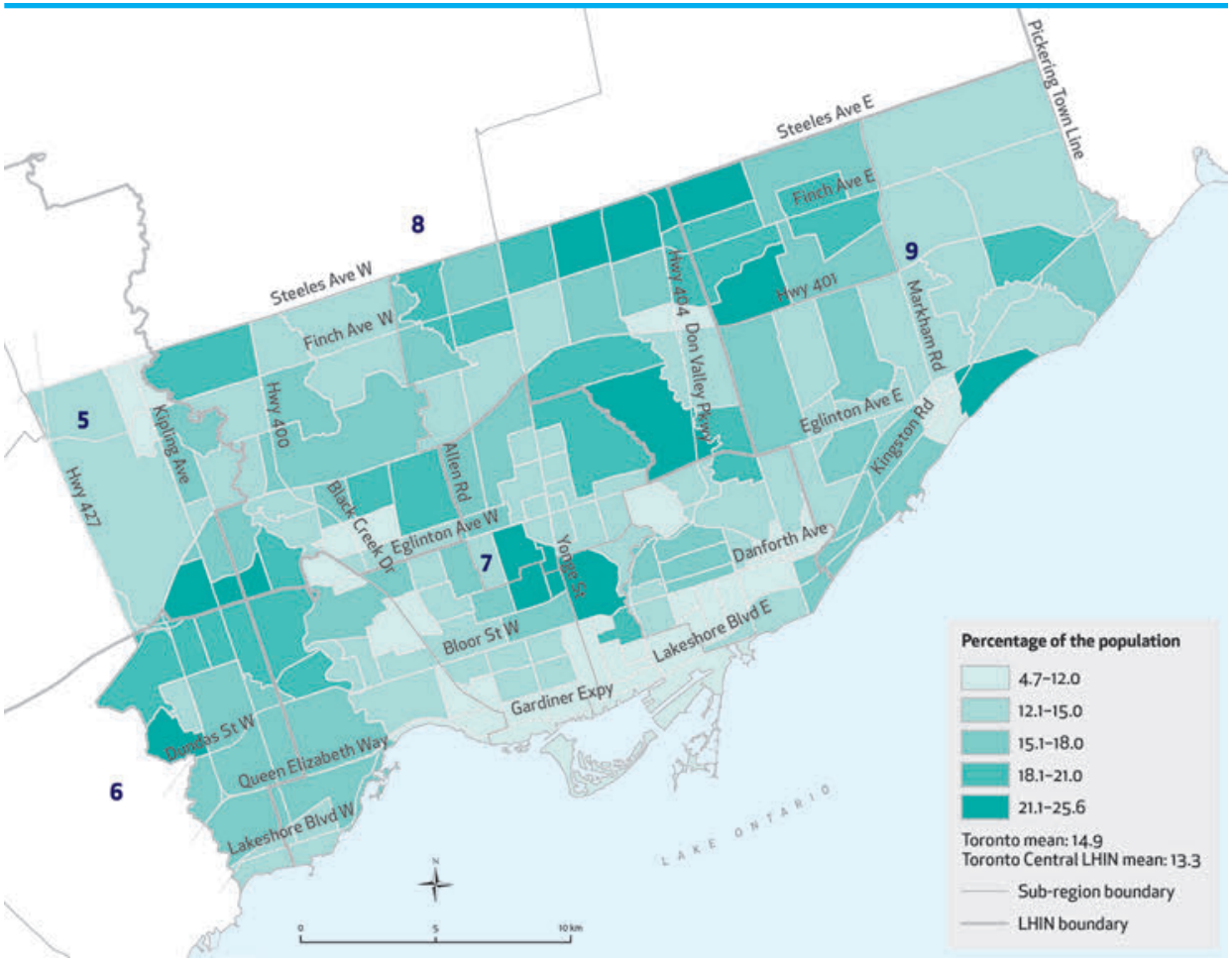


Data sources: IRCC, RPDB.
Note: Recent immigrants are highly heterogeneous and include some who are healthier than those who are Canadian-born (the healthy immigrant effect)[10] and others who face serious health challenges. Recent immigrants commonly experience more difficult navigation within the health care system and a lower standard of living, which may in themselves lead to adverse health outcomes over time.

EXHIBIT 19 Percentage of the population aged 65 and older, by neighbourhood, in Toronto, Ontario, 2016

Key Message

- Areas with the highest percentage of people aged 65 and older were scattered across the city, and included neighbourhoods along Yonge St. between Bloor St. and Eglinton Ave., and in eastern North York, northern Scarborough and central Etobicoke.

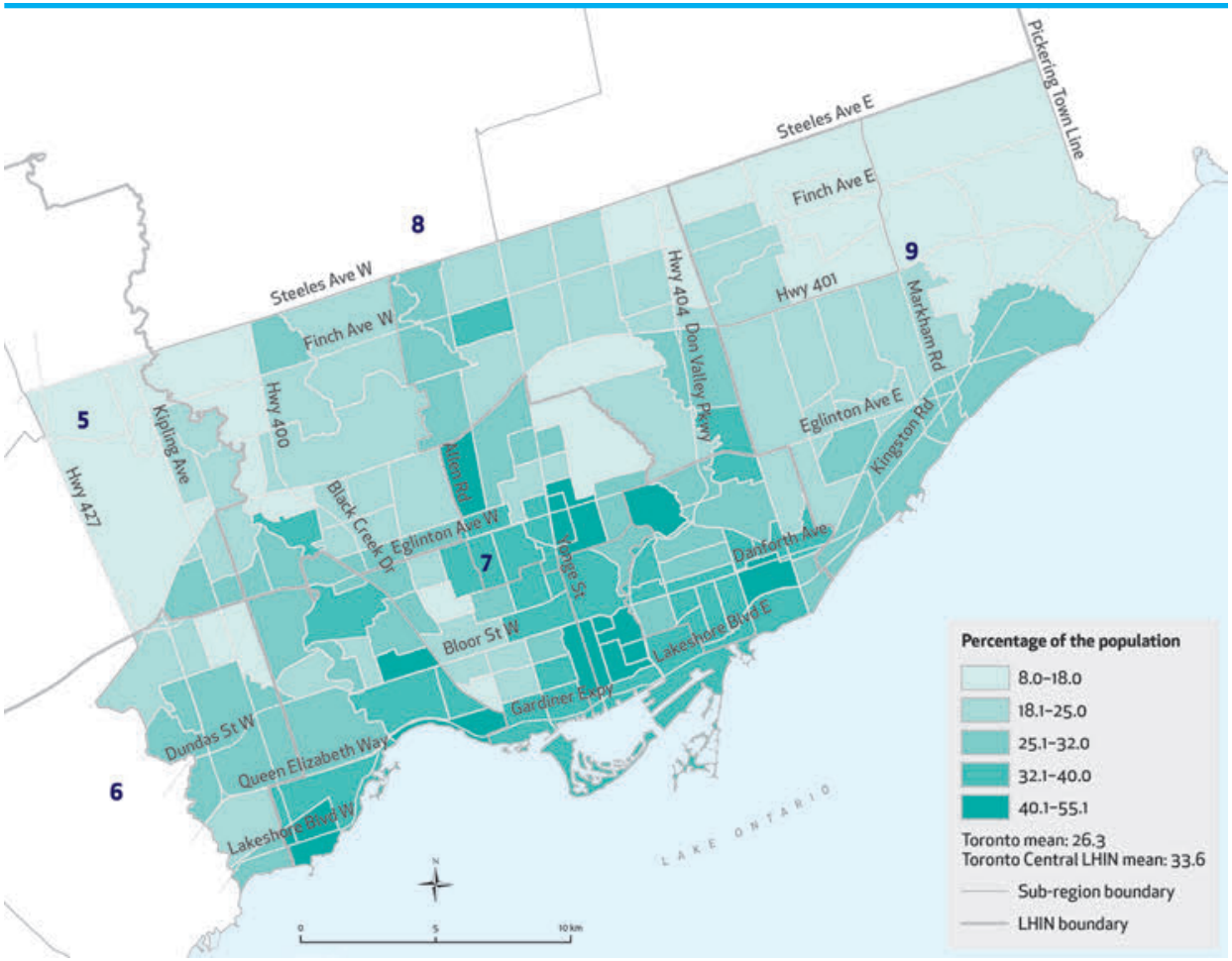


Data source: 2016 Census of Canada.
Note: A high percentage of seniors living in a given area may be associated with increased health care needs and service use in that area.

EXHIBIT 20 Percentage of the population aged 65 and older who lived alone, by neighbourhood, in Toronto, Ontario, 2016

Key Messages

- Neighbourhoods with the highest proportion of seniors living alone were in the downtown core, southern parts of West Toronto (South Parkdale, High Park North, New Toronto) and Midtown Toronto (Mount Pleasant East, Mount Pleasant West, Thorncliffe Park).
- Neighbourhoods in the northeastern and northwestern parts of the city had the lowest proportion of seniors living alone.

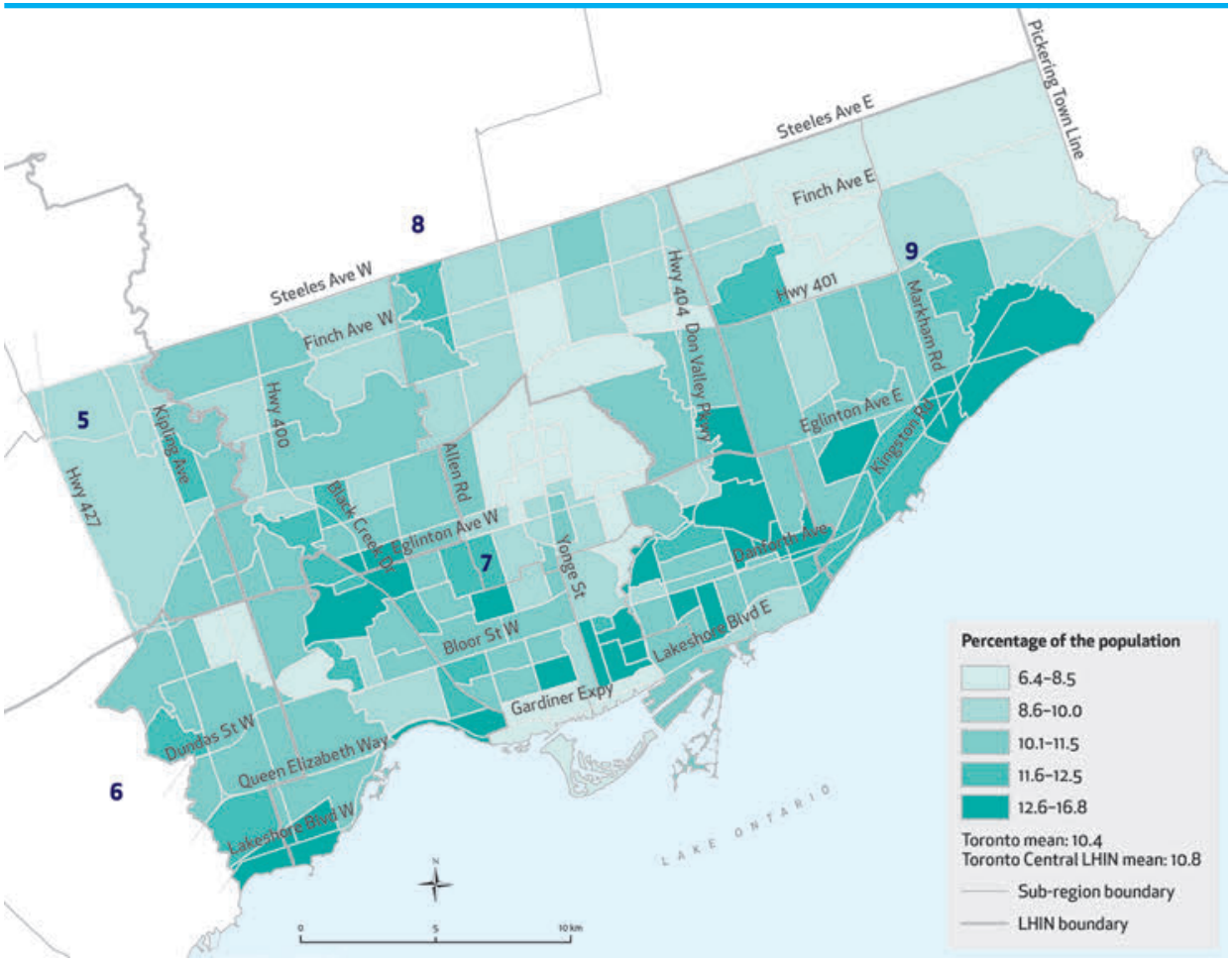


Data source: 2016 Census of Canada.
Note: Seniors living alone can have increased support needs in the face of deteriorating health and function, especially following discharge from inpatient and rehabilitation care facilities.

EXHIBIT 21 Percentage of the population who always experienced difficulties with activities of daily living, by neighbourhood, in Toronto, Ontario, 2016

Key Message

- Areas with the highest proportion of people who always experienced difficulties with activities of daily living were scattered throughout the city, including downtown, mid-east and mid-west neighbourhoods and those along the shores of Lake Ontario (in the eastern and western parts of the city).

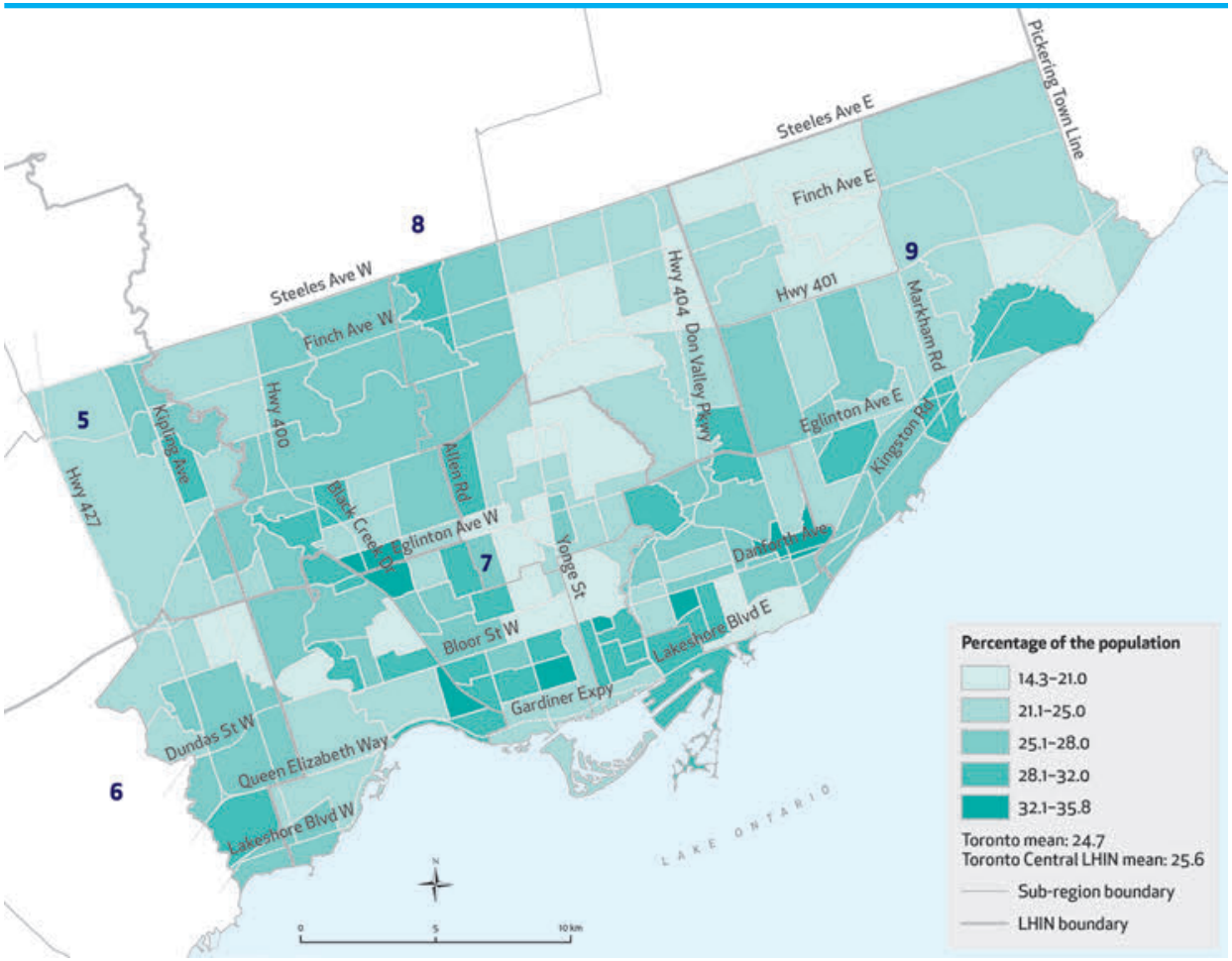


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. People with persistent limitations in activities of daily living usually have greater health care needs and difficulty accessing health care services.

EXHIBIT 22 Percentage of the population aged 65 and older who always experienced difficulties with activities of daily living, by neighbourhood, in Toronto, Ontario, 2016

Key Message

- Neighbourhoods with the highest proportion of seniors who always experienced difficulties with activities of daily living were scattered throughout the city, including the downtown core, around High Park, in the Weston Rd. and Eglinton Ave. W. area, and in the eastern parts of Danforth Ave.

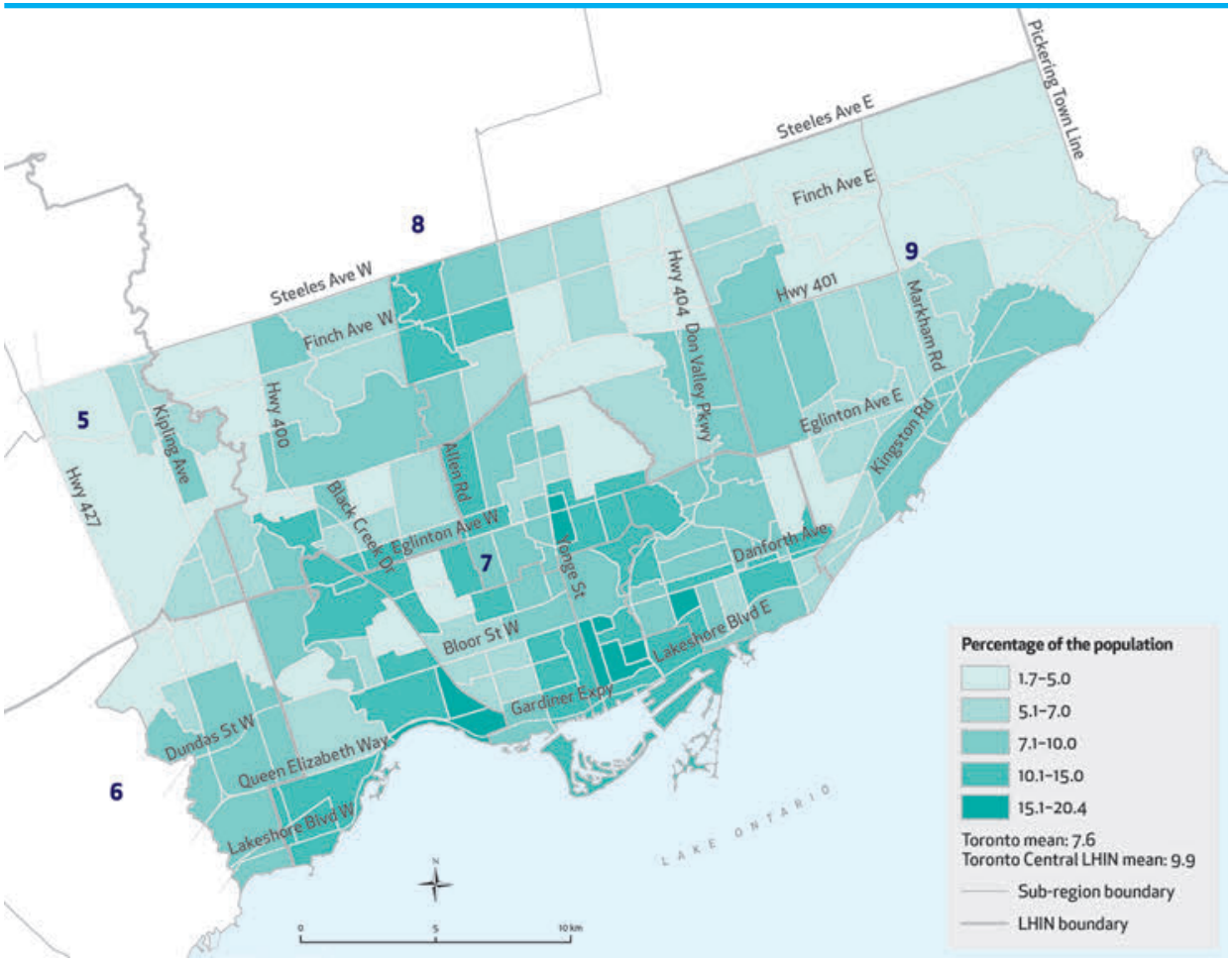


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. Seniors with limitations in activities of daily living may experience higher health care needs and more difficult access to health care services than those aged younger than 65.

EXHIBIT 23 Percentage of the population aged 65 and older who lived alone and always experienced difficulties with activities of daily living, by neighbourhood, in Toronto, Ontario, 2016

Key Message

- Areas with the highest proportion of seniors living alone who always experienced difficulties with activities of daily living included the Mount Pleasant West neighbourhood, as well as neighbourhoods in the southern parts of downtown (Regent Park, Moss Park, South Parkdale, Blake Jones, Church-Yonge Corridor and Roncesvalles).

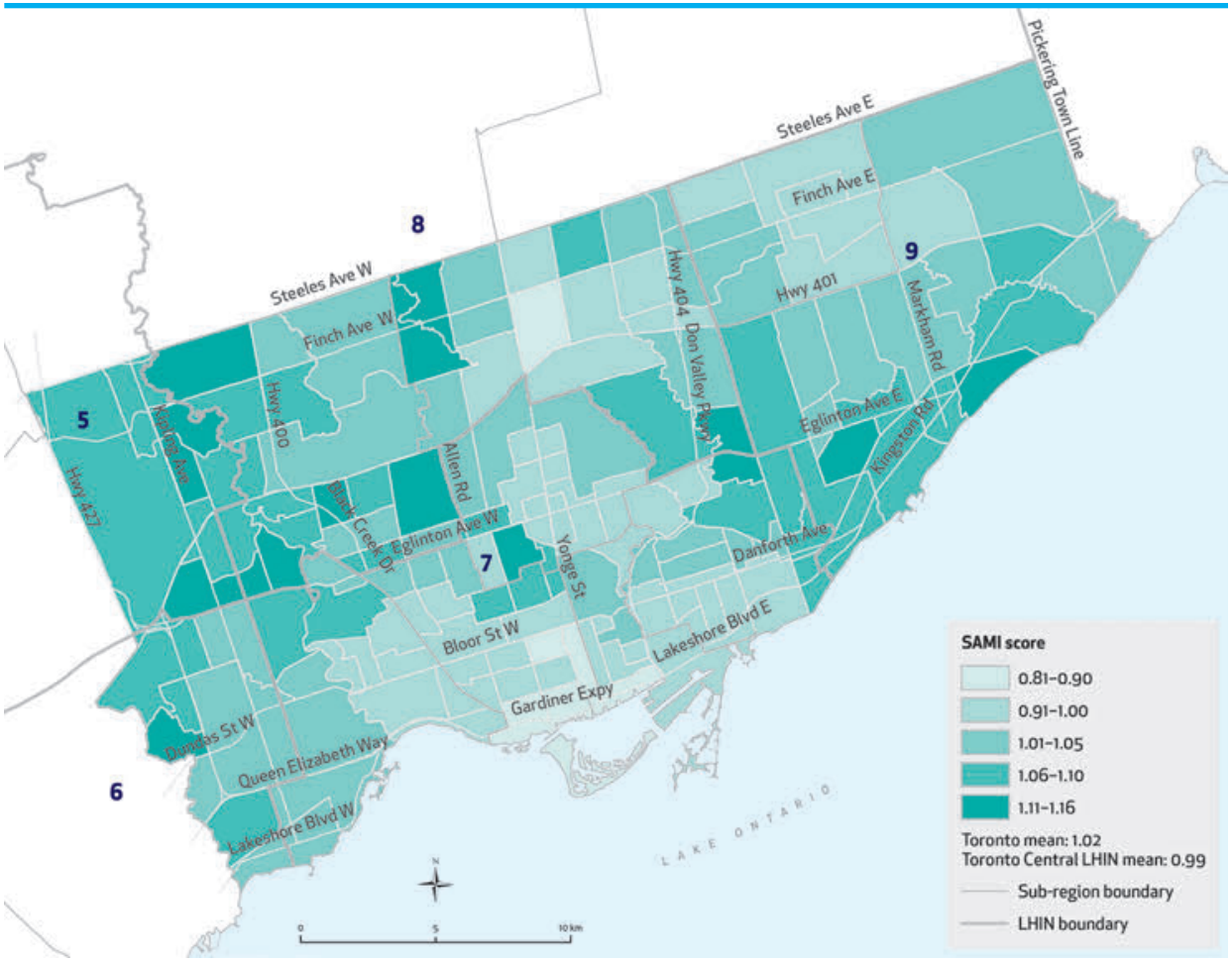


Data source: 2016 Census of Canada.
Note: The percentage of the population who always experienced difficulties with activities of daily living (as a result of physical, mental or other health-related conditions or problems) was used as a measure of disability. Seniors with limitations in activities of daily living may experience higher health care needs and more difficult access to health care services than those aged younger than 65, especially when they live alone.

EXHIBIT 24 Primary care need (SAMI score),* by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest primary need (highest SAMI score) were concentrated in the northwestern and southeastern parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest primary need (highest SAMI score) were in the northern part of East Toronto and on the borders of the Mid-West Toronto and North Toronto sub-regions.

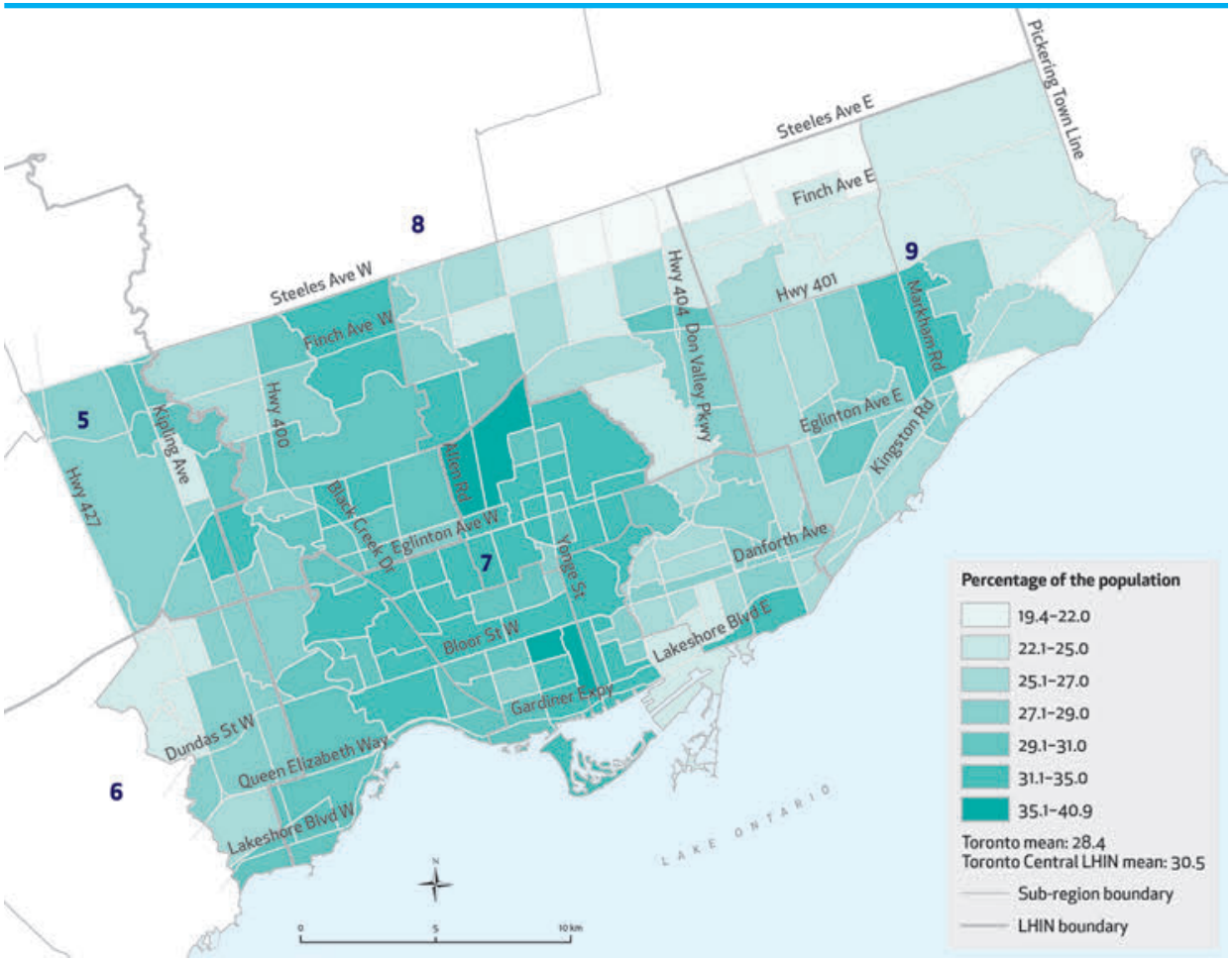


Data sources: CIHI-DAD, OHIP, OMHRS, RPDB.
*Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A neighbourhood SAMI score of 0.8 means that the neighbourhood had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the neighbourhood had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.

EXHIBIT 25 Percentage of the population not in a primary care enrolment model (PEM), by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest proportion of non-enrolled patients were in the central, northern and northwestern parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest proportion of non-enrolled patients were in the North Toronto (western area) and Mid-West Toronto (eastern area) sub-regions.

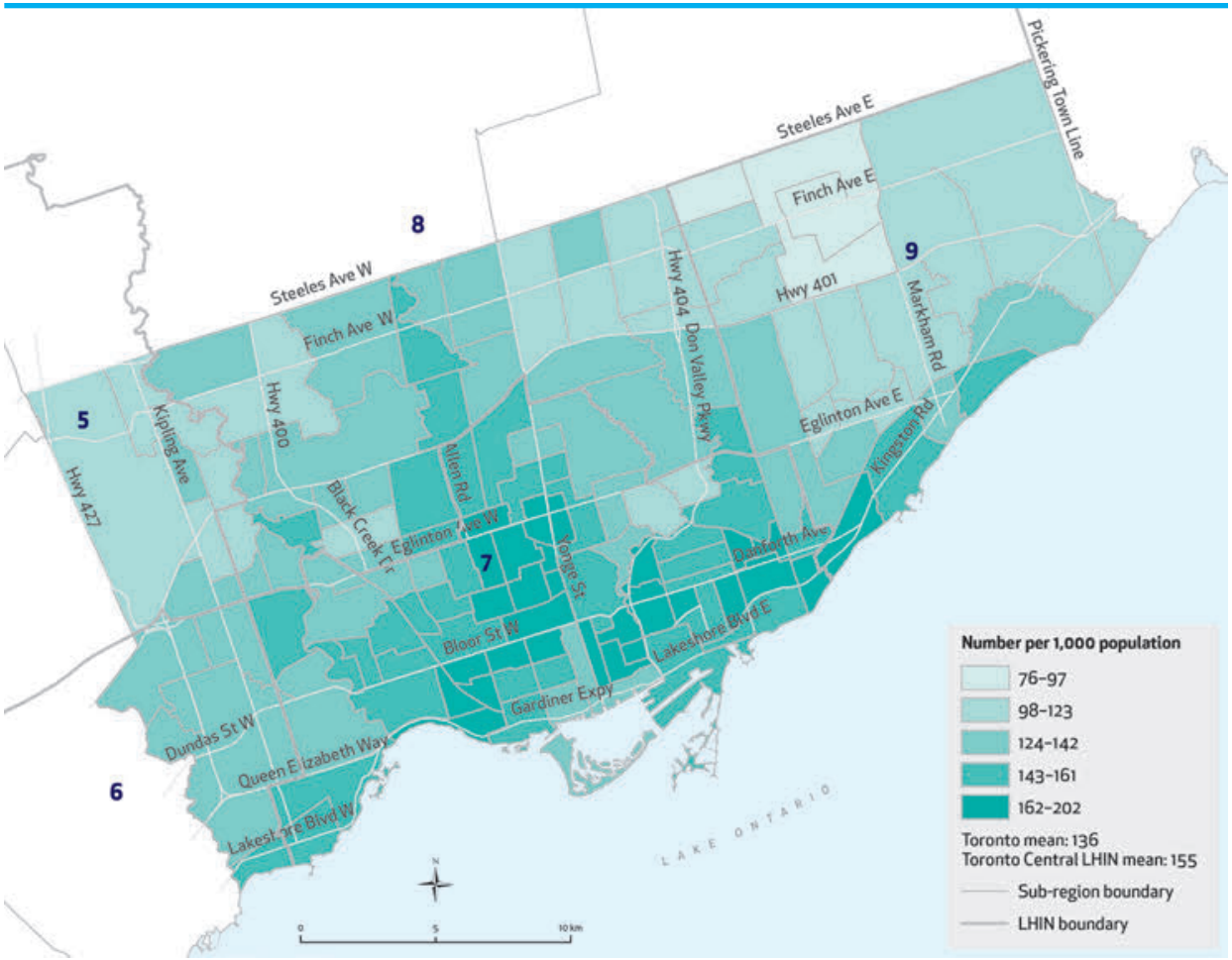


Data sources: CAPE, RPDB.
Note: Patients not enrolled in a PEM receive care from physicians in fee-for-services practices, where both preventive health care and chronic disease management occur at lower levels.[11] Due to data limitations, clients of Community Health Centres and Aboriginal Healing and Wellness Centres and patients of Nurse Practitioner–Led Clinics were included among those not in a PEM.

EXHIBIT 26 Number of people diagnosed with a mental health disorder* per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest number of people diagnosed with a mental health disorder per 1,000 population were in the central and southern parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest number of people diagnosed with a mental health disorder per 1,000 population included those in the Mid-West Toronto, Mid-East Toronto and East Toronto sub-regions.

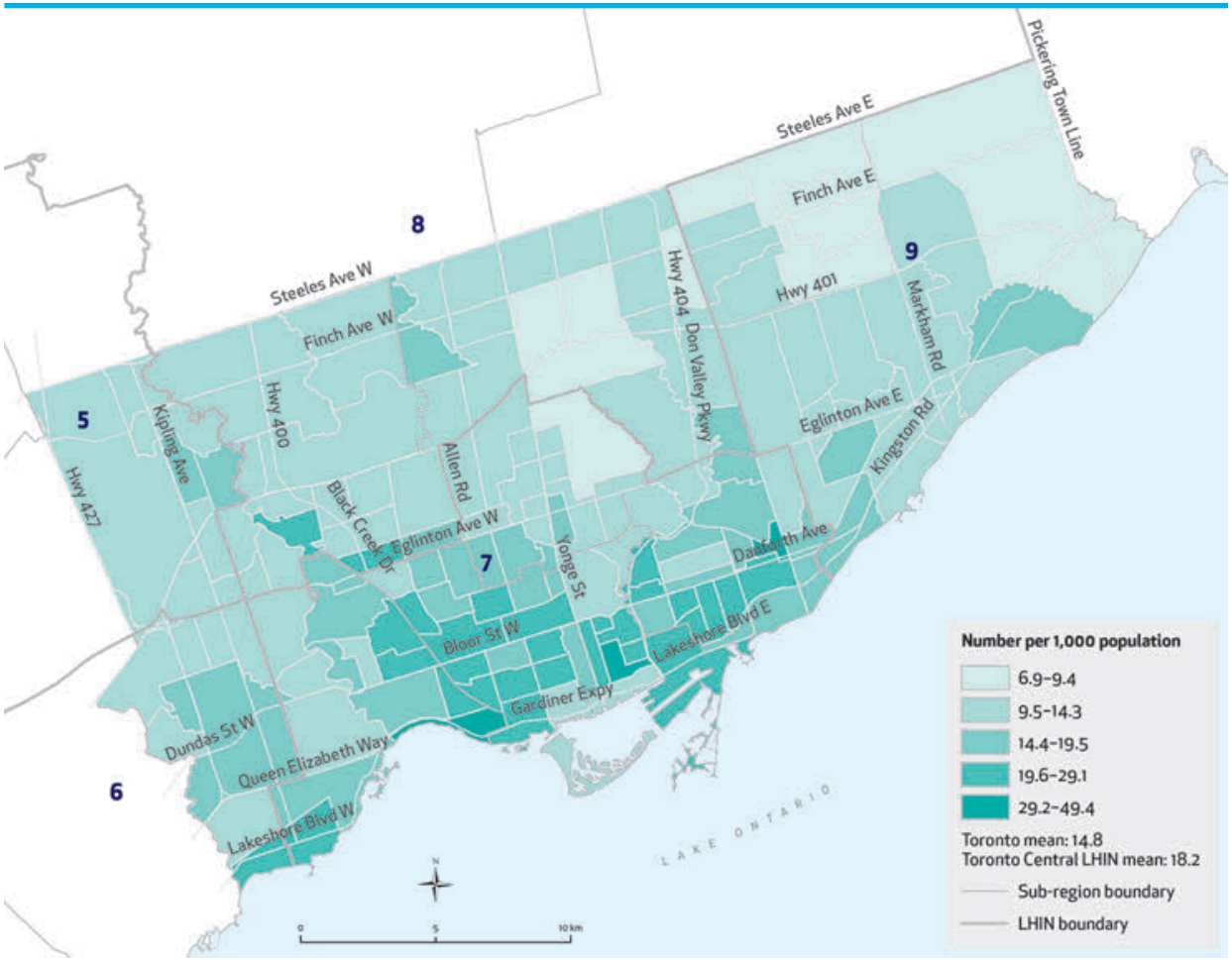


Data sources: OHIP, RPDB.
*Mental health disorders include psychotic disorders (e.g., schizophrenia), non-psychotic disorders (e.g., anxiety, depression, personality disorders), substance-use disorders (e.g., alcoholism and drug dependence), and social, family or occupational issues.

EXHIBIT 27 Number of people diagnosed with a psychotic mental health disorder per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest number of people diagnosed with a psychotic mental health disorder (e.g., schizophrenia) per 1,000 population were in the south and central parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest number of people diagnosed with a psychotic mental health disorder per 1,000 population were in the West Toronto (eastern part), Mid-East Toronto (western part) and East Toronto (eastern part) sub-regions.

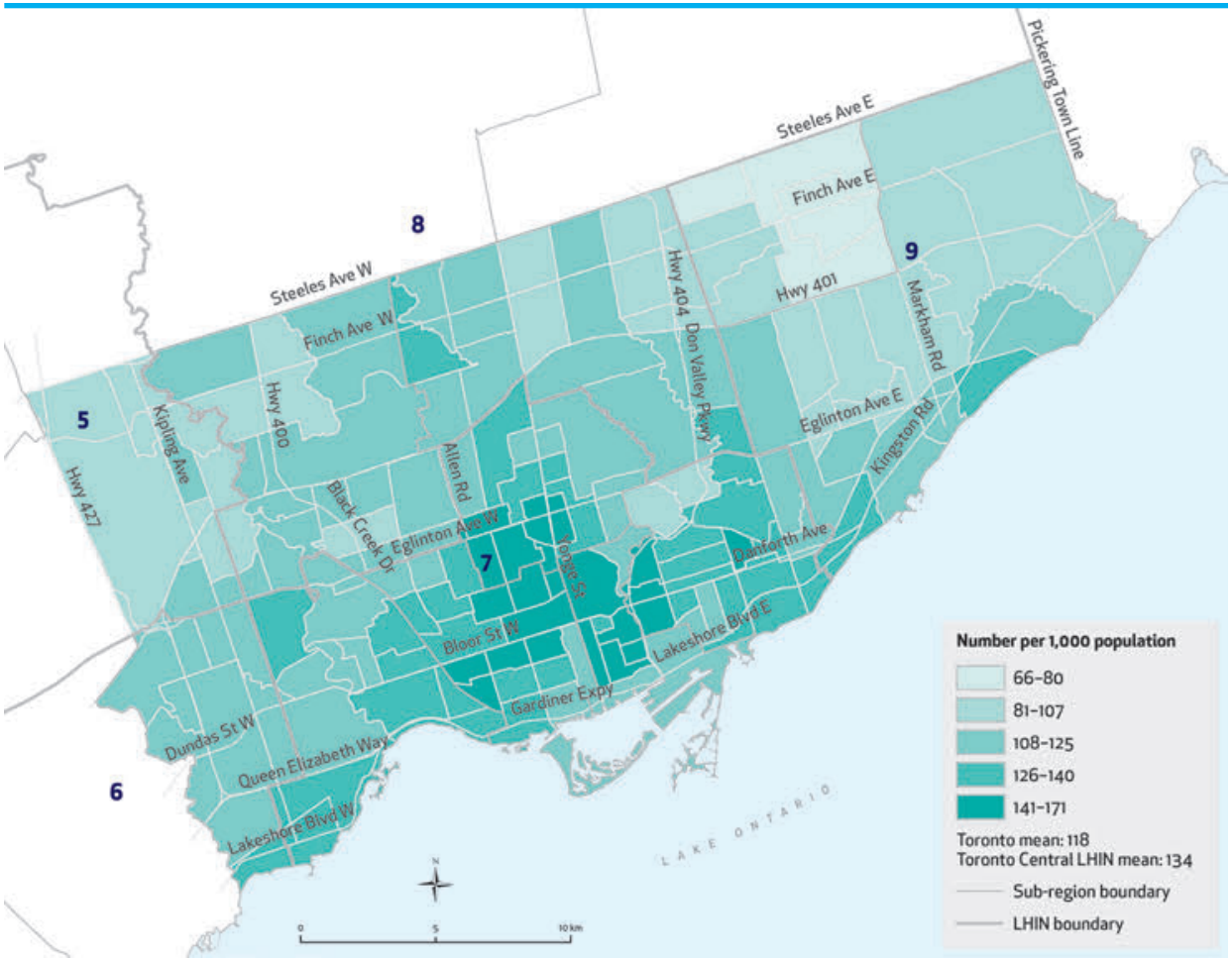


Data sources: OHIP, RPDB.

EXHIBIT 28 Number of people diagnosed with a non-psychotic mental health disorder per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Non-psychotic mental health disorders (e.g., anxiety, depression, personality disorders) are among the most prevalent of all mental health disorders. It is not surprising that the distribution of patients with these disorders across Toronto neighbourhoods was similar to the distribution for all mental health disorders depicted in Exhibit 26.
- Toronto neighbourhoods with the highest number of people diagnosed with a non-psychotic mental health disorder per 1,000 population were in the central and southern parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest prevalence of non-psychotic mental health disorders were in the Mid-West Toronto and Mid-East Toronto sub-regions.

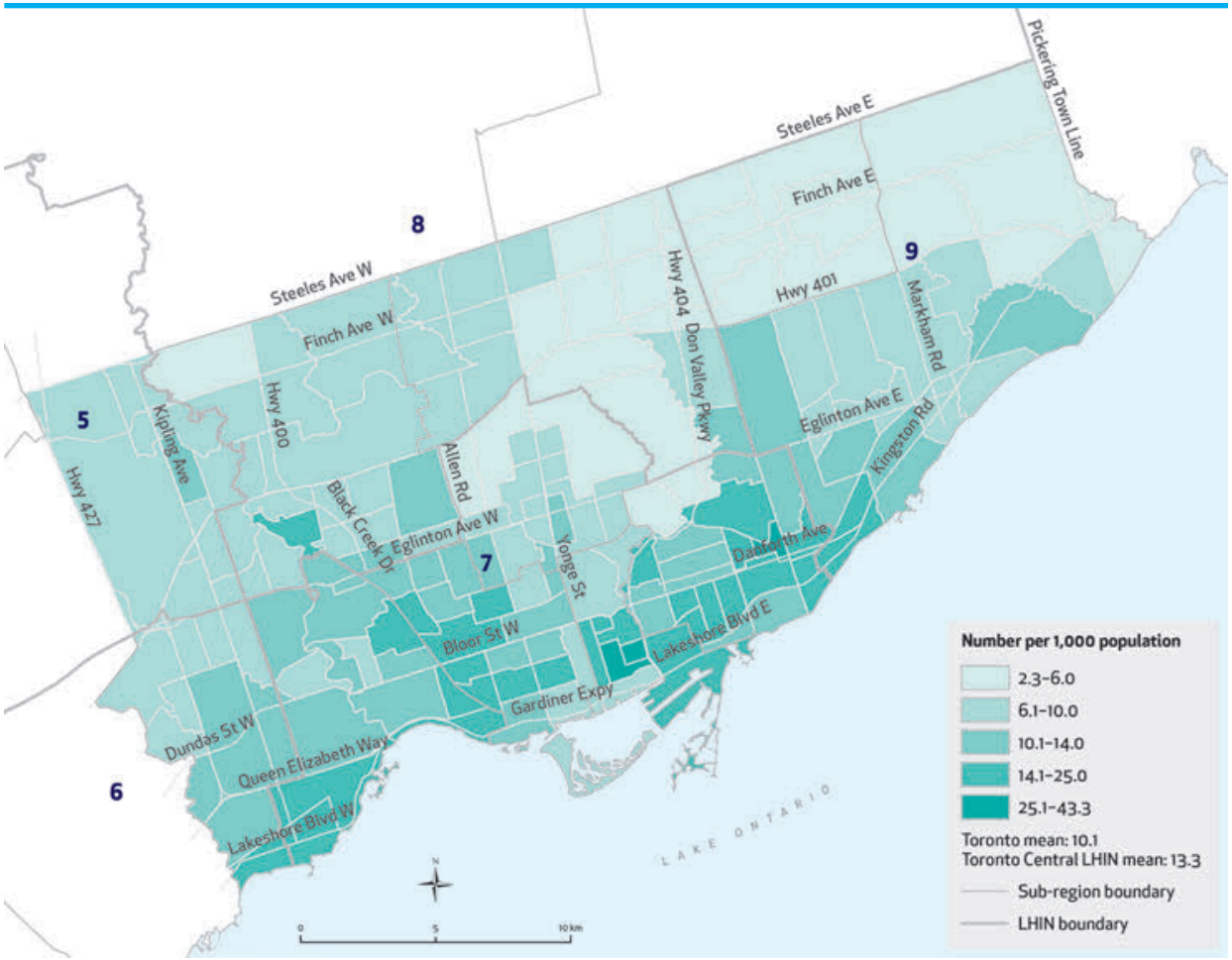


Data sources: OHIP, RPDB.

EXHIBIT 29 Number of people diagnosed with a substance-use disorder per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest number of people diagnosed with a substance-use disorder (e.g., alcoholism, drug dependence) per 1,000 population were in the southern parts of the city.
- In the Toronto Central LHIN, the southern part of the Mid-East Toronto sub-region had the highest number of people diagnosed with a substance-use disorder per 1,000 population.

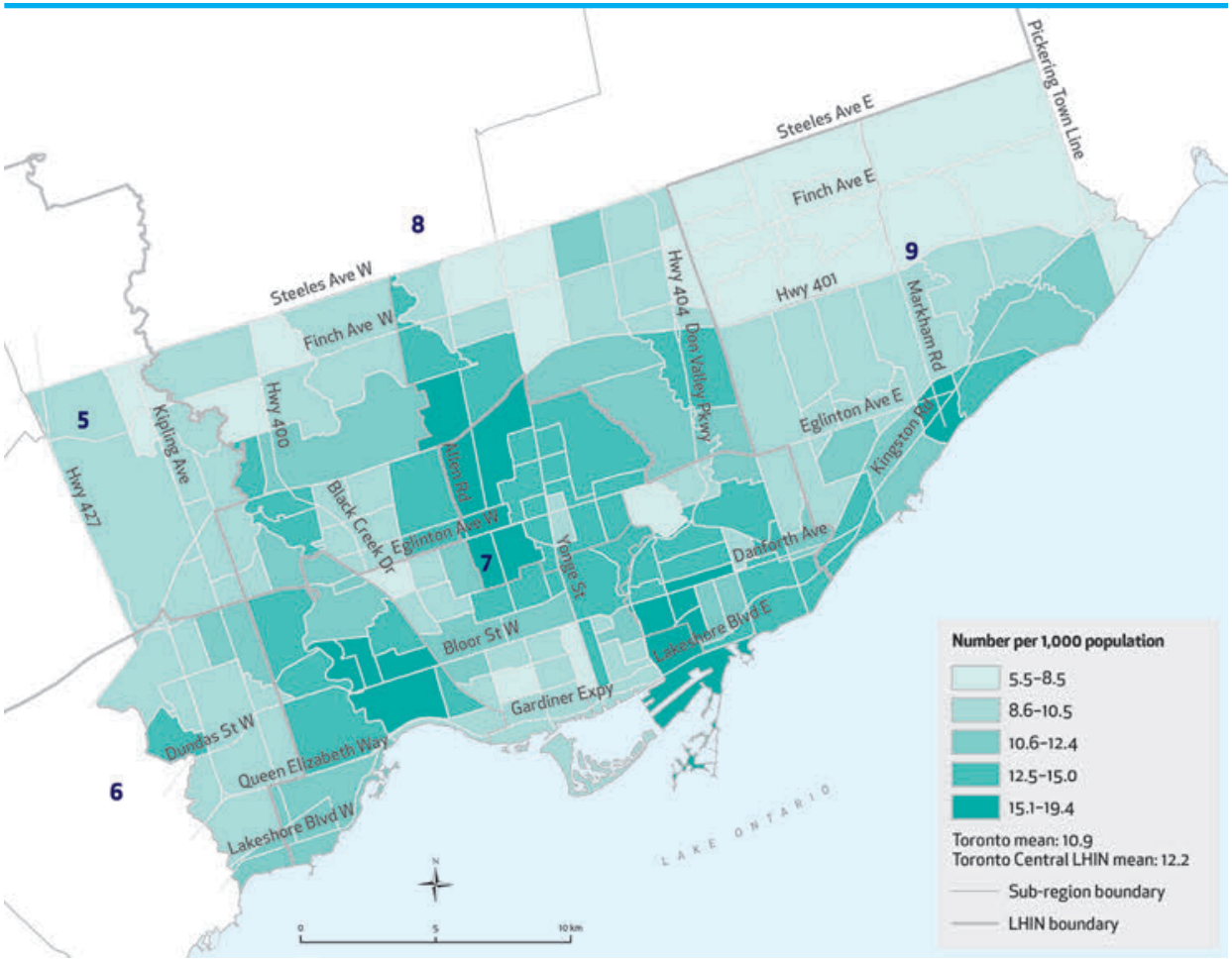


Data sources: OHIP, RPDB.

EXHIBIT 30 Number of people diagnosed with a social, family or occupational issue* per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest proportion of people diagnosed with a social, family or occupational issue were in the central and western parts of the city.
- Neighbourhoods in the Toronto Central LHIN with the highest proportion of people diagnosed with a social, family or occupational issue were in the West Toronto, North Toronto (western part) and East Toronto (western part) sub-regions.



Data sources: OHIP, RPDB.
*Social, family or occupational issues include economic problems, marital difficulties, parent-child problems, problems with aged parents or in-laws, family disruption/divorce, education problems, social maladjustment, occupational problems, legal problems and other problems of social adjustment.

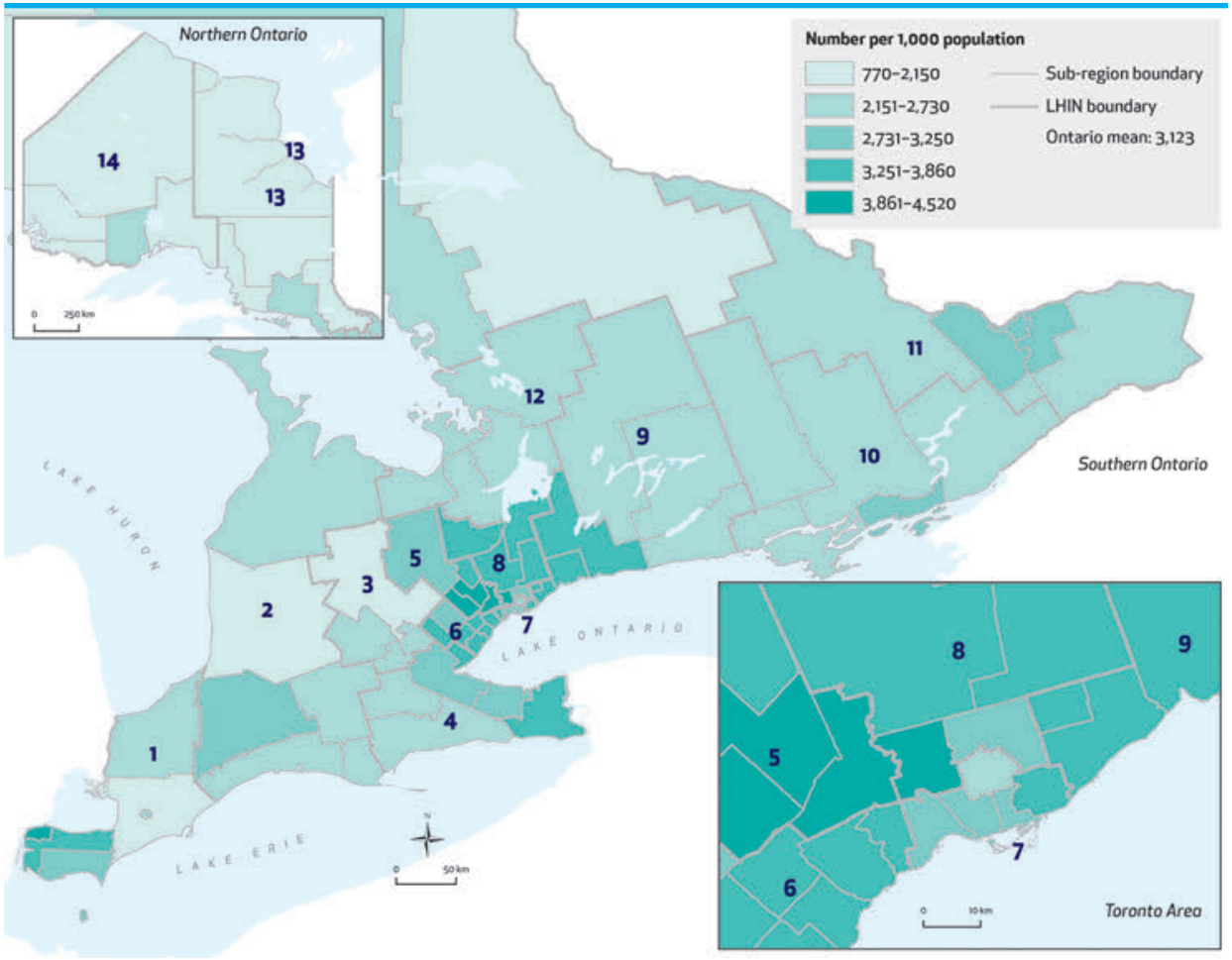
Primary Care Service Use

Ontario

EXHIBIT 31 Mean annual number of visits to primary care physicians per 1,000 population, by sub-region, in Ontario, 2014/15 to 2015/16

Key Messages

- The Greater Toronto Area, as well as the Niagara, Windsor, and Tecumseh Lakeshore Amherstburg LaSalle sub-regions had the highest number of visits to primary care physicians per 1,000 population.
- Rates were also high in urban areas surrounding the London Middlesex and Kingston sub-regions and in Ottawa.

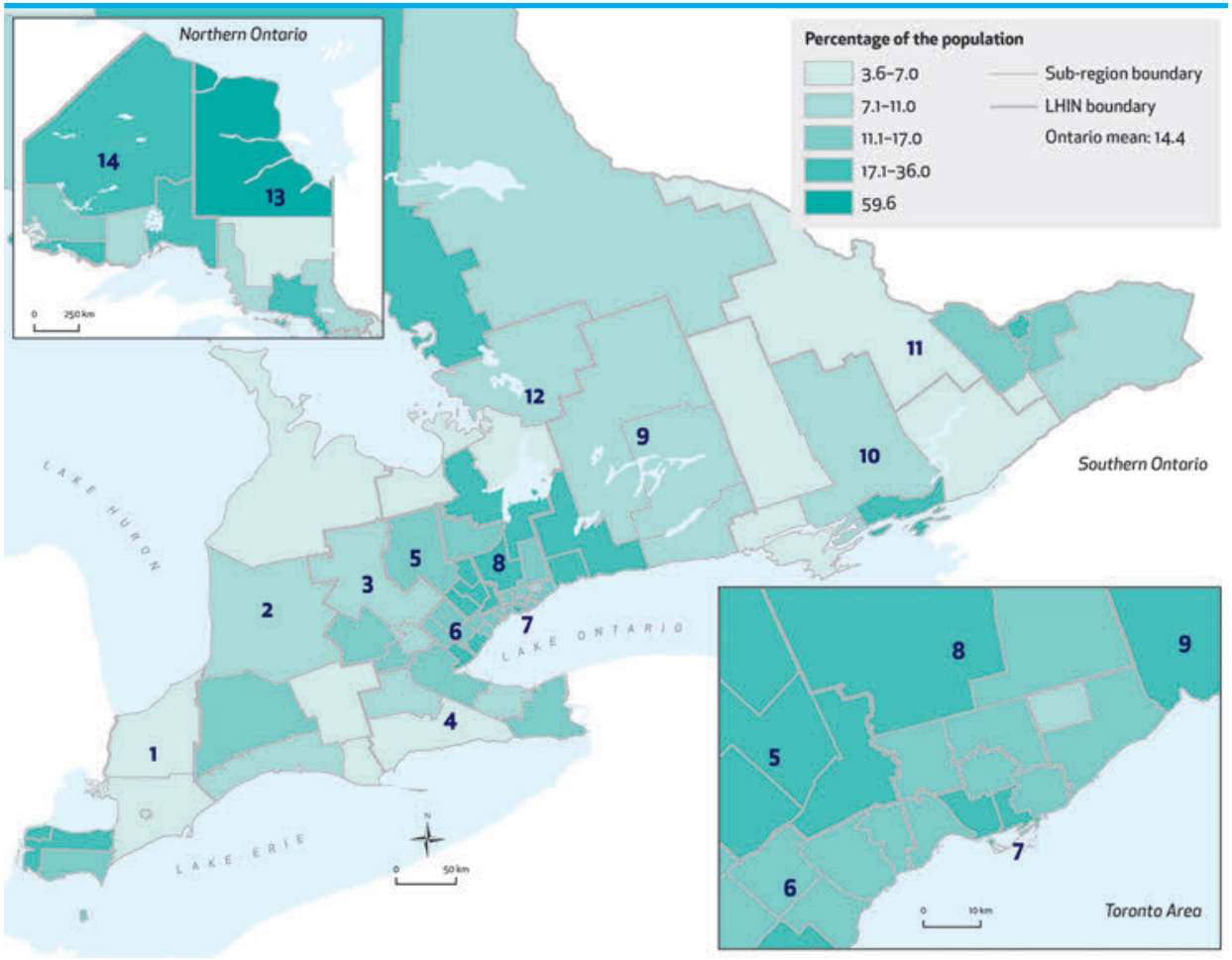


Data sources: CHC, OHIP, RPDB.
Note: High rates of primary care visits can be desirable, given that early detection and management of certain conditions may prevent more complicated and costly health outcomes. On the other hand, high rates of primary care visits can also indicate worse health status.

EXHIBIT 32 Percentage of the population with at least three primary care visits who had low continuity to any primary care physician, by sub-region, in Ontario, 2014/15 to 2015/16

Key Messages

- Low continuity to any primary care physician was highest in the James and Hudson Bay Coasts sub-region, throughout the Greater Toronto Area (especially outside Toronto), and in other urban areas in southern Ontario (Windsor, Kingston, Ottawa).
- Sub-regions in the North East and North West LHINs also had low continuity rates.

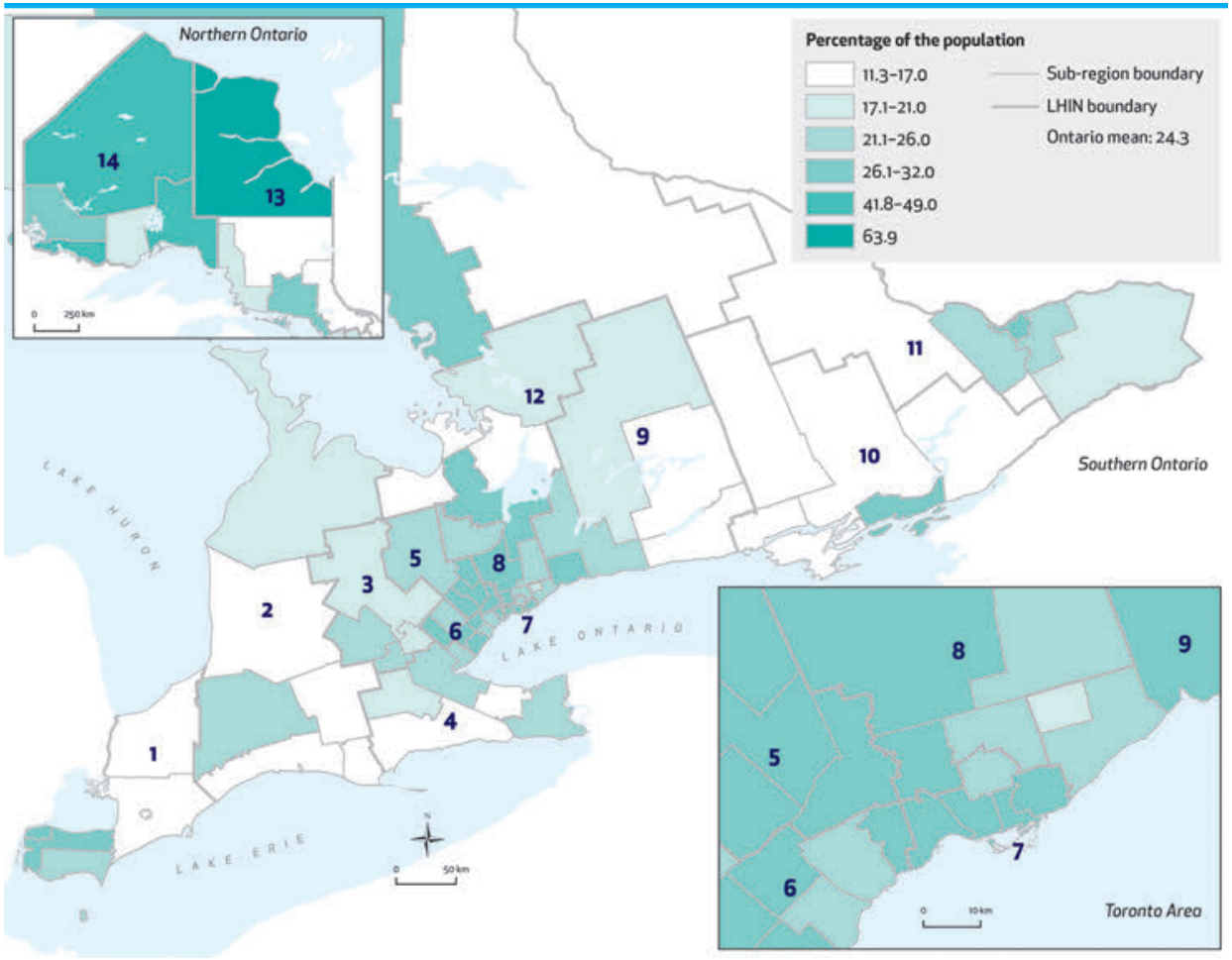


Data sources: CHC, OHIP, RPDB.
Note: Low continuity of care to any primary care physician may indicate that a patient does not have a dedicated family physician. This can reflect difficulties accessing care, or inconsistent health care-seeking behavior among patients, that is often associated with inefficient or inadequate care. Continuity improves the patient-provider care relationship; it helps providers to better understand their patients' long-term health care needs, including their values and preferences and their family and social circumstances.

EXHIBIT 33 Percentage of the population with at least three primary care visits who had low continuity to their own primary care physician, by sub-region, in Ontario, 2014/15 to 2015/16

Key Messages

- Low continuity to a patient's own primary care physician was highest in the James and Hudson Bay Coasts sub-region, throughout the Greater Toronto Area and in other urban areas of southern Ontario (Windsor, Kingston, Ottawa).
- Sub-regions in the North East and North West LHINs also had low continuity rates.

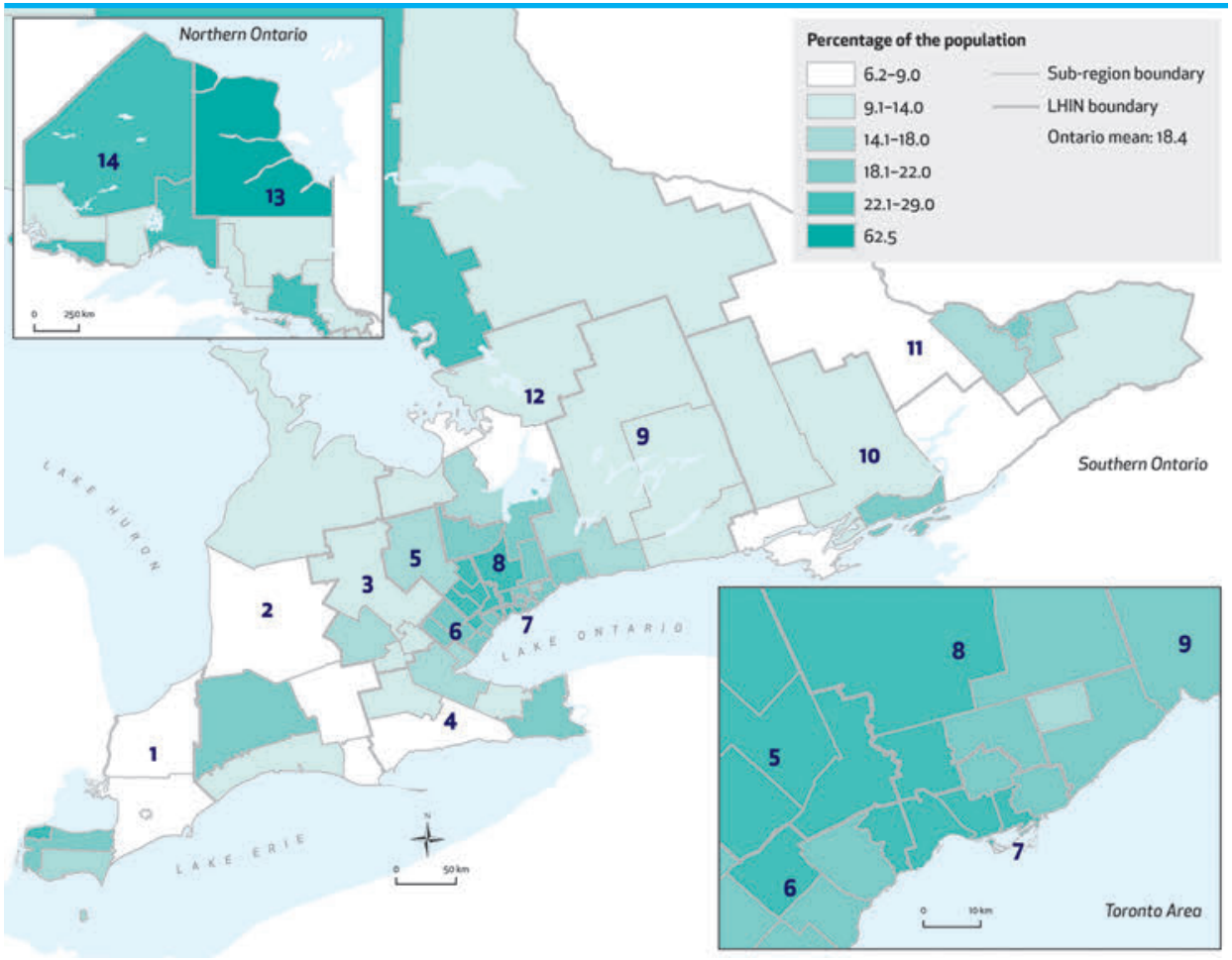


Data sources: CHC, OHIP, RPDB.
Note: This measure includes both formal and virtual rostering of patients to their own primary care physician (see Appendix B). Low continuity of care may indicate that these patients had difficulty accessing their physician or sought alternative primary care options (e.g., walk-in clinics and house call services).

EXHIBIT 34 Percentage of the population with at least three primary care visits who had low continuity to a physician in a primary care enrolment model (PEM), by sub-region, in Ontario, 2014/15 to 2015/16

Key Messages

- Low continuity to physicians in a PEM was highest in the James and Hudson Bay Coasts sub-region, throughout the Greater Toronto Area and in other urban areas of southern Ontario (Windsor, Kingston, Ottawa).
- Sub-regions in the North East and North West LHINs also had low continuity rates.

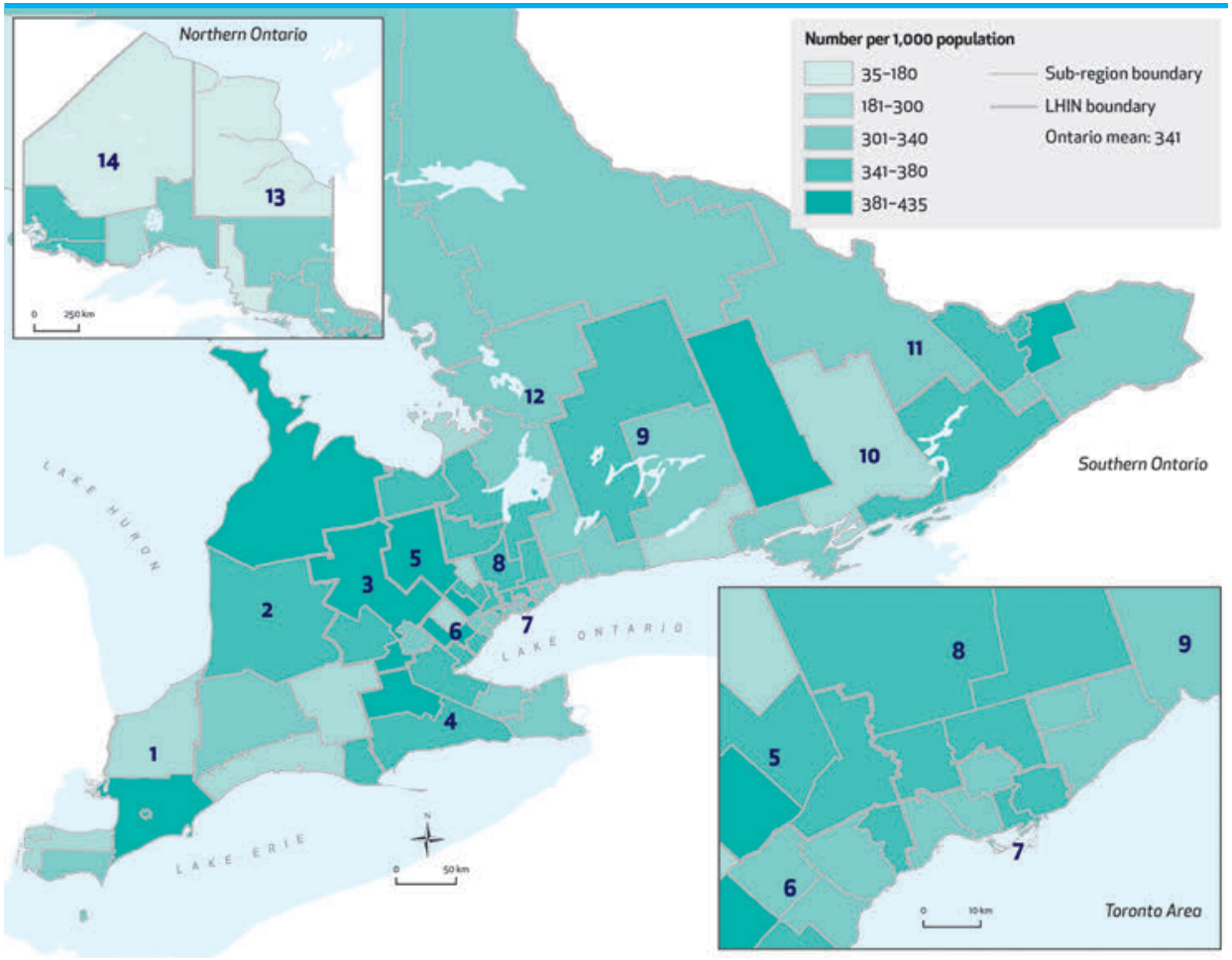


Data sources: CHC, OHIP, RPDB.
Note: This measure includes both formal and virtual rostering of patients to physicians in a PEM (see Appendix B). Low continuity of care may indicate that these patients had difficulty accessing these physicians or sought alternative primary care options (e.g., walk-in clinics and house call services).

EXHIBIT 35 Number of people newly enrolled in a primary care enrolment model (PEM) in the previous five years per 1,000 population, by sub-region, in Ontario, 2015/16

Key Message

- Areas with the most new enrolments were in the rural areas of Southern Ontario (e.g., northern parts of the South West, Waterloo Wellington and Central West LHINs), and in the western sub-regions of the Hamilton Niagara Haldimand Brant, Mississauga Halton and South East LHINs. This finding may be explained by the fact that small changes in PEM enrolment in less populous sub-regions have a relatively higher impact on the overall rate.

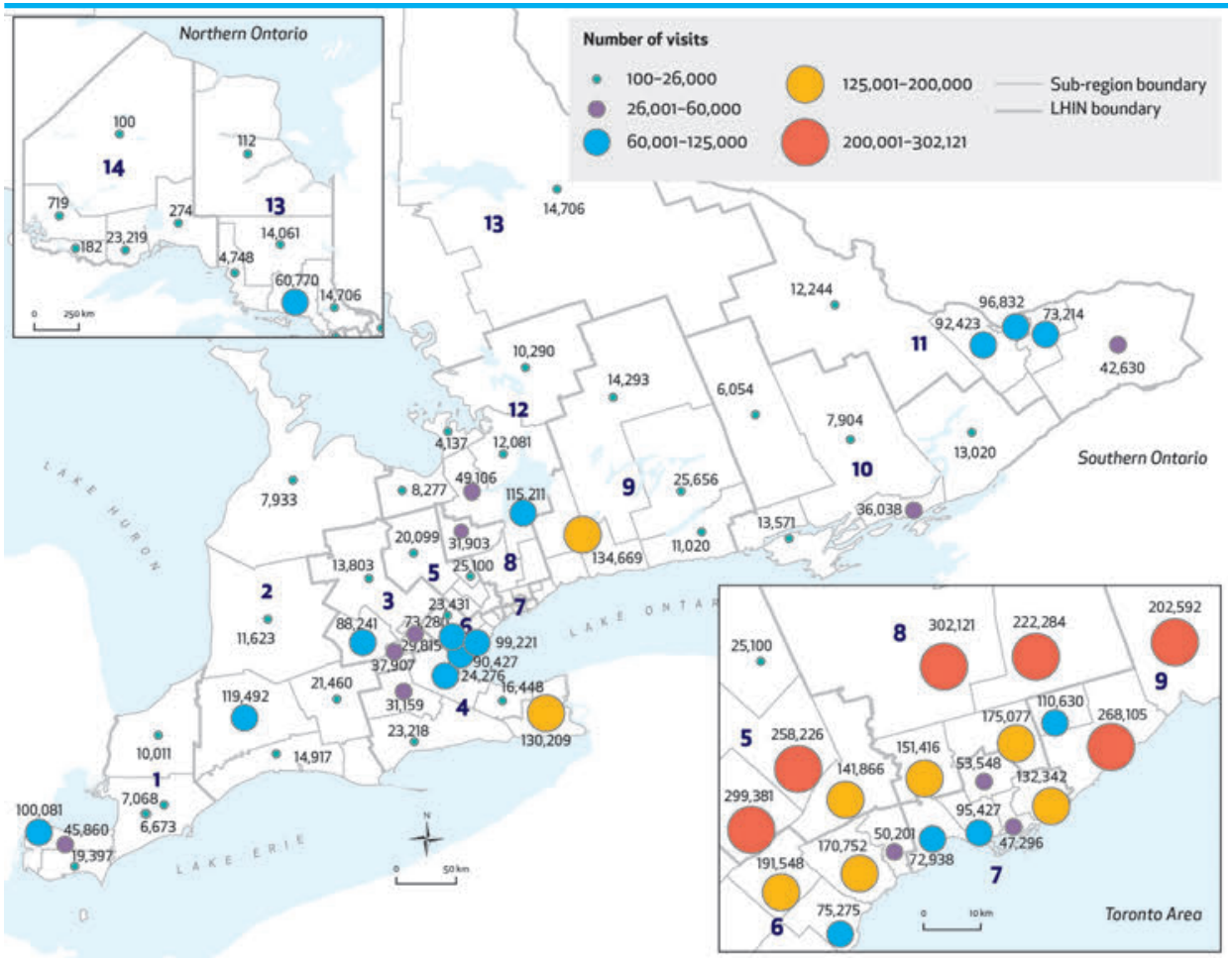


Data sources: OHIP, RPDB.
Note: New enrolment in a PEM in a given region can be driven by new births, in-migration of patients or increased availability of primary care physicians in those areas.

EXHIBIT 36 Number of after-hours visits to primary care physicians, by sub-region, in Ontario, 2015/16

Key Messages

- The sub-regions with the highest numbers of after-hours visits were in the areas immediately surrounding Toronto.
- Sub-regions in Toronto, Mississauga, Durham and Niagara, as well as urban areas in southern Ontario, also had high numbers of after-hours visits.

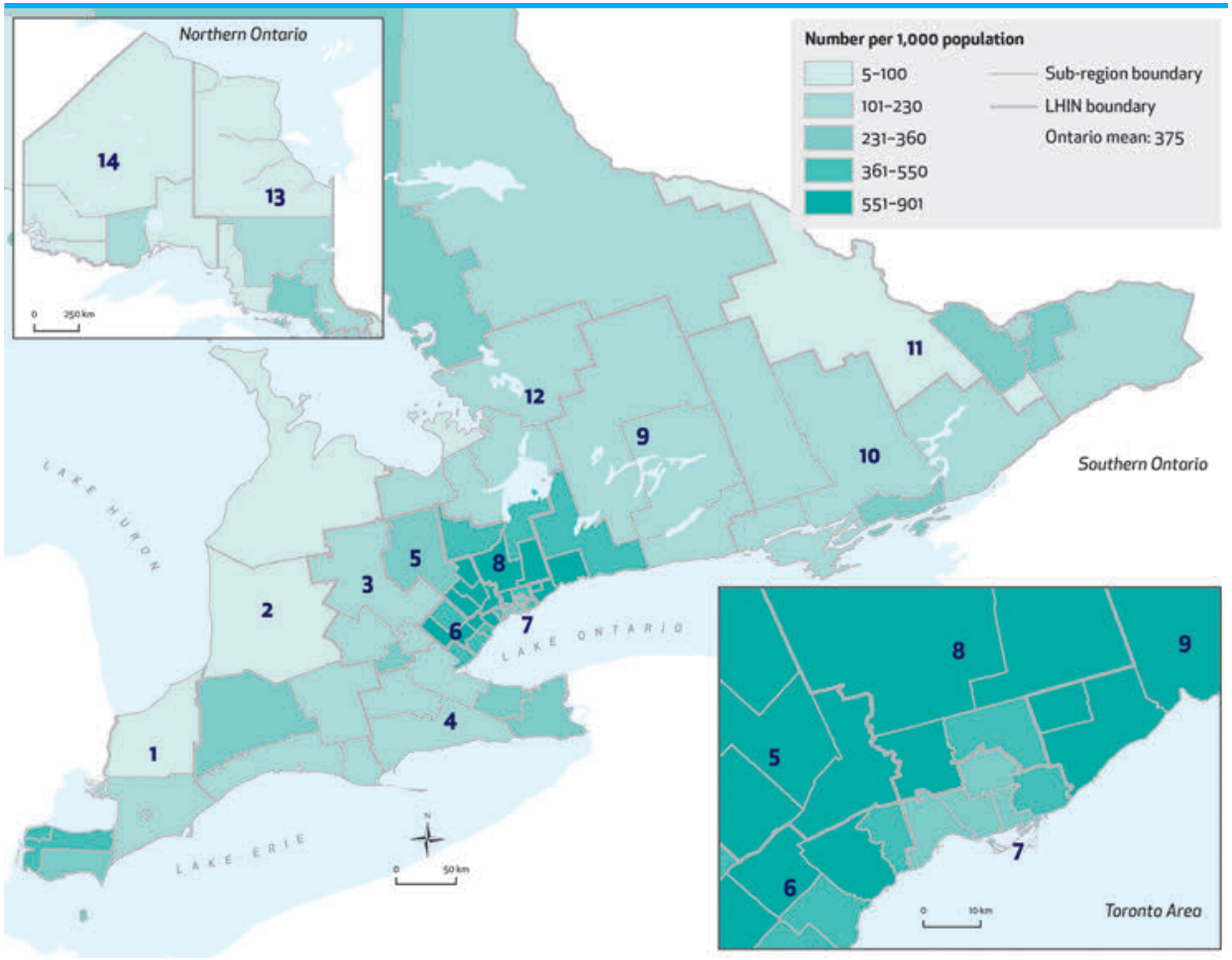


Data sources: OHIP, RPDB.
Note: Most physicians in primary care enrolment models have obligations to provide evening and weekend care, typically from 5 p.m. to 8 p.m. on weekdays and half days or full days on weekends, depending on the size of the group. More after-hours visits can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities, or for those whose health conditions begin or worsen after hours.

EXHIBIT 37 Number of after-hours visits to primary care physicians per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- The number of after-hours visits per 1,000 population was highest throughout the Greater Toronto Area, but especially in areas outside of the Toronto Central LHIN.
- Rates were also high in the Sudbury-Manitoulin-Parry Sound sub-region and in the urban areas of southern Ontario.

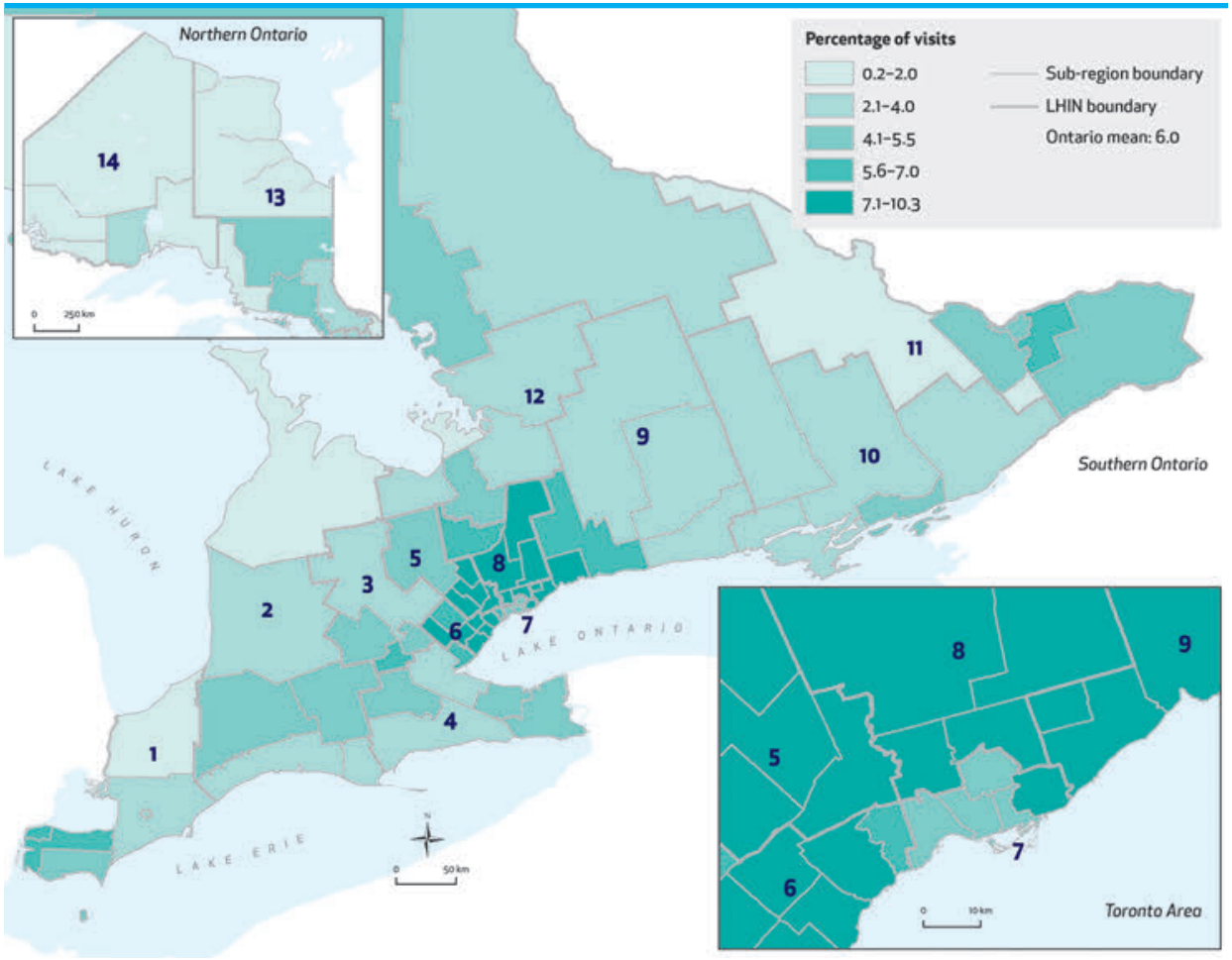


Data sources: OHIP, RPDB.
Note: More after-hours visits per 1,000 population can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities, or for those whose health conditions begin or worsen after hours.

EXHIBIT 38 Percentage of visits to primary care physicians that were after-hours visits, by sub-region, in Ontario, 2015/16

Key Message

- Similar to the number of after-hours visits per 1,000 population depicted in Exhibit 37, the percentage of all primary care visits that were after-hours visits was highest throughout the Greater Toronto Area, with the exception of some sub-regions in the Toronto Central LHIN.

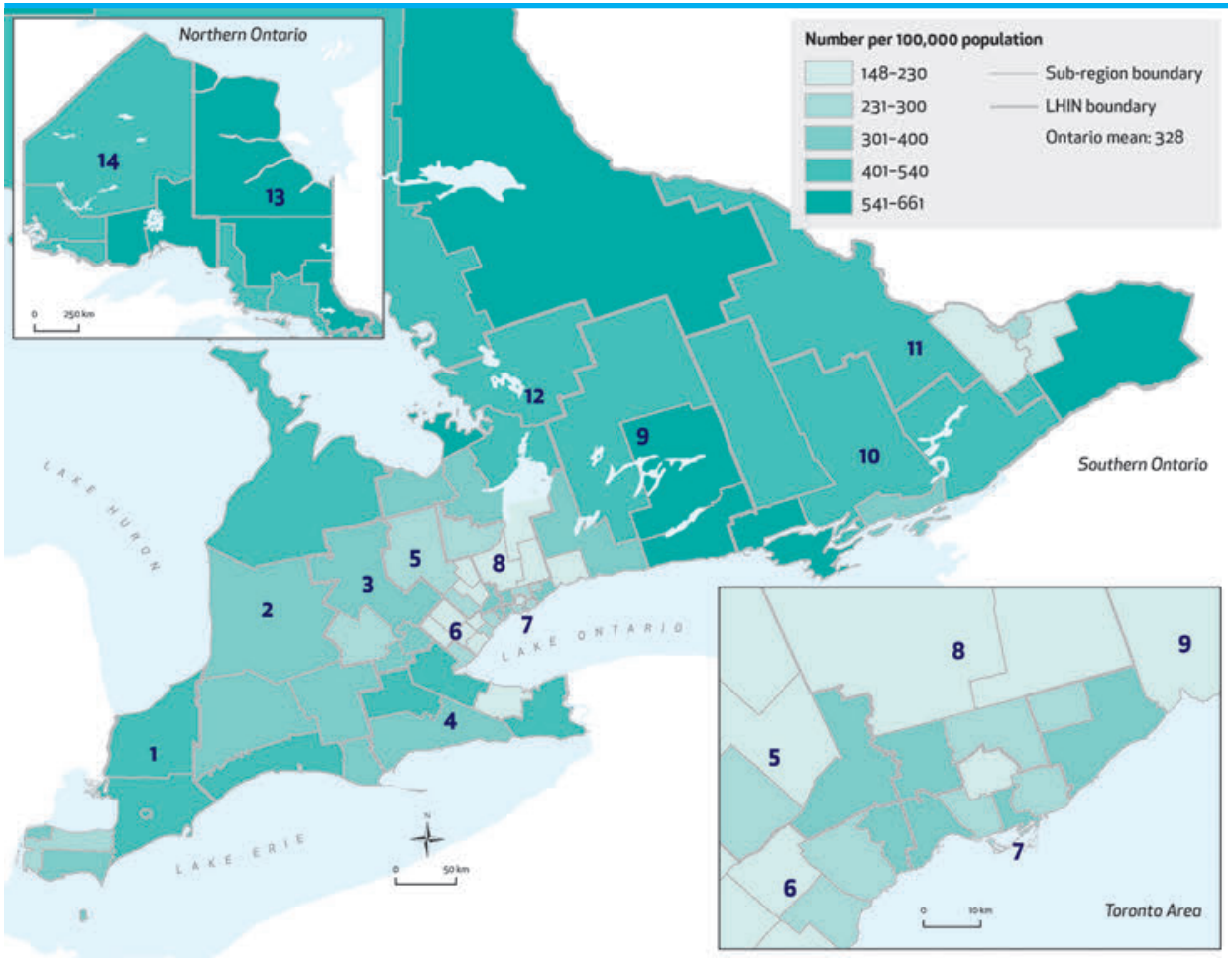


Data sources: OHIP, RPDB.
Note: A higher percentage of after-hours visits can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities, or for those whose health conditions begin or worsen after hours.

EXHIBIT 39 Number of avoidable hospitalizations for ambulatory care–sensitive conditions (ACSCs) per 100,000 population, by sub-region, in Ontario, 2015/16

Key Message

- The highest rates of ACSC admissions were in the Peterborough City and County, Northumberland County, Quinte, Rural Frontenac, Lennox & Addington, Nipissing-Temiskaming, Cochrane, James and Hudson Bay Coasts, District of Thunder Bay and City of Thunder Bay sub-regions.

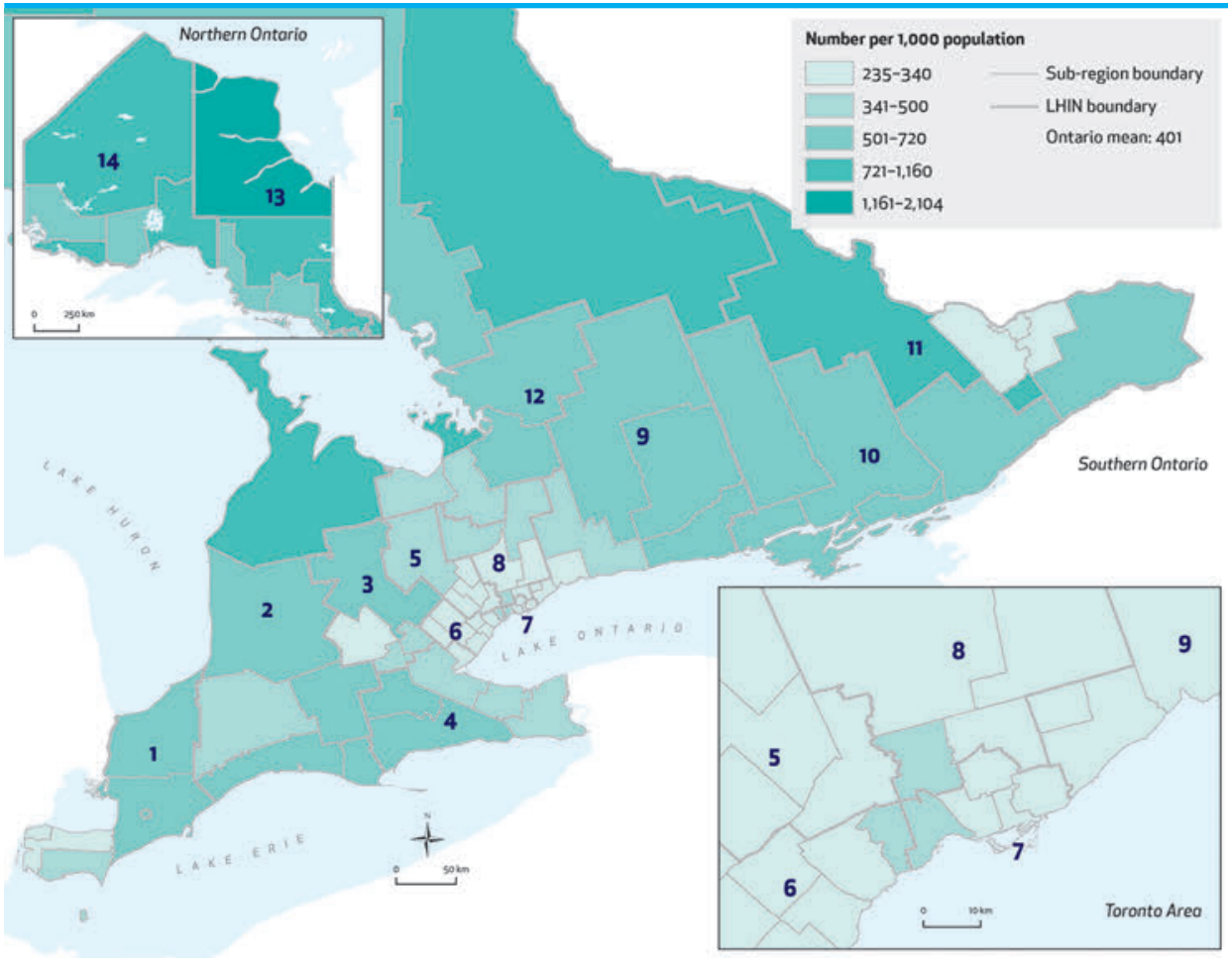


Data sources: CIHI-DAD, RPDB.
Note: Hospitalizations for ACSCs may be avoided or reduced through appropriate, timely primary care. The number of hospitalizations for ACSCs is often used as a proxy measure of access to ongoing, high-quality primary care. ACSC admissions are often higher in rural areas since there are more hospital beds available, and the need for overnight observation is greater for those living a long distance from the hospital.

EXHIBIT 40 Number of emergency department (ED) visits per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- Areas with the highest number of ED visits per 1,000 population were in the northern and rural areas of the province, including the James and Hudson Bay Coasts sub-region.
- The lowest numbers of ED visits per 1,000 population were in the urban sub-regions of the Ottawa area, the Greater Toronto Area, Kitchener-Waterloo and the Windsor area.

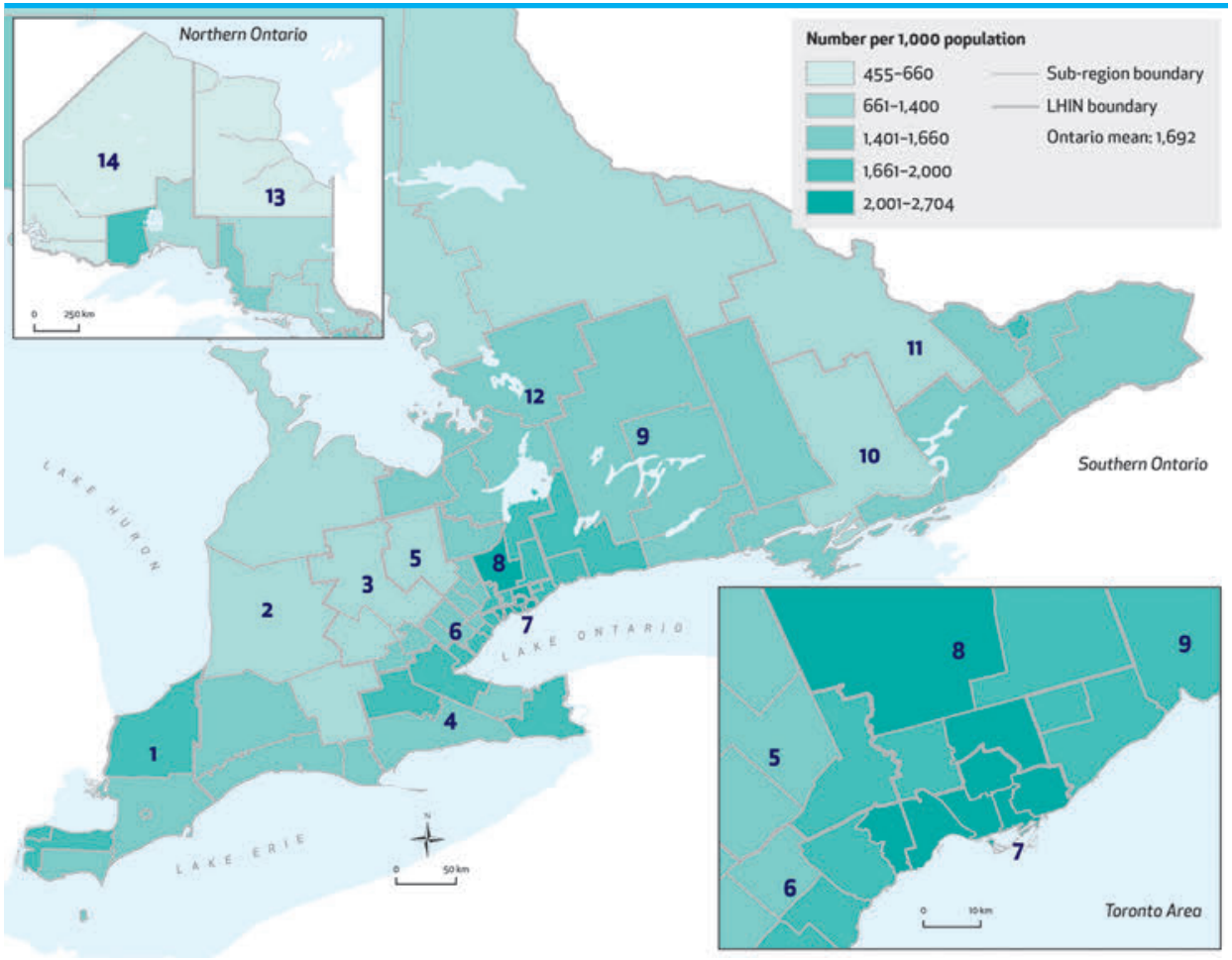


Data sources: NACRS, RPDB.
Note: The number of ED visits is often used as a proxy measure of appropriate access to timely and after-hours primary care. While many ED visits are urgent and not avoidable, others could potentially be avoided if primary care providers were available in a timely way and outside of regular office hours. The number of ED visits in rural areas is often higher because there are no alternative primary care, specialty care or diagnostic services available.

EXHIBIT 41 Number of visits to specialist physicians per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- The Western York Region, South Etobicoke and North York Central sub-regions, as well as sub-regions in the Toronto Central LHIN, had the highest number of visits to specialist physicians per 1,000 population.
- The District of Kenora and District of Rainy River sub-region had the lowest number of visits to specialist physicians per 1,000 population.



Data sources: IPDB, OHIP, RPDB.
Note: The number of visits to specialist physicians per 1,000 population may reflect population need for specialist care but is also related to specialist availability and patient expectations. Specialist visits tend to be lower in rural areas where the availability of specialist physicians is lower, and higher in urban areas and in areas of higher socioeconomic status.

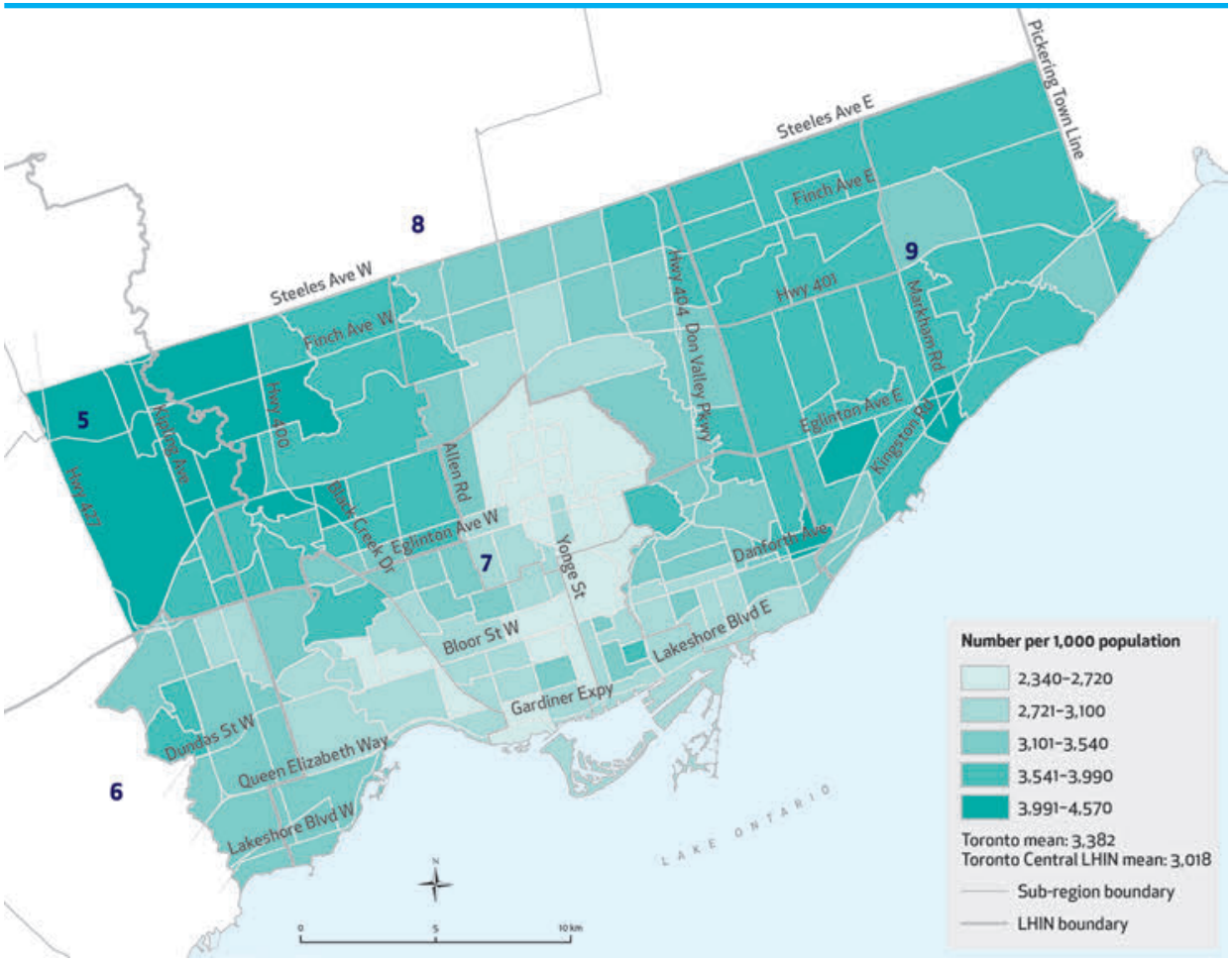
Primary Care Service Use

Toronto

EXHIBIT 42 Mean annual number of visits to primary care physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

Key Message

- Neighbourhoods in northern Etobicoke, western North York and Scarborough had the highest number of visits to primary care physicians per 1,000 population.

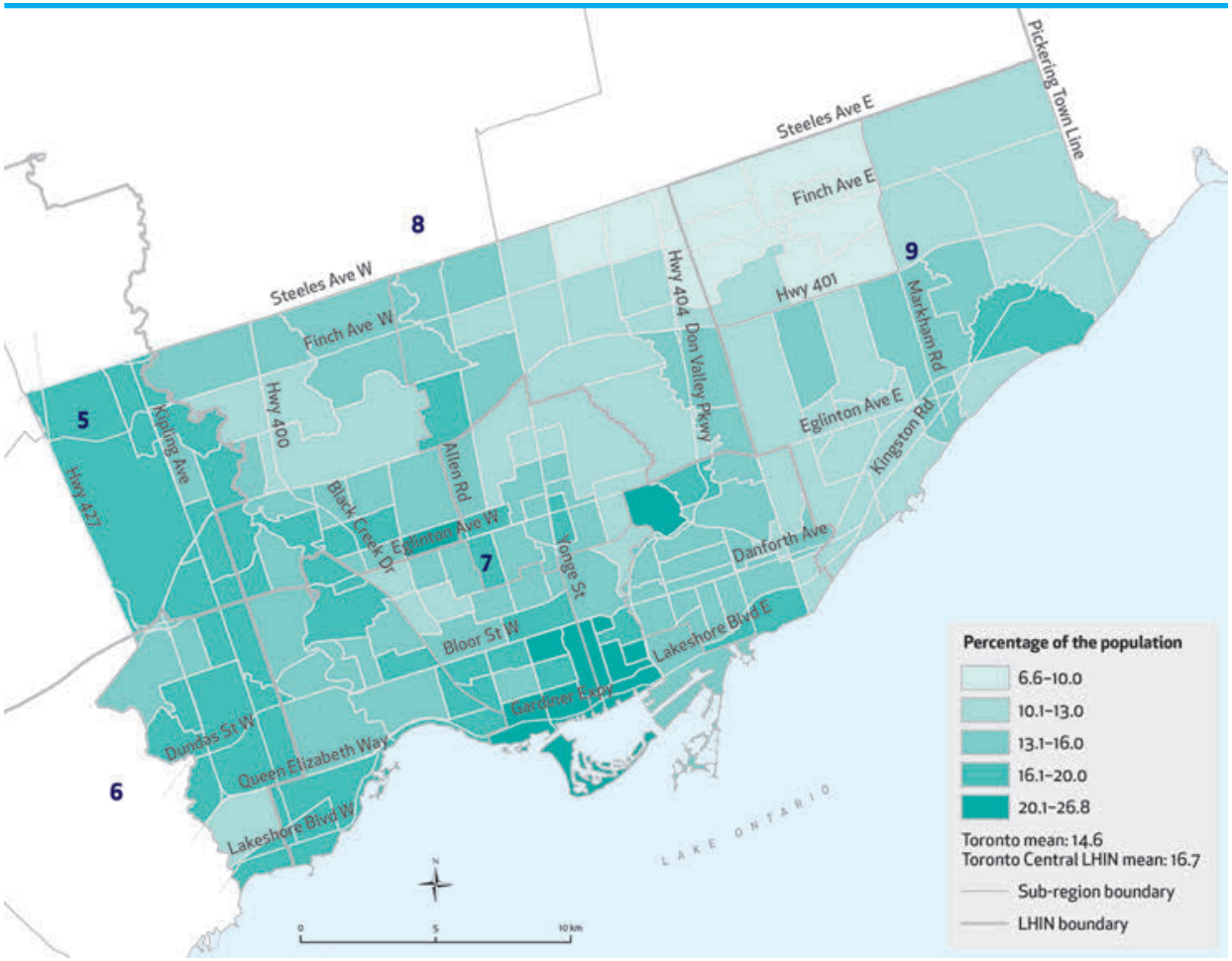


Data sources: CHC, OHIP, RPDB.
Note: Higher rates of primary care visits can be desirable, given that early detection and management of certain conditions may prevent more complicated and costly health outcomes. On the other hand, higher rates of primary care visits can also indicate worse health status.

EXHIBIT 43 Percentage of the population with at least three primary care visits who had low continuity to any primary care physician, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

Key Messages

- Low continuity of care to any physician was highest in the downtown core, as well as in the northeastern part of the Toronto Central LHIN.
- Rates were also high in most of Etobicoke and parts of North York and Scarborough.

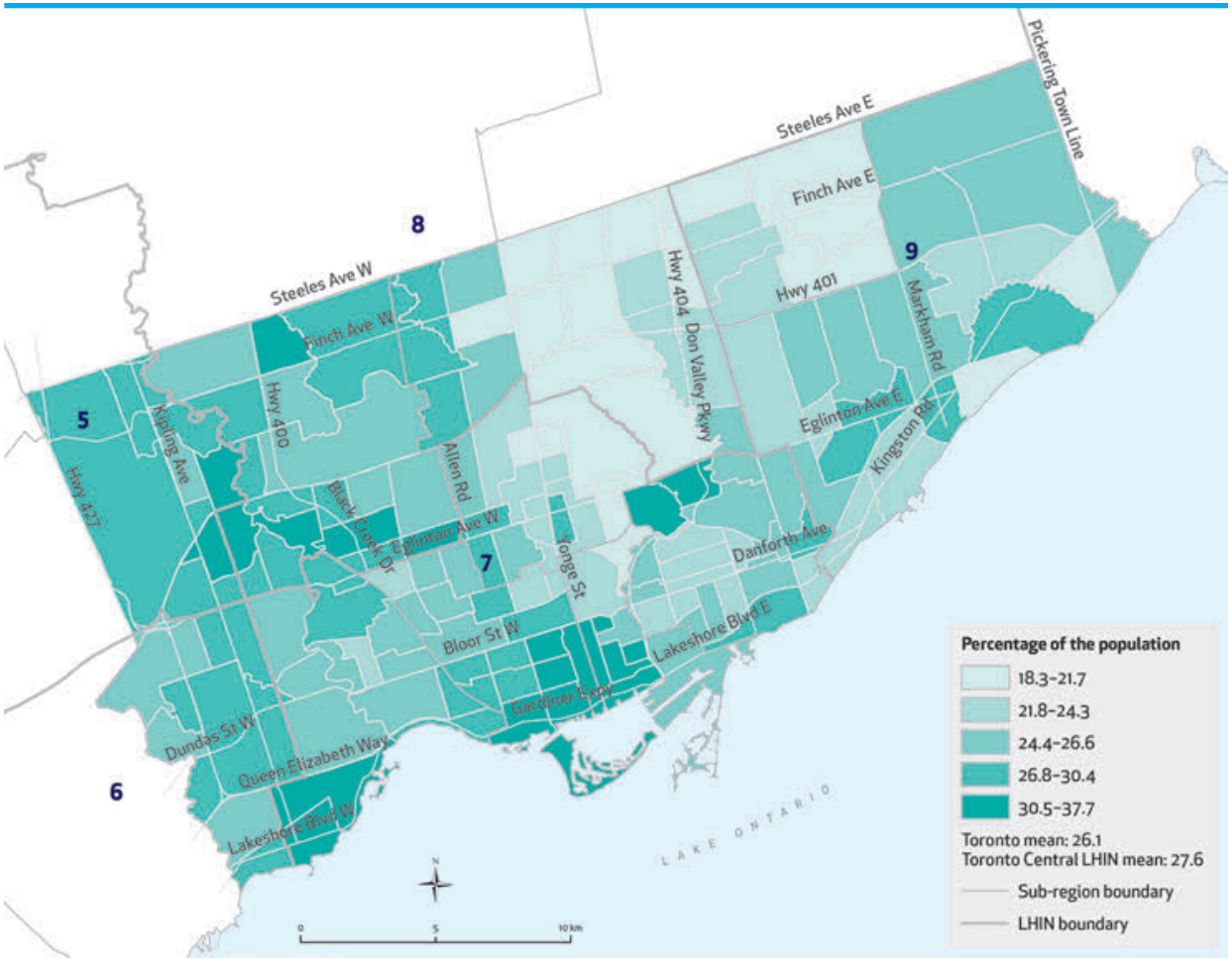


Data sources: CHC, OHIP, RPDB.
Note: Low continuity of care to any primary care physician may indicate that a patient does not have a dedicated family physician. This can reflect difficulties accessing care, or inconsistent health care-seeking behavior among patients, that is often associated with inefficient or inadequate care. Continuity improves the patient-provider care relationship; it helps providers to better understand their patients' long-term health care needs, including their values and preferences and their family and social circumstances.

EXHIBIT 44 Percentage of the population with at least three primary care visits who had low continuity to their own primary care physician, by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

Key Messages

- Low continuity of care to a patient's own physician was highest in the downtown core, as well as in the northeastern part of the Toronto Central LHIN.
- Rates were also high in north Etobicoke and west North York.
- These patterns are similar to those for low continuity to any primary care physician (see Exhibit 43).

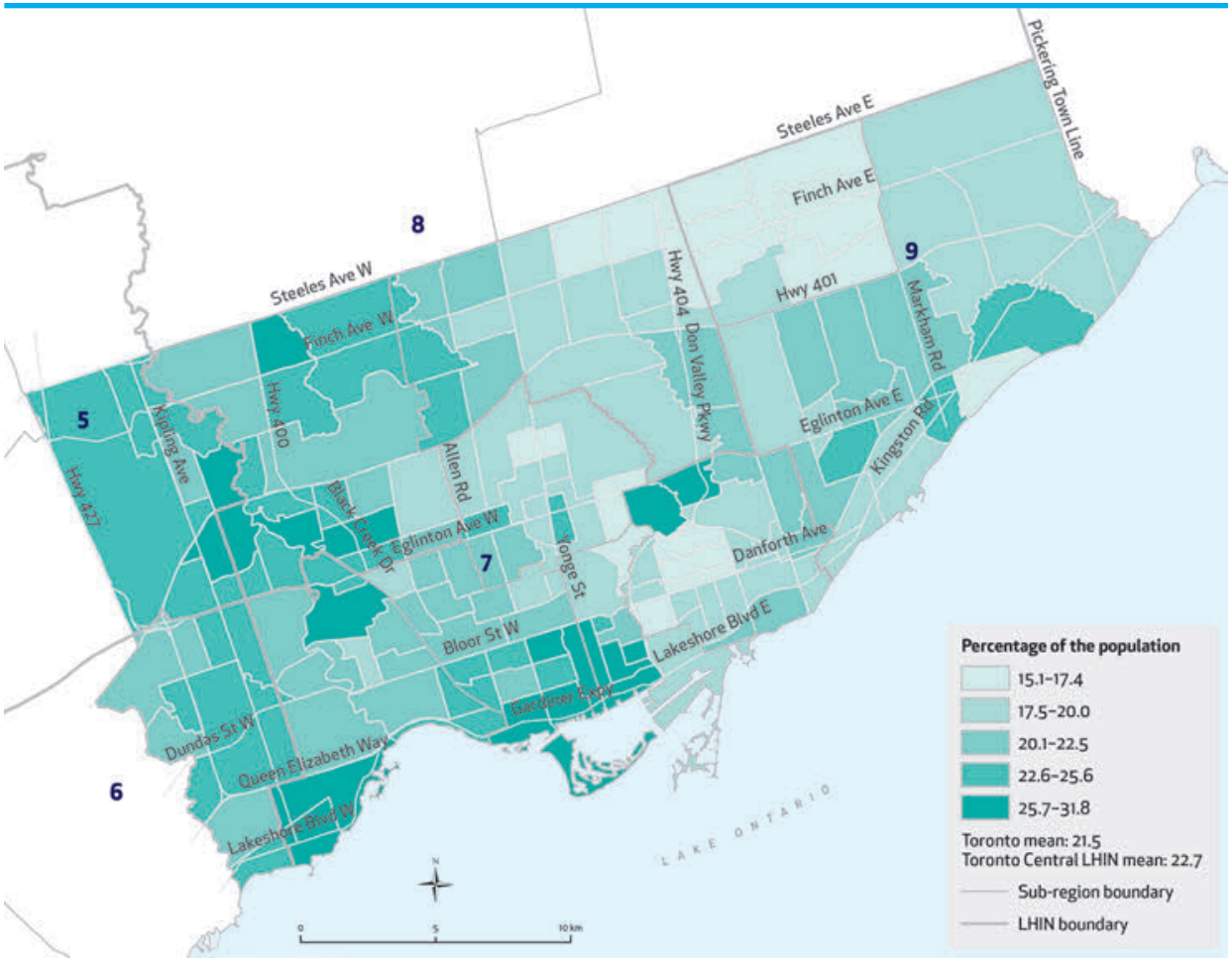


Data sources: CHC, OHIP, RPDB.
Note: This measure includes both formal and virtual rostering of patients to their own primary care physician (see Appendix B). Low continuity of care may indicate that these patients had difficulty accessing their physician or sought alternative primary care options (e.g., walk-in clinics and house call services).

EXHIBIT 45 Percentage of the population with at least three primary care visits who had low continuity to a physician in a primary care enrolment model (PEM), by neighbourhood, in Toronto, Ontario, 2014/15 to 2015/16

Key Message

- The highest rates of low continuity of care to a physician in a PEM were in the downtown core, the northeastern part of the Toronto Central LHIN and the northwestern and southwestern parts of the city. These patterns are similar to those for low continuity to any, or a patient's own, primary care physician (see Exhibits 43 and 44).

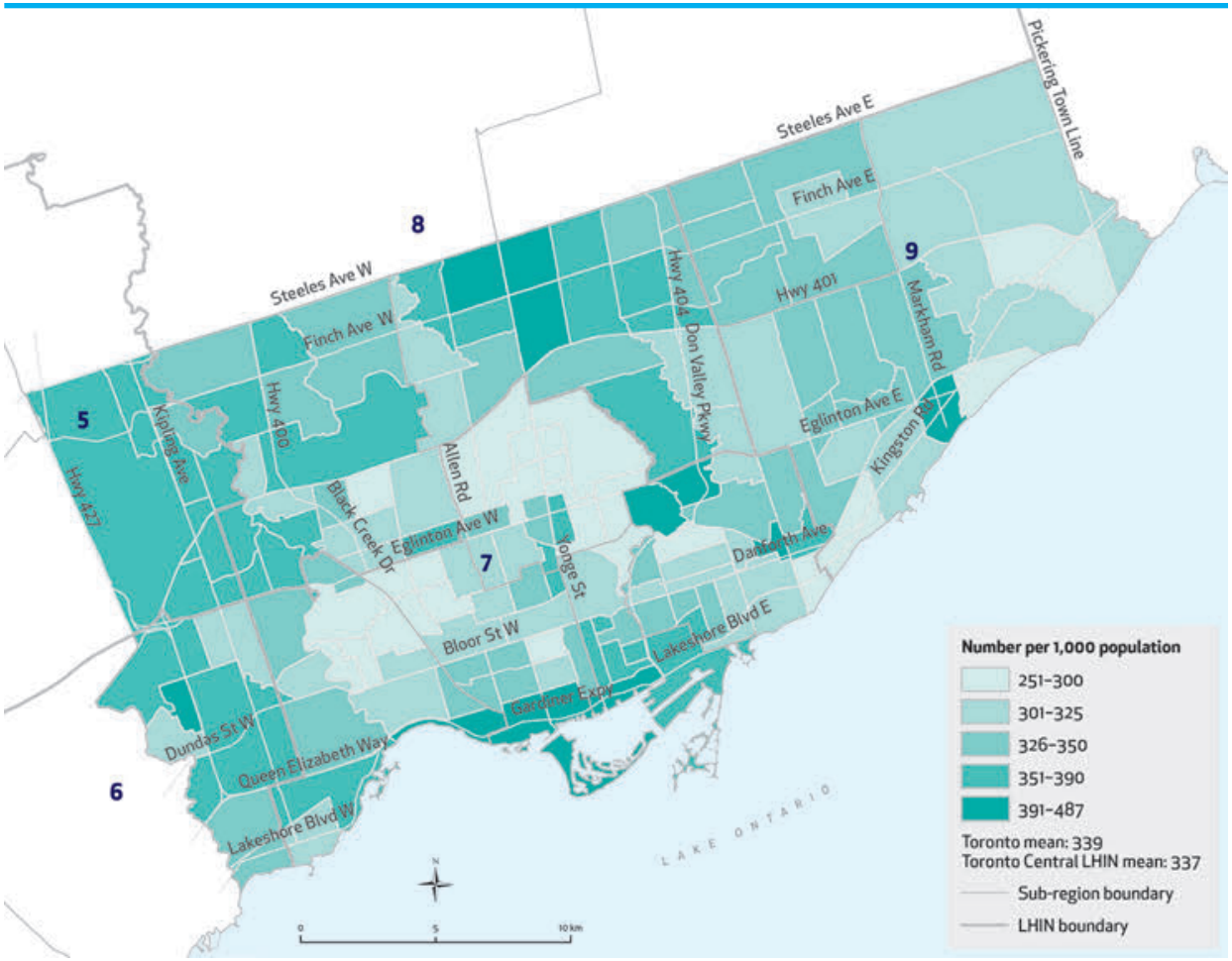


Data sources: CHC, OHIP, RPDB.
Note: This measure includes both formal and virtual rostering of patients to physicians in a PEM (see Appendix B). Low continuity of care may indicate that these patients had difficulty accessing these physicians or sought alternative primary care options (e.g., walk-in clinics and house call services).

EXHIBIT 46 Number of people newly enrolled in a primary care enrolment model (PEM) in the previous five years per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- The developing lakefront communities within and just west of downtown had the highest number of new enrolments per 1,000 population.
- The northeastern and eastern parts of the Toronto Central LHIN, and some areas west, north and east of the city, also had high rates of new enrolments.

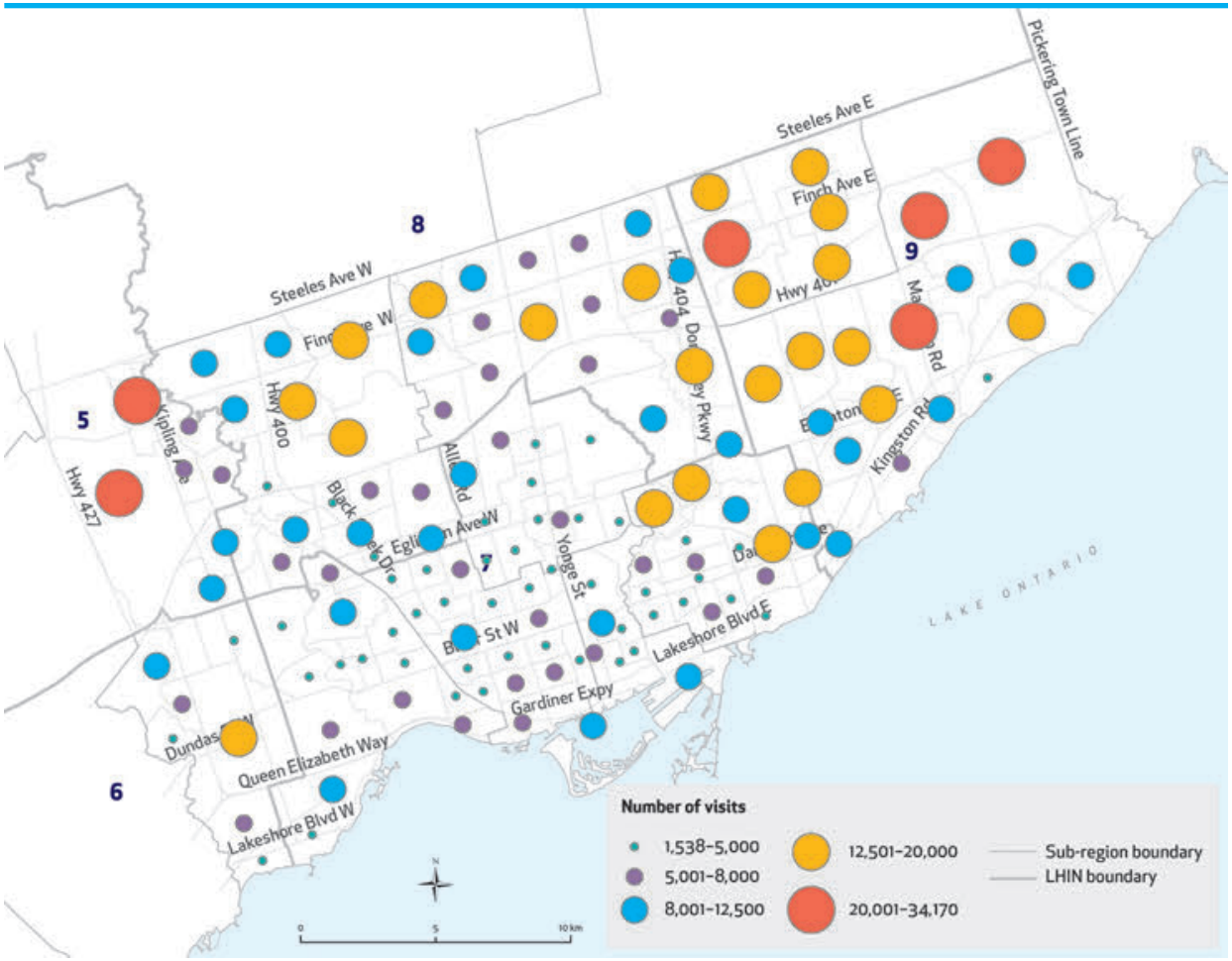


Data sources: CHC, CIHI-DAD, OHIP.
Note: New enrolment in a PEM in a given region can be driven by new births, in-migration of patients or increased availability of primary care physicians in those areas.

EXHIBIT 47 Number of after-hours visits to primary care physicians, by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- Neighbourhoods in the northeastern part of the Toronto Central LHIN and in northern Etobicoke, North York and Scarborough had the highest numbers of after-hours visits.

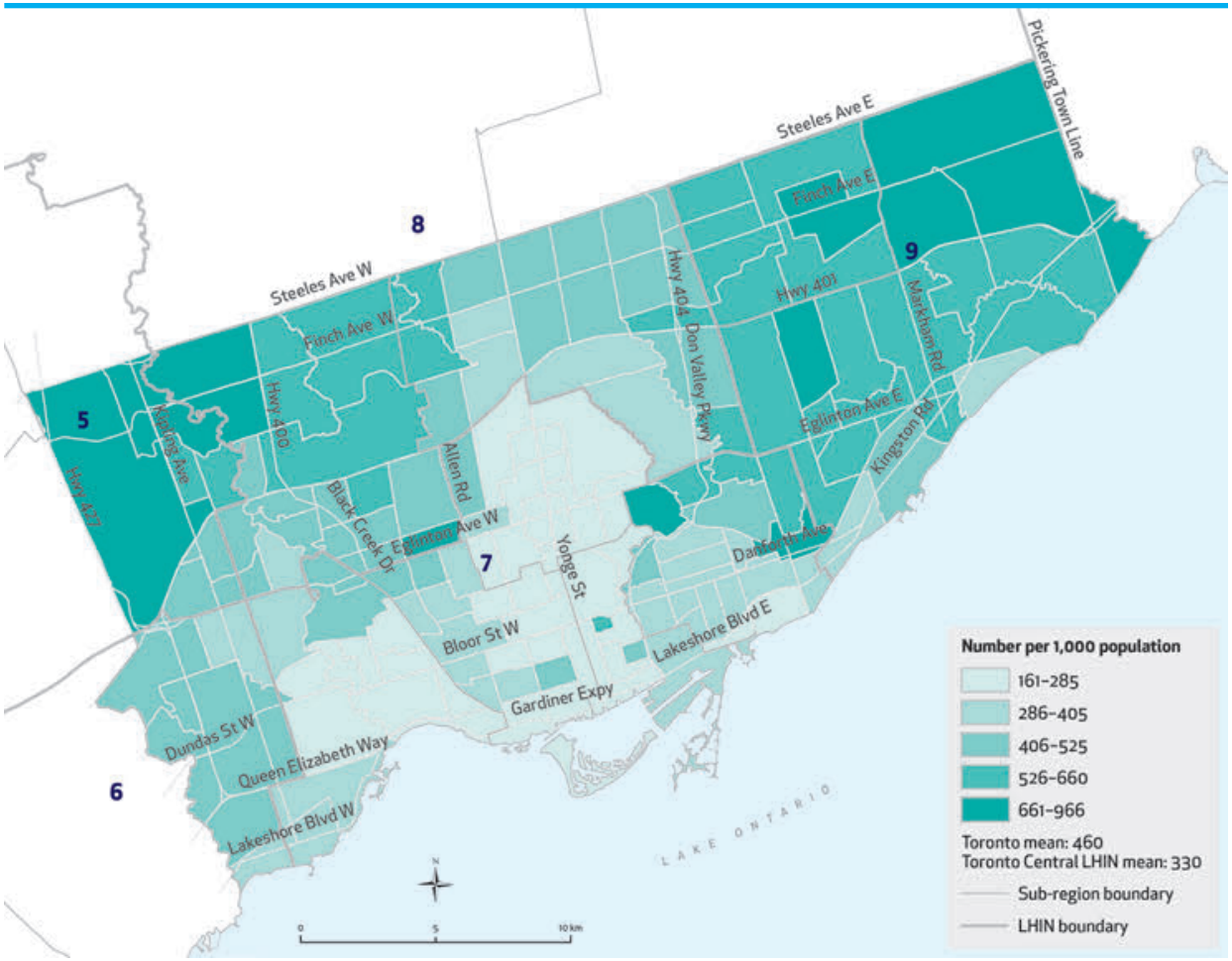


Data sources: OHIP, RPDB.
Note: Most physicians in primary care enrolment models have obligations to provide evening and weekend care, typically from 5 p.m. to 8 p.m. on weekdays and half days or full days on weekends, depending on the size of the group. More after-hours visits can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities or for those whose health conditions begin or worsen after hours.

EXHIBIT 48 Number of after-hours visits to primary care physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- The number of after-hours visits per 1,000 population was highest in the northeastern and eastern parts of the Toronto Central LHIN, as well as in the northwestern and eastern parts of the city.

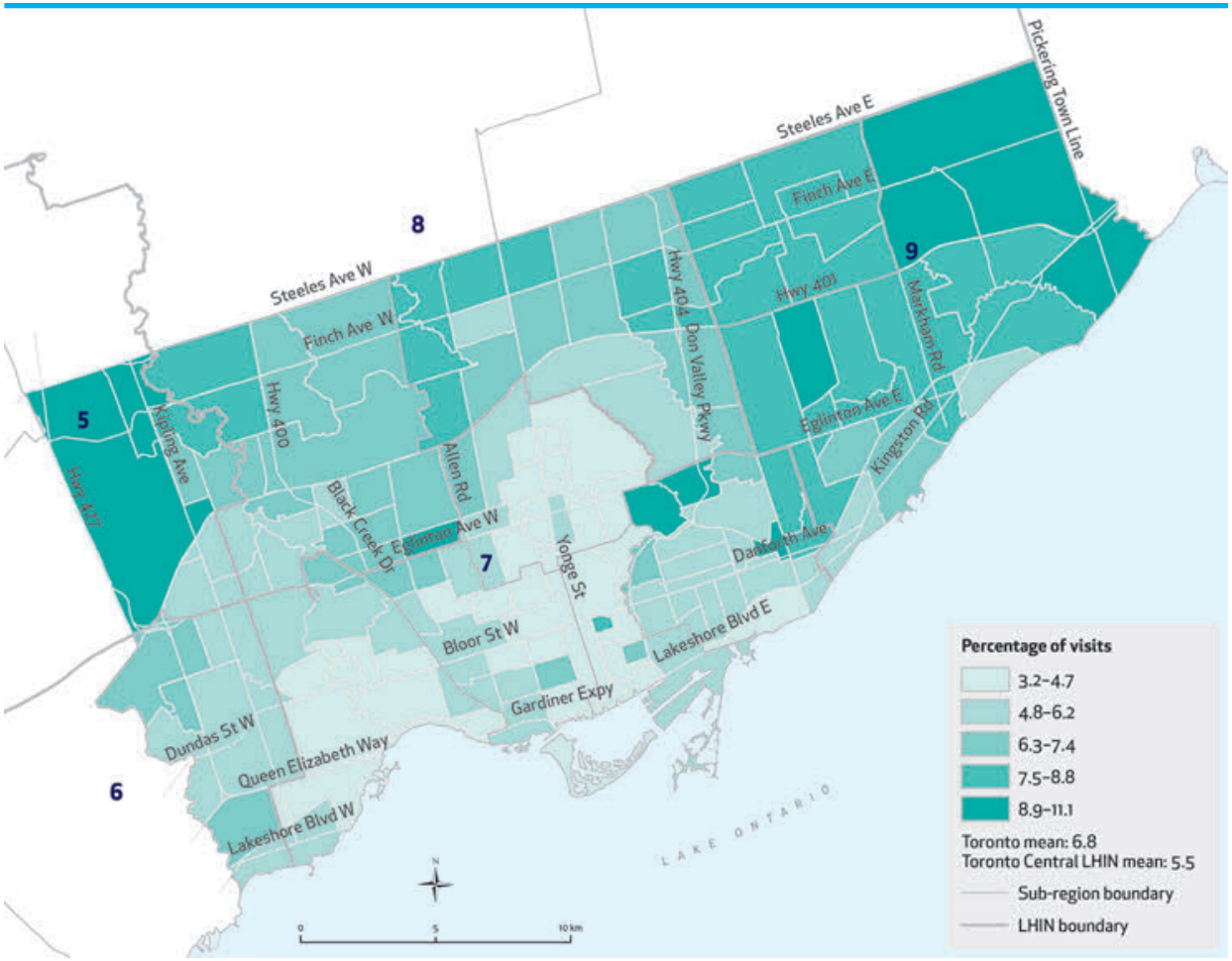


Data sources: OHIP, RPDB.
Note: More after-hours visits per 1,000 population can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities or for those whose health conditions begin or worsen after hours.

EXHIBIT 49 Percentage of visits to primary care physicians that were after-hours visits, by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- Similar to the number of after-hours visits per 1,000 population (see Exhibit 48), the percentage of all primary care physician visits that were after-hours visits was highest in the northeastern and eastern parts of the Toronto Central LHIN, as well as in the northwestern and eastern parts of the city.

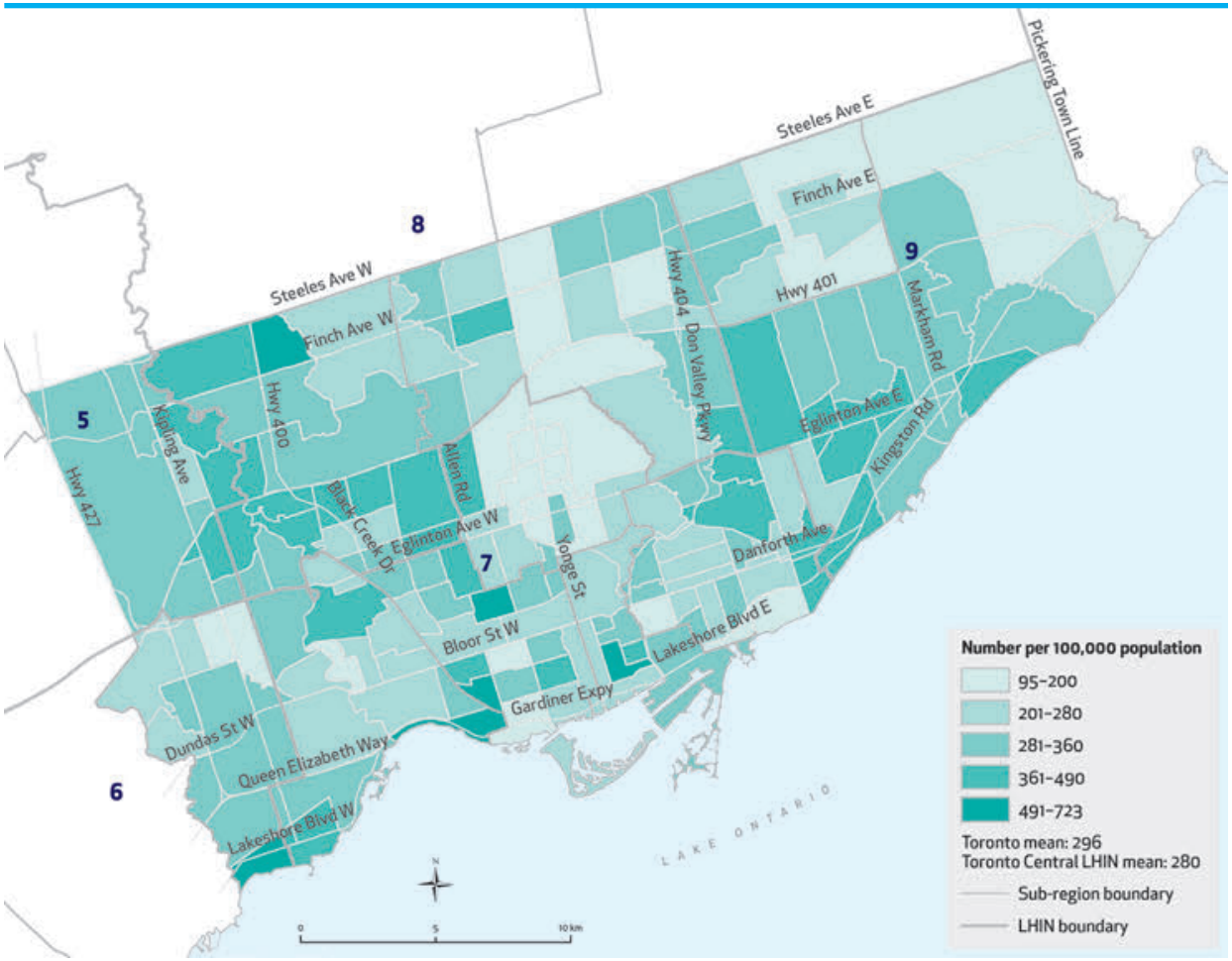


Data sources: OHIP, RPDB.
Note: A higher percentage of after-hours visits can indicate better access to after-hours care for people who have difficulty attending daytime appointments due to work or childcare responsibilities or for those whose health conditions begin or worsen after hours.

EXHIBIT 50 Number of avoidable hospitalizations for ambulatory care–sensitive conditions (ACSCs) per 100,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- The number of avoidable hospitalizations per 100,000 population was highest in neighbourhoods in the centre of the city and lowest in neighbourhoods outside of the city.
- In the Toronto Central LHIN, the neighbourhoods with the highest number of avoidable hospitalizations per 100,000 population were scattered across the West Toronto, Mid-West Toronto and Mid-East Toronto sub-regions.

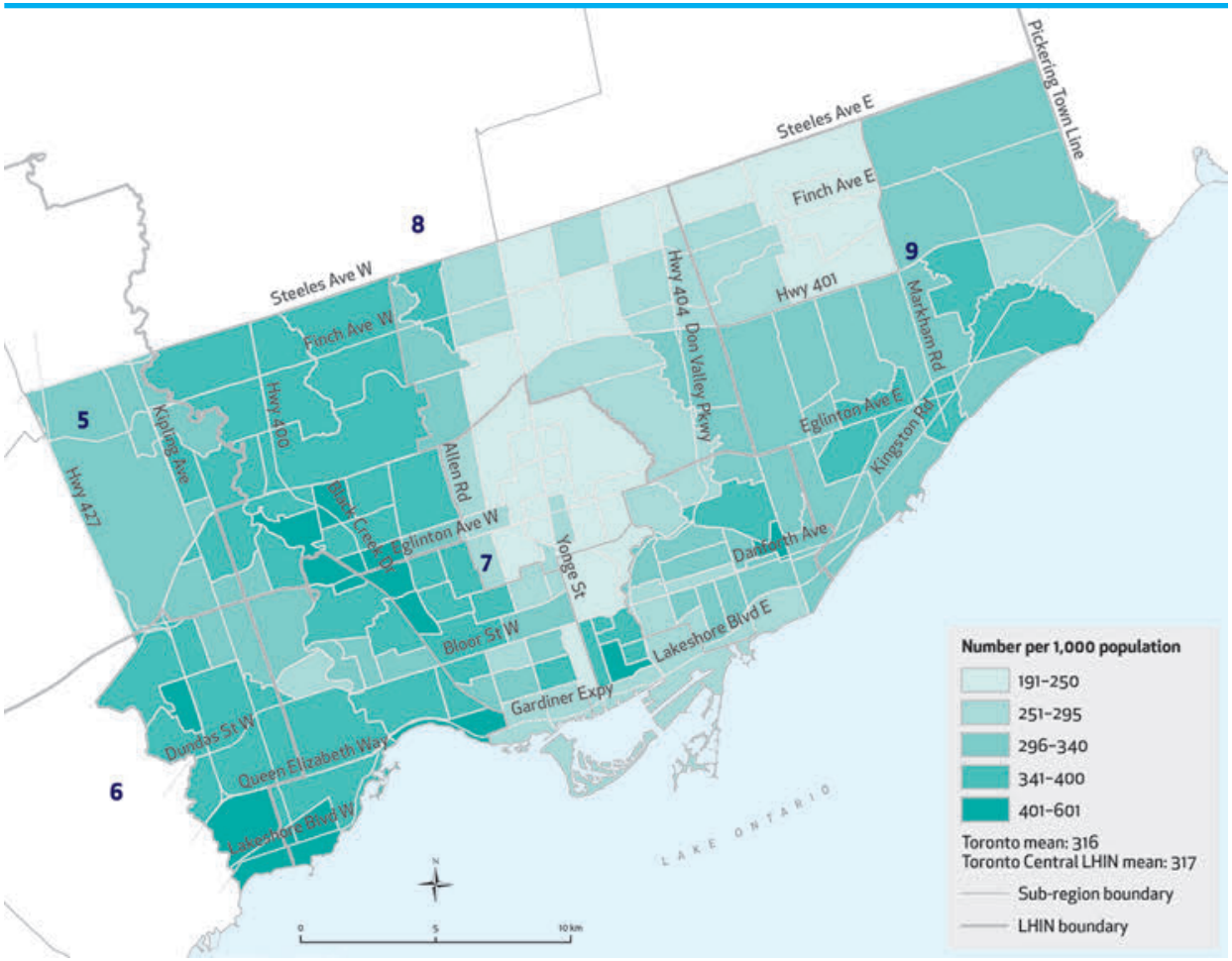


Data sources: CIHI-DAD, RPDB.
Note: Hospitalizations for ACSCs may be avoided or reduced through appropriate, timely primary care. The number of hospitalizations for ACSCs is often used as a proxy measure of access to ongoing, high-quality primary care. ACSC admissions are often higher in rural areas since there are more hospital beds available, and the need for overnight observation is greater for those living a long distance from the hospital.

EXHIBIT 51 Number of emergency department (ED) visits per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Toronto neighbourhoods with the highest number of ED visits per 1,000 population were in the south-central and western parts of the city.
- In the Toronto Central LHIN, the areas with the highest number of ED visits per 1,000 population were in the downtown core and in the southwestern, northwestern and eastern parts of the LHIN.

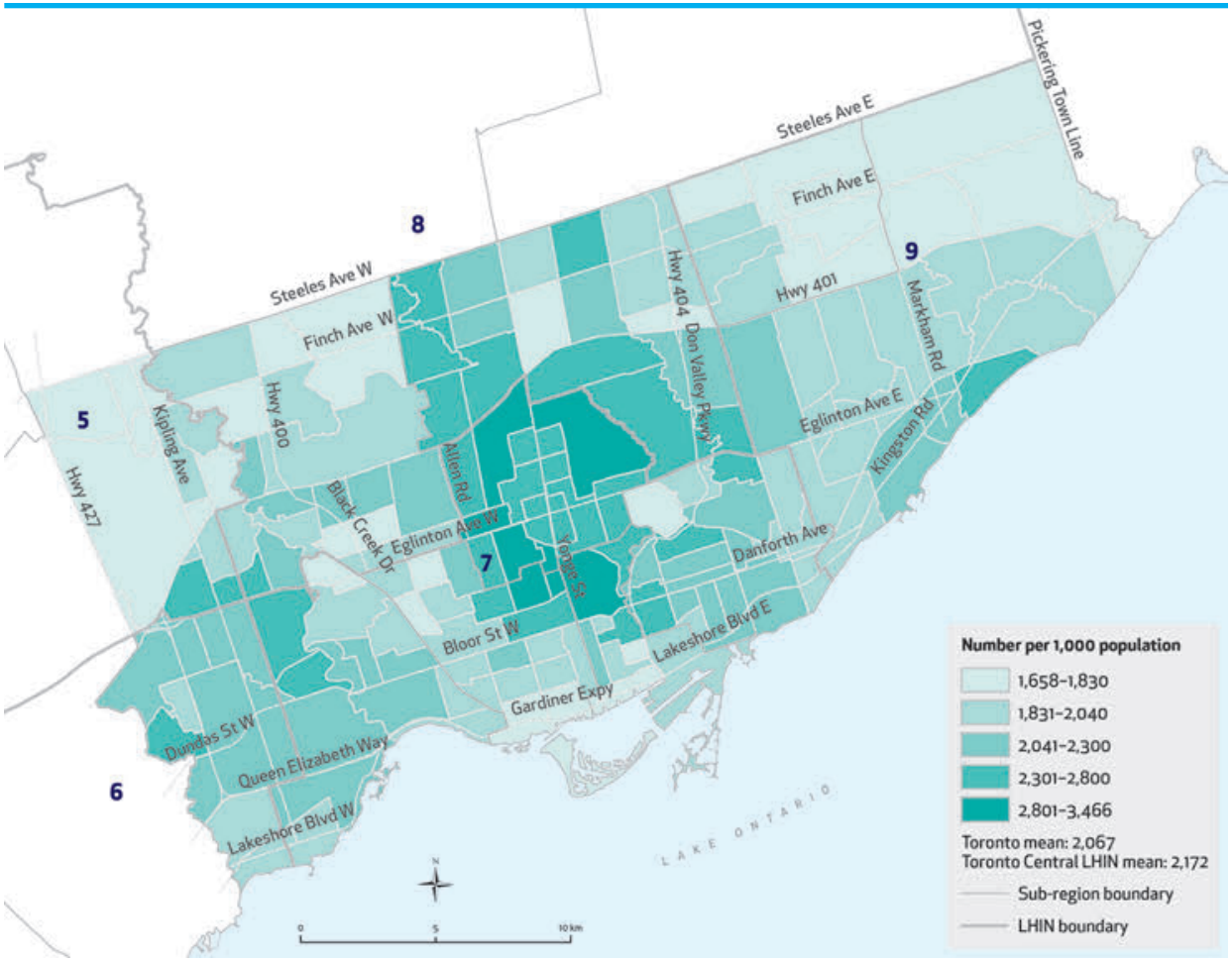


Data sources: NACRS, RPDB.
Note: The number of ED visits is often used as a proxy measure of appropriate access to timely and after-hours primary care. While many ED visits are urgent and not avoidable, others could potentially be avoided if primary care providers were available in a timely way and outside of regular office hours.

EXHIBIT 52 Number of visits to specialist physicians per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- In Toronto, neighbourhoods with the highest number of specialist visits per 1,000 population were in the high-income areas in the centre of the city; conversely, the number of specialist visits per 1,000 population was low in many areas characterized by low income.



Data sources: IPDB, OHIP, RPDB.
Note: The number of visits to specialist physicians per 1,000 population may reflect population need for specialist care but is also related to specialist availability and patient expectations. Specialist visits tend to be higher in urban areas and in areas of higher socioeconomic status.

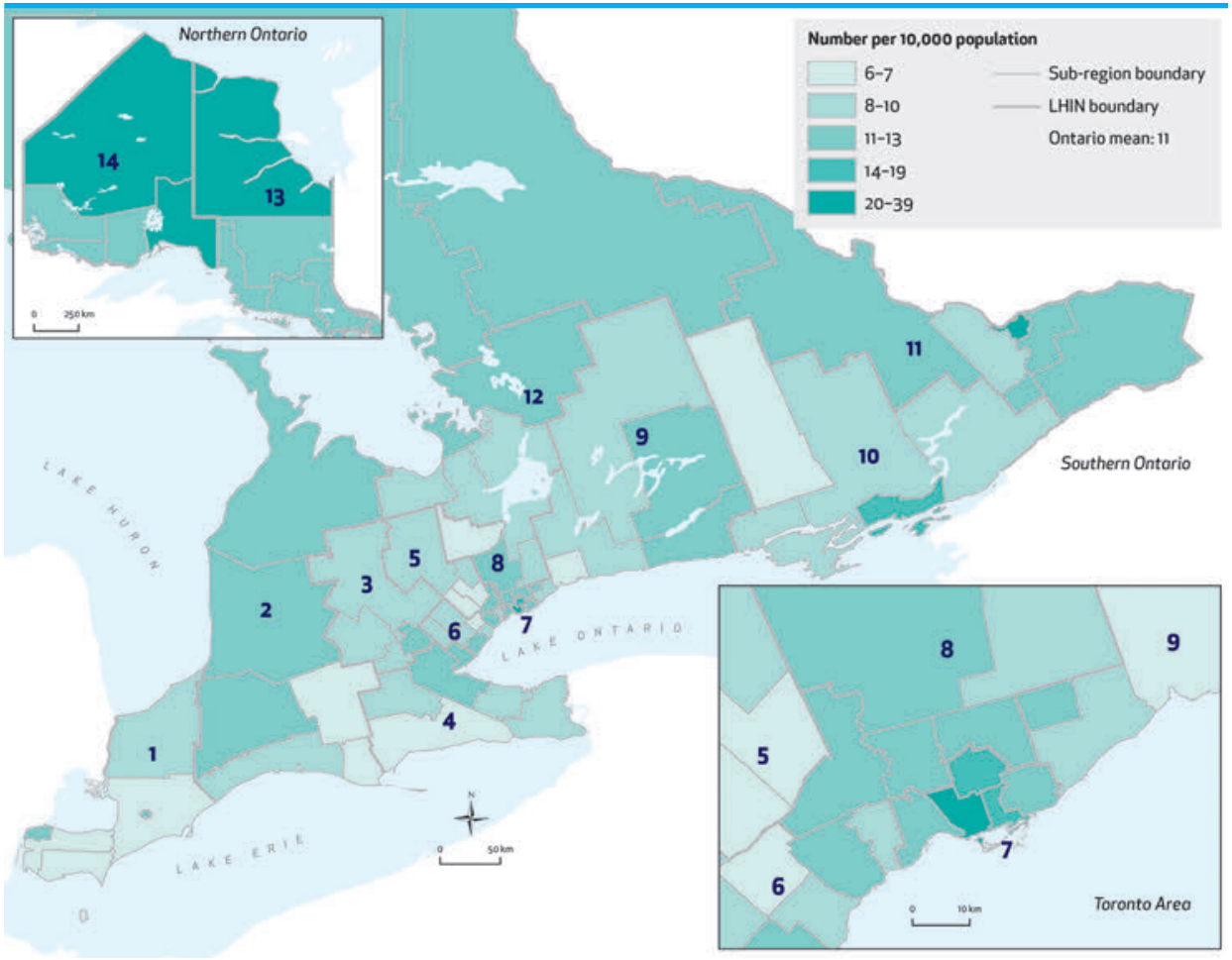
Primary Care Providers and Teams

Ontario

EXHIBIT 53 Number of primary care physicians per 10,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- The Northern sub-region had the highest number of primary care physicians per 10,000 population, followed by the District of Thunder Bay, James and Hudson Bay Coasts, Mid-West and Central Ottawa sub-regions. Available counts of the resident population and of physicians may not be accurate in northern and remote regions of the province.
- These proportions do not account for flows of patients across boundaries, a phenomenon that is especially common in the Greater Toronto Area (see Exhibits 76–81).

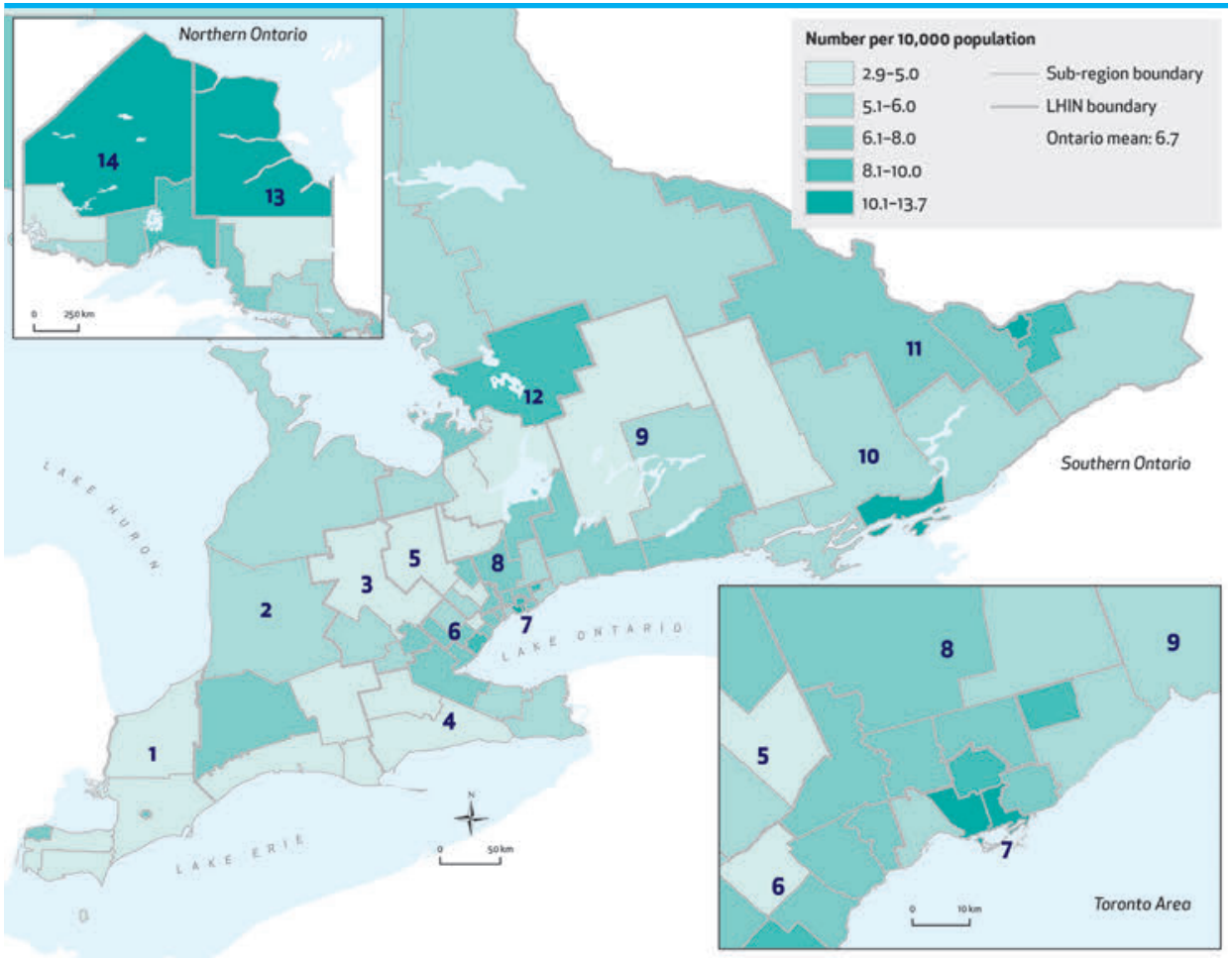


Data sources: CPDB, IPDB, RPDB.
Note: The number of primary care physicians per population is often used as a measure of primary care physician supply and availability. It may not be an accurate measure if an area is subject to large inflows or outflows of patients from or to other areas. For example, a major urban centre such as Toronto may appear to have a large number of primary care physicians per population, but that number might be an overestimate if those Toronto physicians are also treating patients who come in to Toronto from surrounding areas. In addition, the number of primary care physicians per capita does not take into account the extent of full-time versus part-time practice or the actual availability of physicians.

EXHIBIT 54 Number of comprehensive primary care physicians per 10,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- Comprehensive primary care physicians, while fewer in number, maintained a similar pattern of distribution across Ontario as primary care physicians who did not provide comprehensive care (see Exhibit 53).
- These proportions do not account for flows of patients across boundaries, a phenomenon that is especially common in the Greater Toronto Area (see Exhibits 76–81).

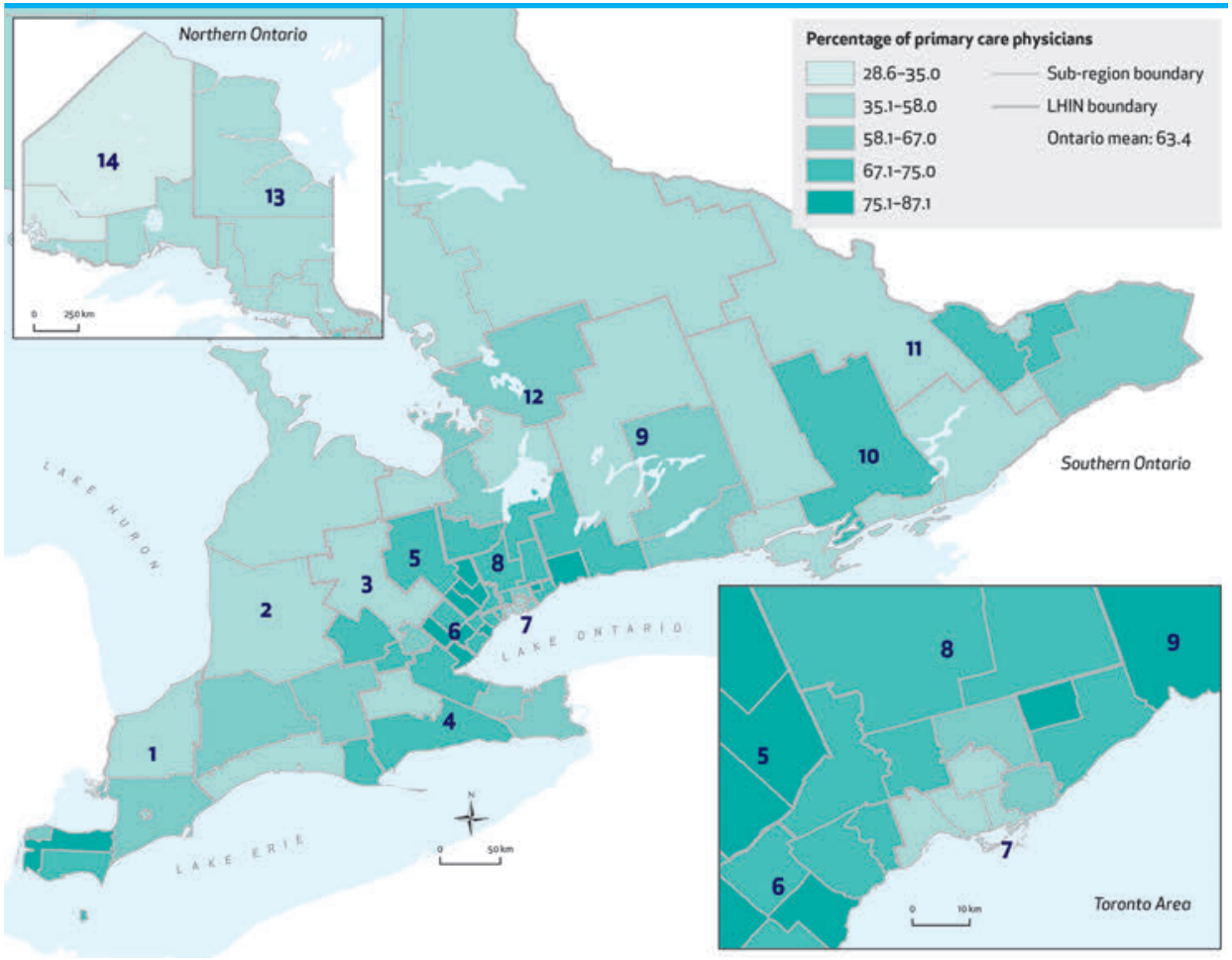


Data sources: CPDB, IPDB, OHIP, RPDB.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13]

EXHIBIT 55 Percentage of primary care physicians who were comprehensive primary care physicians, by sub-region, in Ontario, 2015/16

Key Messages

- In Ontario, 9,144 (63.4%) of primary care physicians were comprehensive primary care physicians and 5,270 (36.6%) were non-comprehensive.
- The percentage of comprehensive primary care physicians varied across the province. Low percentages were found in northern Ontario and in some rural areas, likely reflecting time spent in hospital rather than in office settings in these smaller communities.
- The large urban centres of Toronto and Ottawa also had low percentages of comprehensive primary care physicians, most likely as result of primary care physicians having more focused practices in these areas.

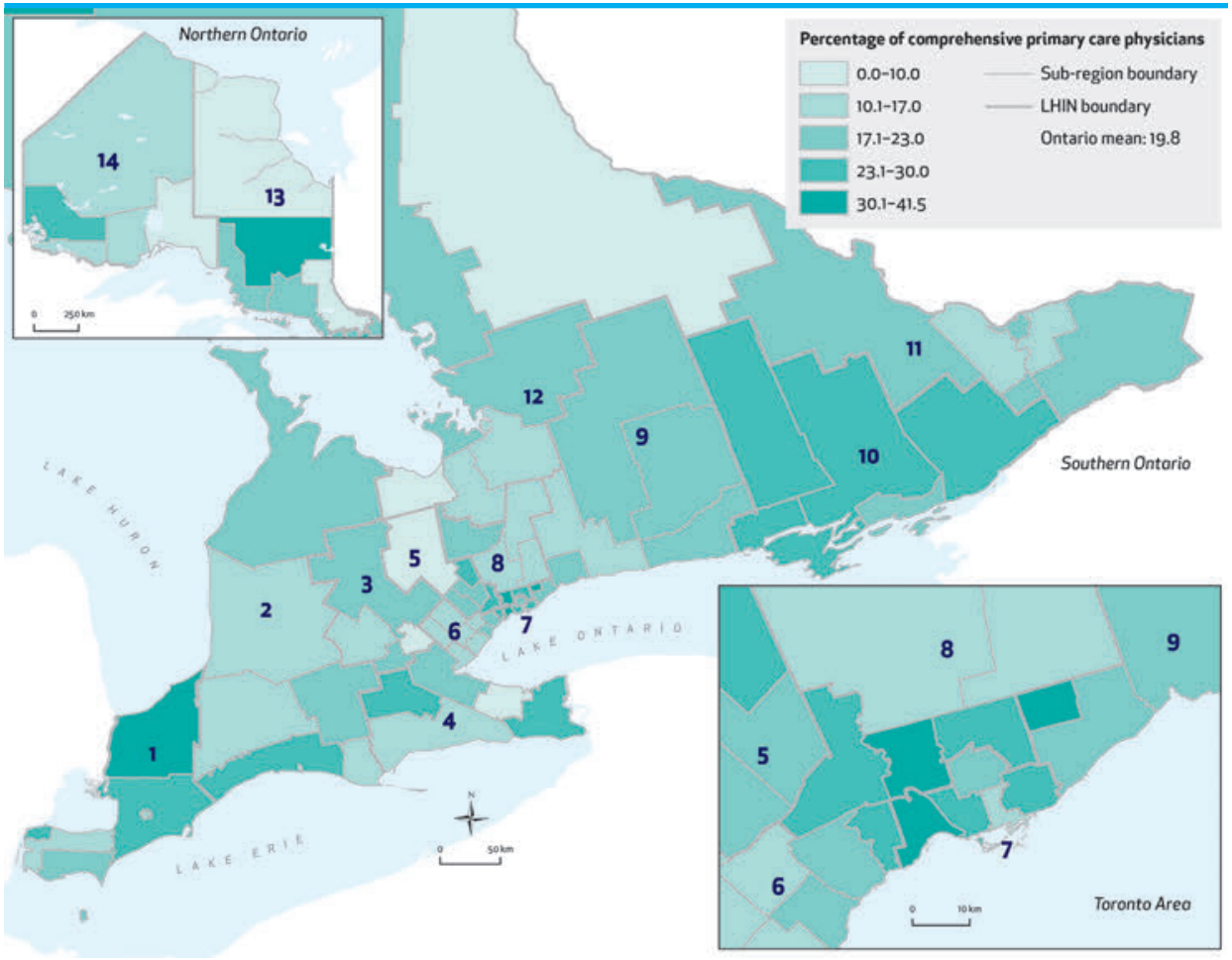


Data sources: CPDB, IPDB, OHIP.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13]

EXHIBIT 56 Percentage of comprehensive primary care physicians who were aged 65 and older, by sub-region, in Ontario, 2015/16

Key Messages

- In Ontario, 1,807 (19.8%) of comprehensive primary care physicians were aged 65 and older and 7,330 (80.2%) were younger than 65.
- The Lambton, Cochrane, Scarborough North, West Toronto and North York West sub-regions had the highest proportion of physicians aged 65 and older.

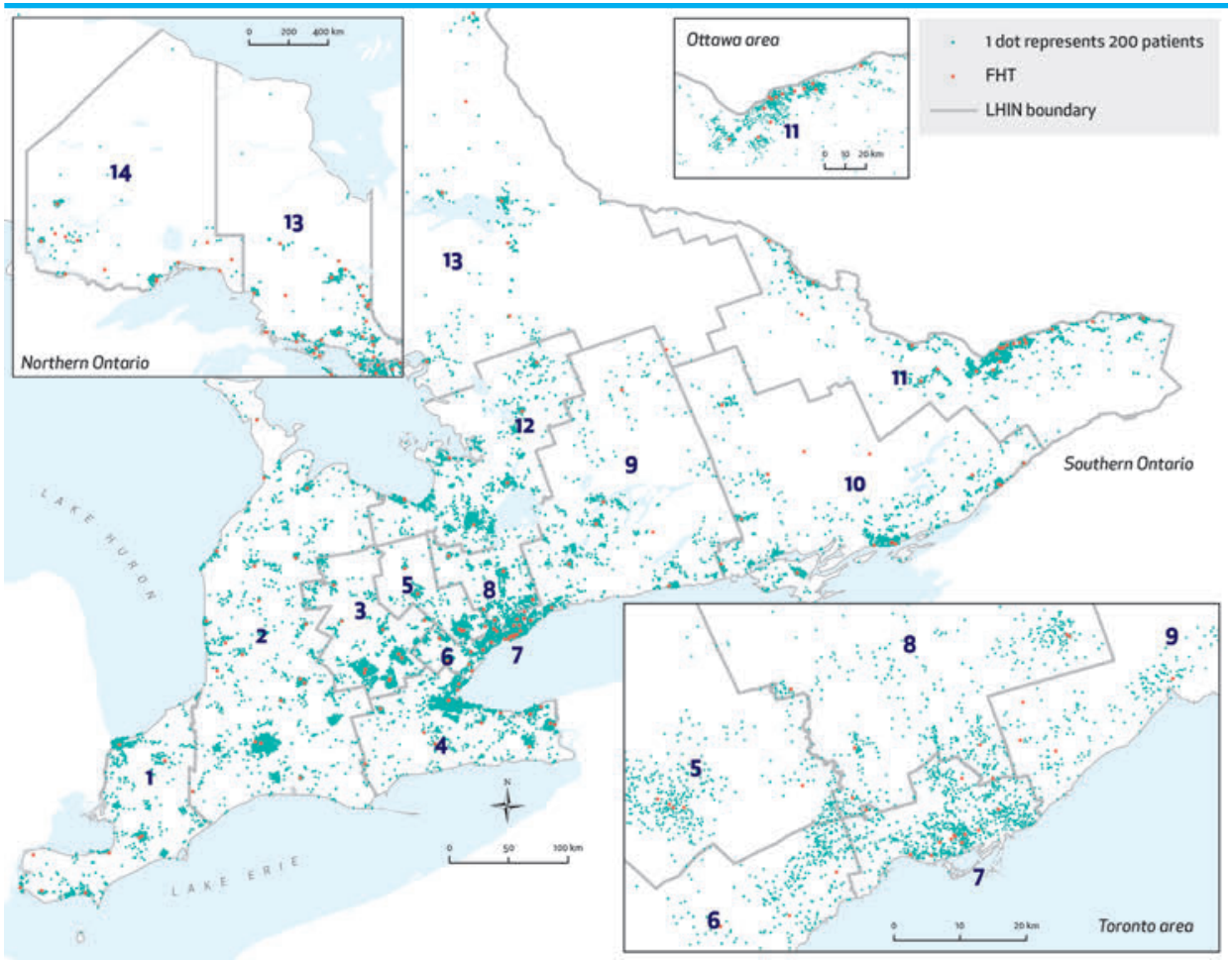


Data sources: CPDB, IPDB, OHIP.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13] The age of primary care physicians is a concern for planning, especially when communities are largely served by older physicians who are nearing retirement.

EXHIBIT 57 Distribution of Family Health Teams (FHTs) and their patients, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

Key Messages

- FHTs and their patients were concentrated in urban centres and in many rural areas across the province.
- Patients in rural areas often resided a considerable distance from the nearest FHT.

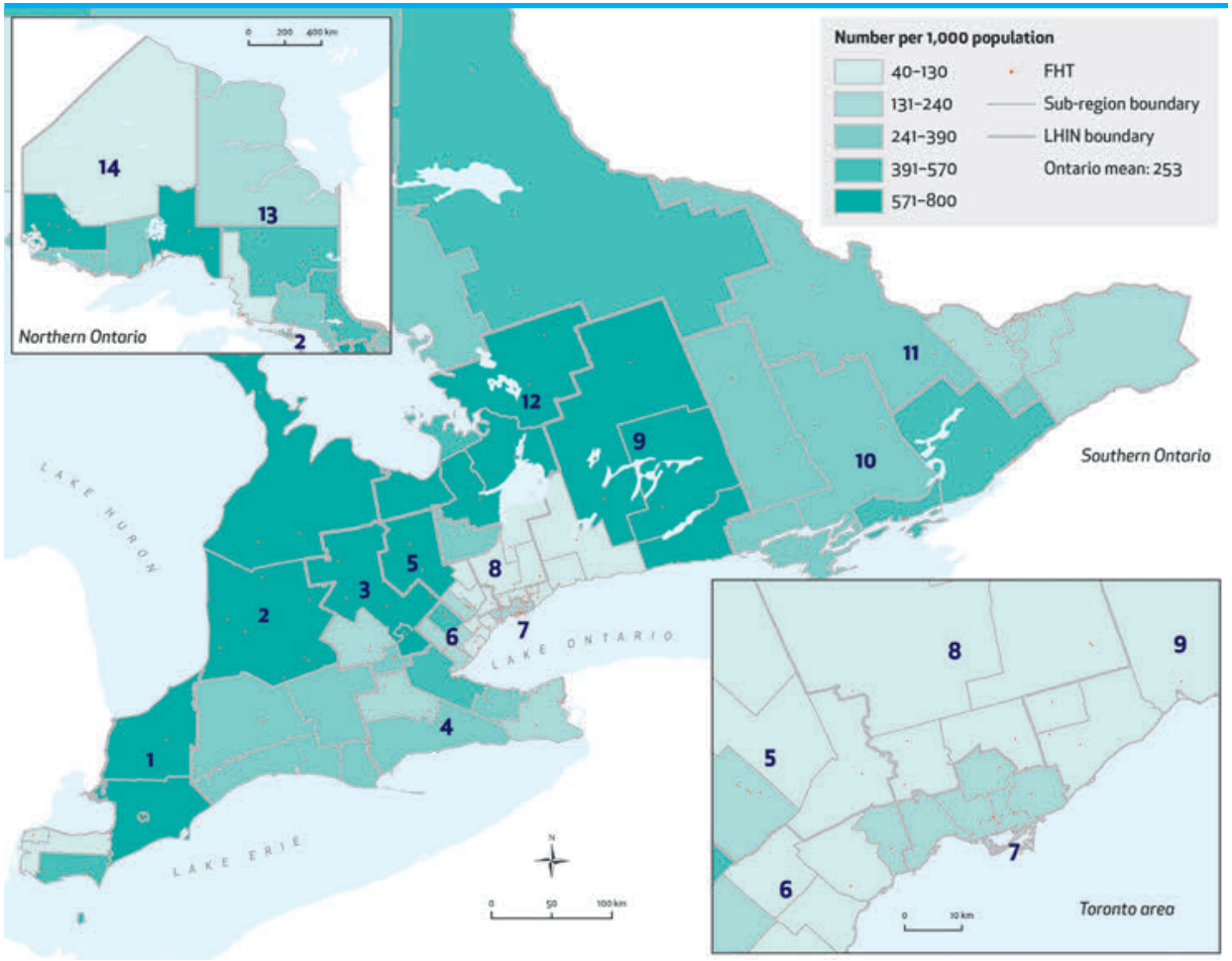


Data sources: CAPE, CPDB, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met.

EXHIBIT 58 Distribution of Family Health Teams (FHTs) and number of FHT patients per 1,000 population, by sub-region, in Ontario, March 31, 2016

Key Messages

- FHTs were distributed unevenly across Ontario. The rural areas of southern and northern Ontario had the highest number of FHT patients per 1,000 population.
- The Northern, Algoma, Windsor and Tecumseh Lakeshore Amherstburg LaSalle sub-regions, and LHINs in the Greater Toronto Area, had the lowest proportion of FHT patients per 1,000 population.

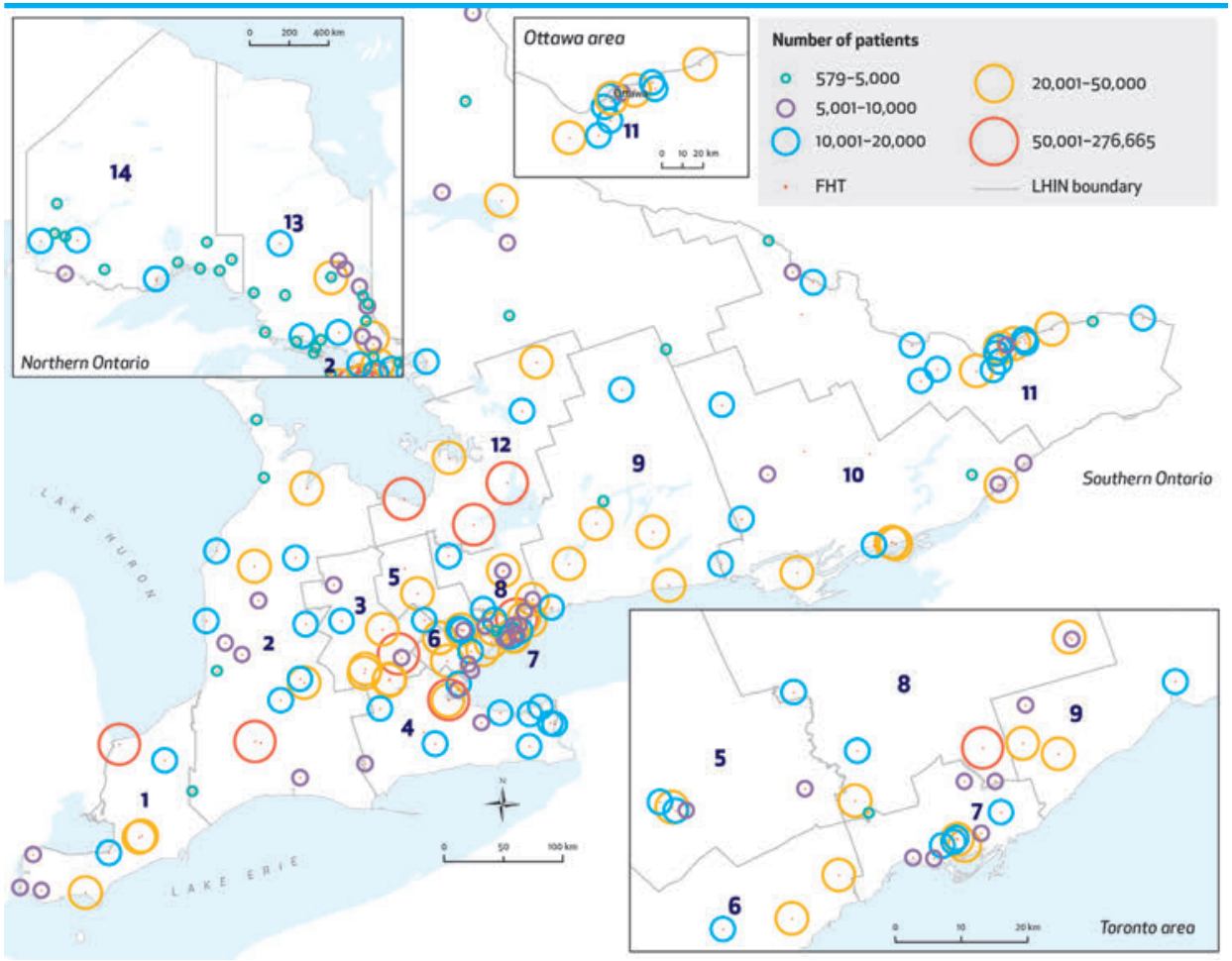


Data sources: CAPE, CPDB, OHIP, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met. The number of FHT patients per 1,000 population is an indication of service availability in the population.

EXHIBIT 59 Distribution of Family Health Teams (FHTs) and number of patients in each FHT, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

Key Messages

- As expected, urban areas had FHTs with larger numbers of patients. Sarnia, London, Guelph, Hamilton, North York, Collingwood, Barrie and Orillia had the largest FHTs.
- In Toronto, FHTs were concentrated in the downtown core and in North York.

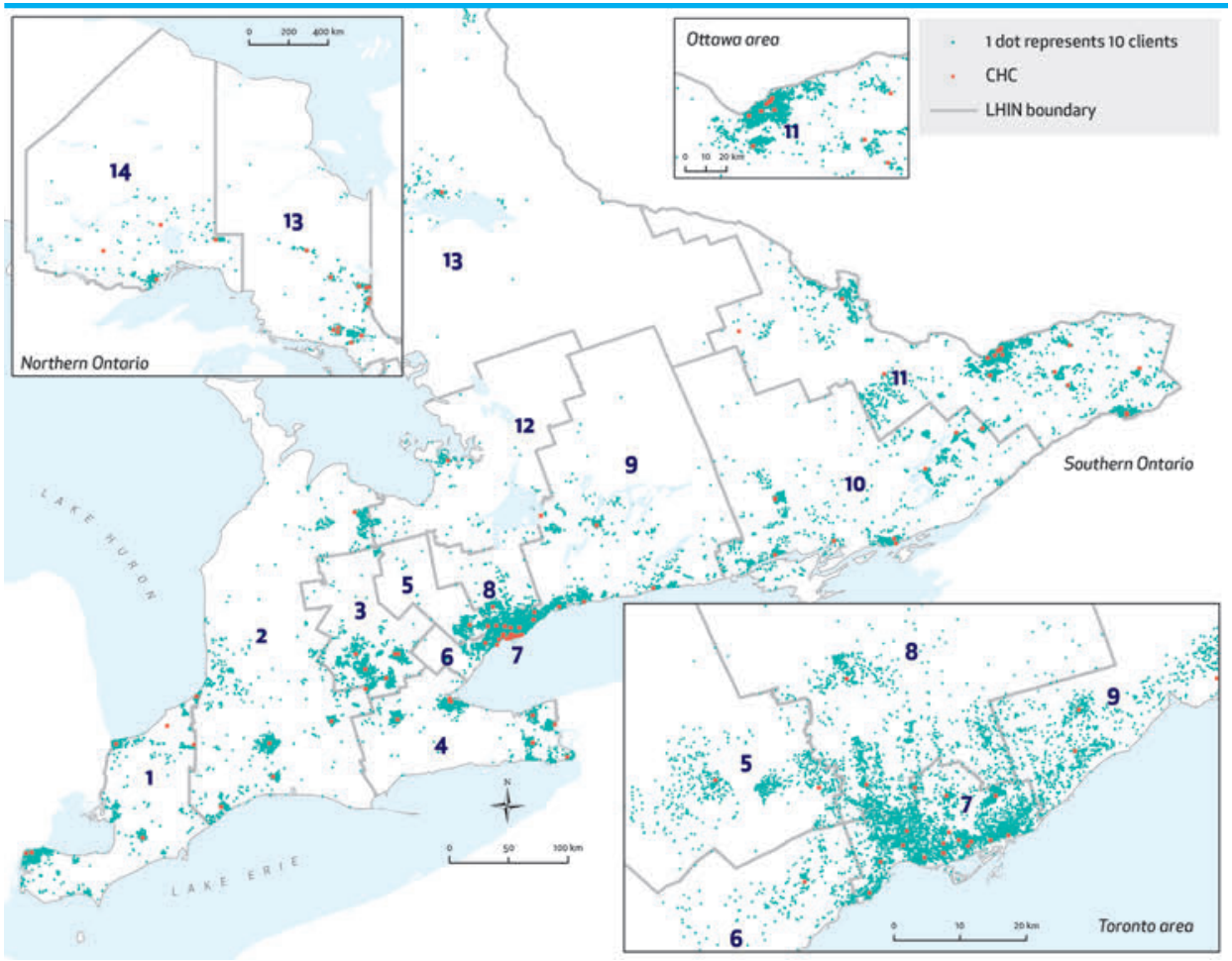


Data sources: CAPE, CPDB, OHIP, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met.

EXHIBIT 60 Distribution of Community Health Centres (CHCs) and their clients, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

Key Messages

- CHCs and their clients were concentrated in urban centres and in some rural areas, but they were not as widespread as FHTs due to their relatively smaller numbers.
- Across Toronto, the distribution of CHCs and their clients followed a U-shaped pattern. The lower part of the city had more CHCs and clients, which is consistent with low levels of income and high immigration rates in those areas.

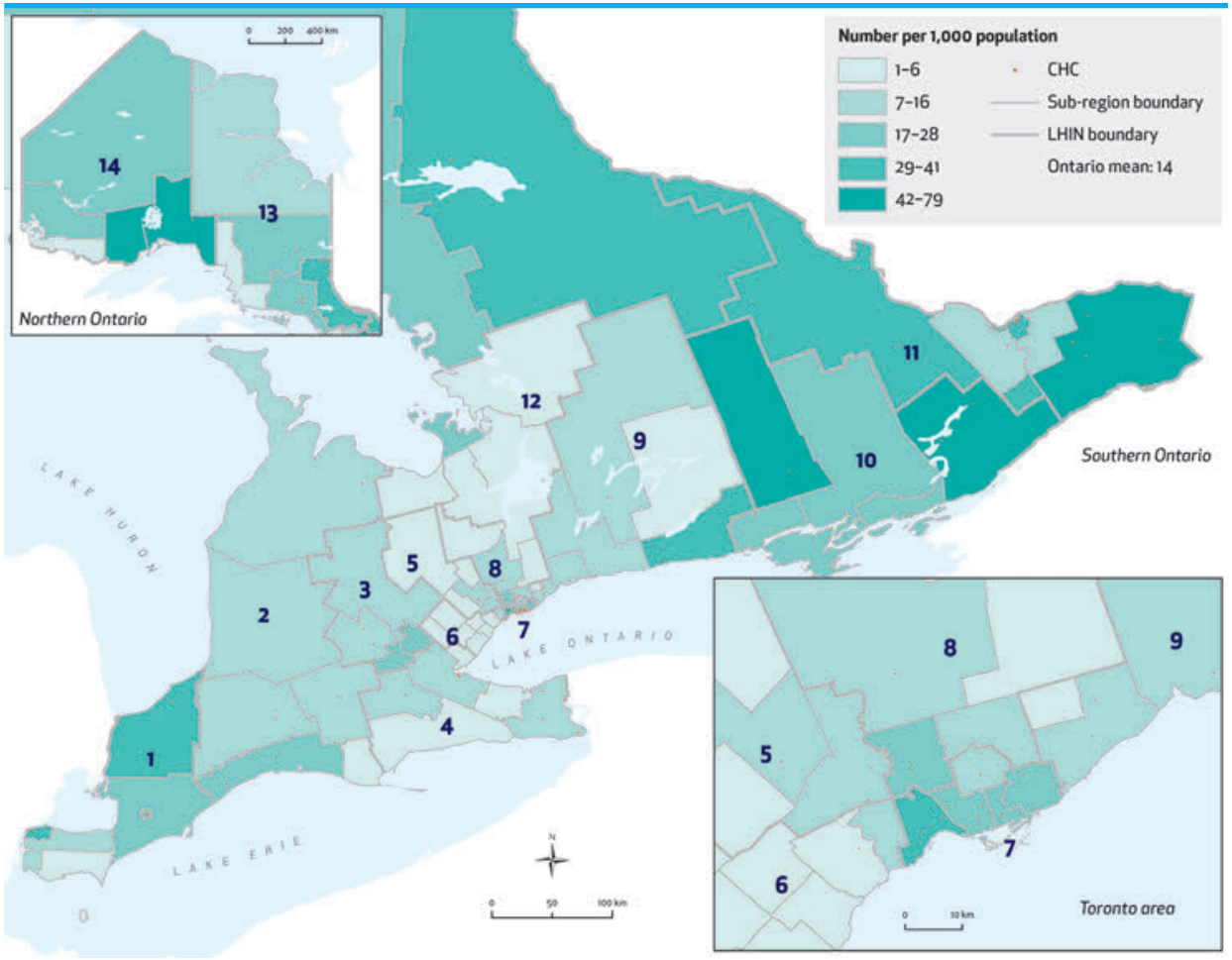


Data sources: CHC, RPDB.
Note: CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population. In addition, CHCs have a particular focus on populations who experience barriers to accessing health care (e.g., recent immigrants, people who are homeless, those with serious mental illness or addictions).

EXHIBIT 61 Distribution of Community Health Centres (CHCs) and number of CHC clients per 1,000 population, by sub-region, in Ontario, March 31, 2016

Key Message

- CHCs and their clients were distributed unevenly across Ontario. Sub-regions with the lowest proportion of CHC clients per 1,000 population included the Algoma, District of Rainy River, Essex South Shore, Peterborough City and County, Haldimand Norfolk and Niagara North West sub-regions, as well as sub-regions in the Mississauga Halton, Central (northern area) and Central West LHINs.

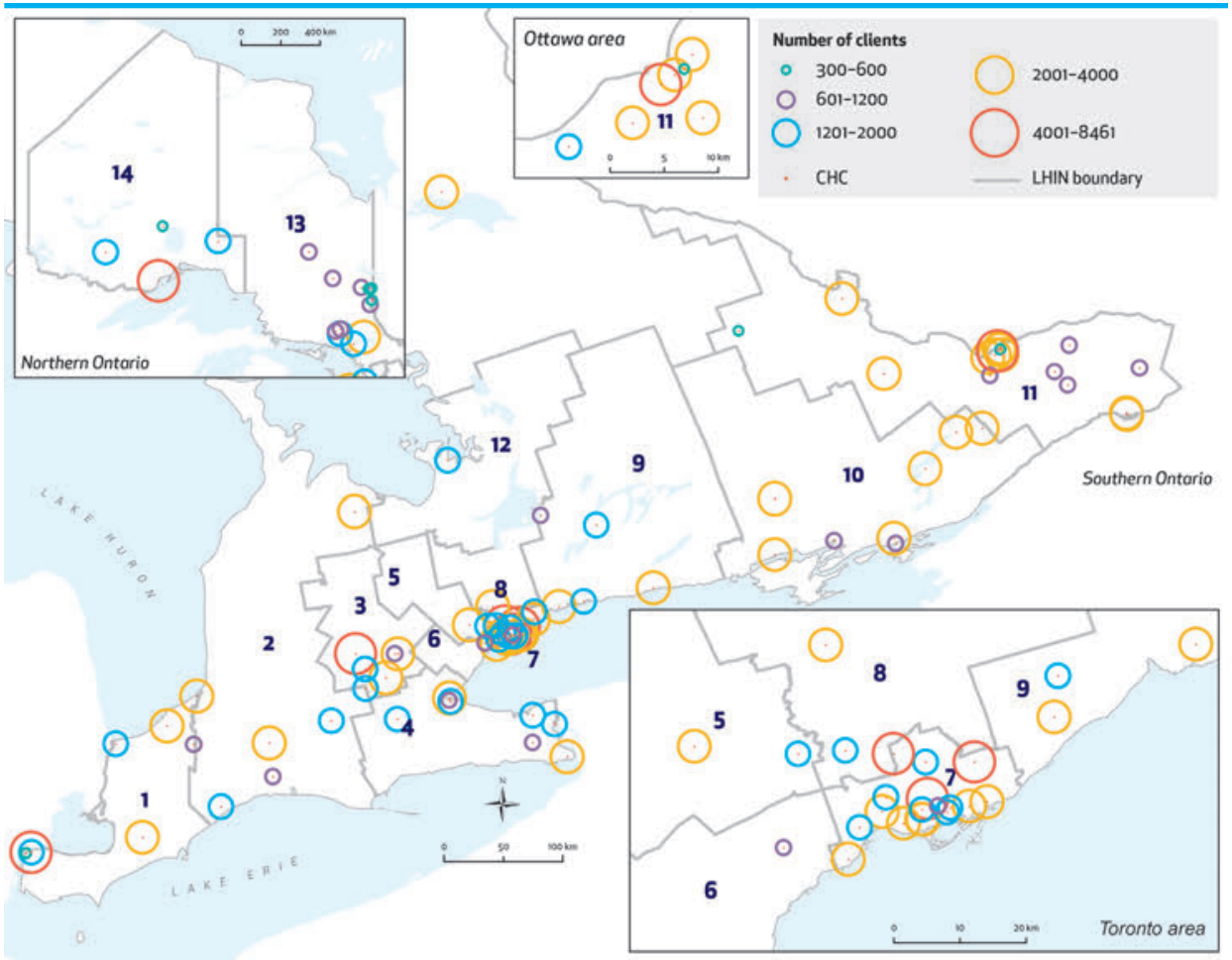


Data sources: CHC, RPDB.
Note: CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population. In addition, CHCs have a particular focus on populations who experience barriers to accessing health care (e.g., recent immigrants, people who are homeless, those with serious mental illness or addictions).

EXHIBIT 62 Distribution of Community Health Centres (CHCs) and number of clients in each CHC, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

Key Messages

- The largest CHCs were located in Thunder Bay, Windsor, Stratford, Toronto and Ottawa.
- In Toronto, the largest CHCs were found in the central, northern and eastern parts of the Toronto Central LHIN.

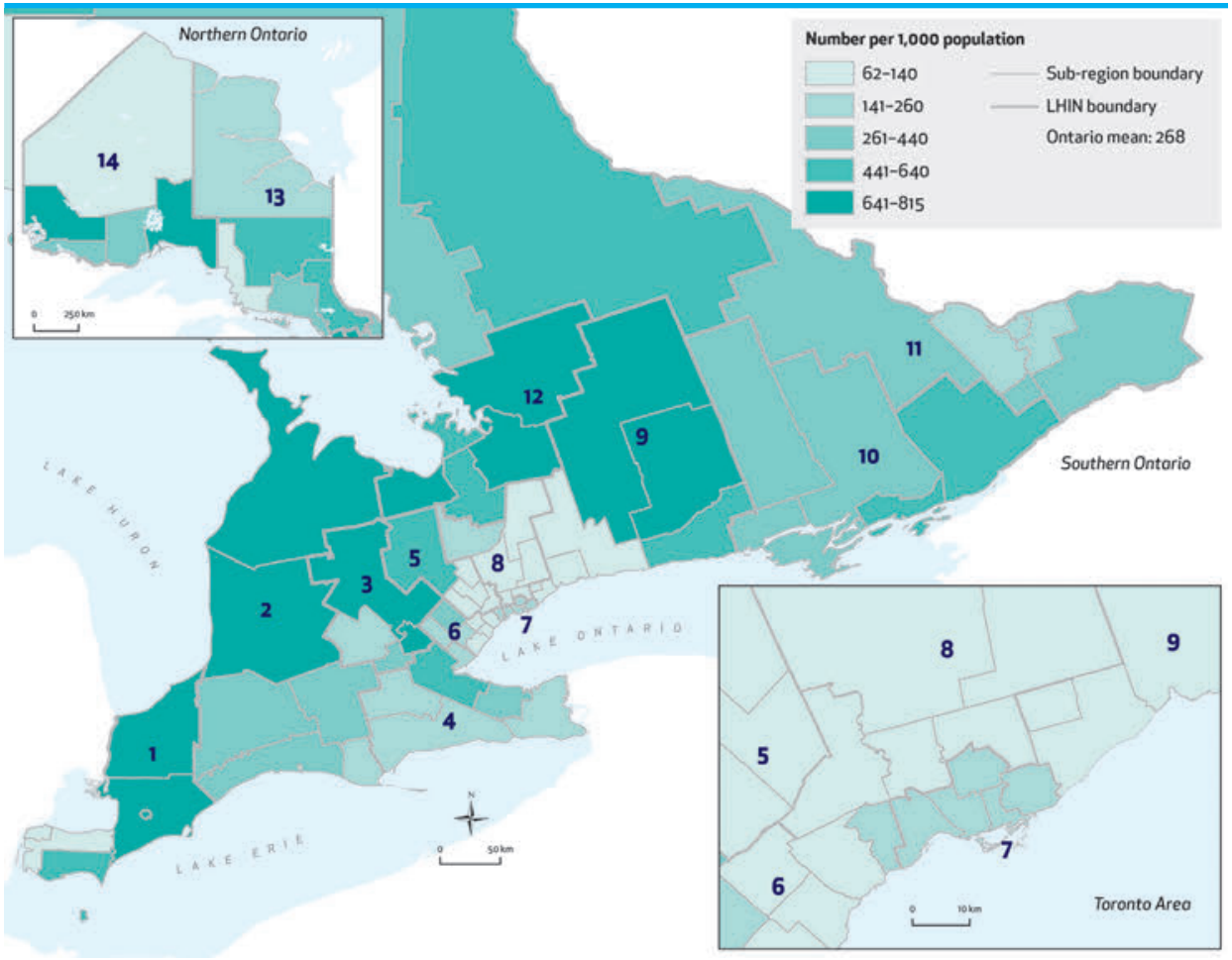


Data sources: CHC, RPDB.
Note: CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population. In addition, CHCs have a particular focus on populations who experience barriers to accessing health care (e.g., recent immigrants, people who are homeless, those with serious mental illness or addictions).

EXHIBIT 63 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients per 1,000 population, by sub-region, in Ontario, March 31, 2016

Key Messages

- When combined, FHTs and CHCs were unevenly distributed across Ontario.
- The pattern was similar to that seen for FHTs alone (see Exhibit 58).

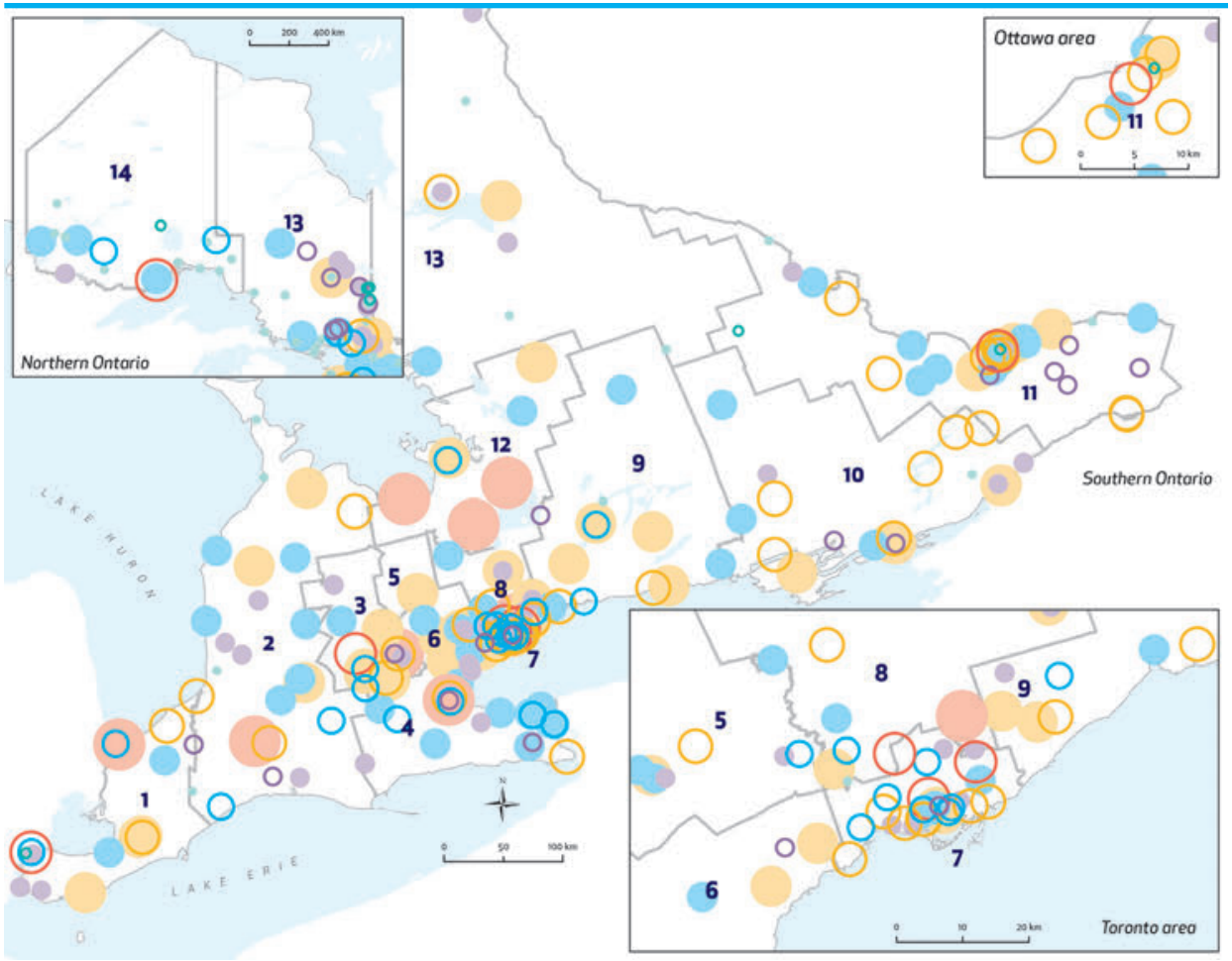


Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met. CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population.

EXHIBIT 64 Number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients in each FHT and CHC, respectively, by Local Health Integration Network (LHIN), in Ontario, March 31, 2016

Key Message

- FHTs were more predominant than CHCs across the province because of their large numbers of patients; however, some communities appeared to receive interprofessional care mainly from CHCs (e.g., Windsor, parts of the North West LHIN, parts of Ottawa, the northwestern part of the Toronto Central LHIN and some rural communities).

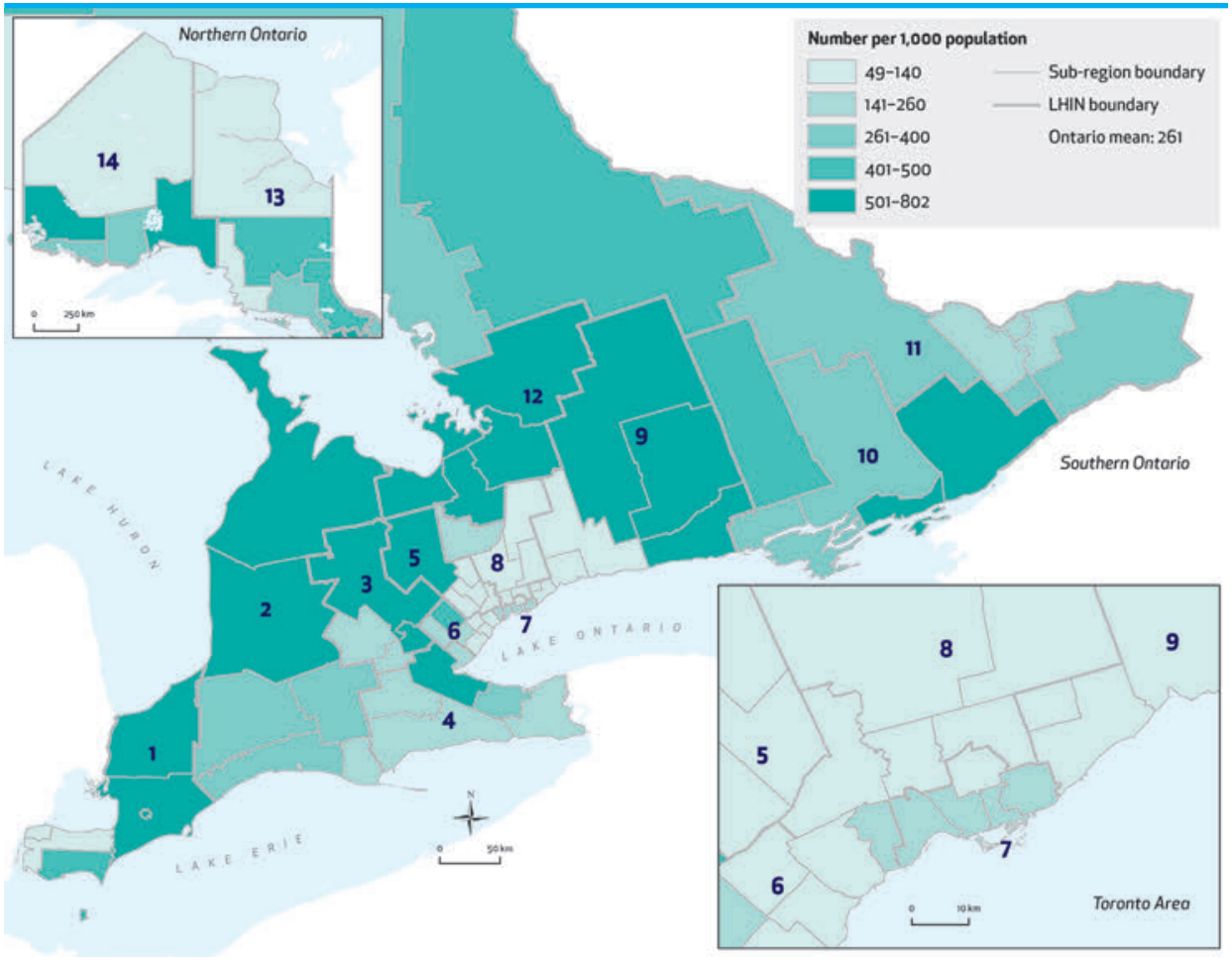


Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met. CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population.

EXHIBIT 65 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients who had access to a nurse practitioner per 1,000 population, by sub-region, in Ontario, March 31, 2016

Key Message

- Access to a nurse practitioner by FHT patients and CHC clients was uneven across Ontario and followed a pattern that was similar to the distribution of FHT patients per 1,000 population (see Exhibit 58).

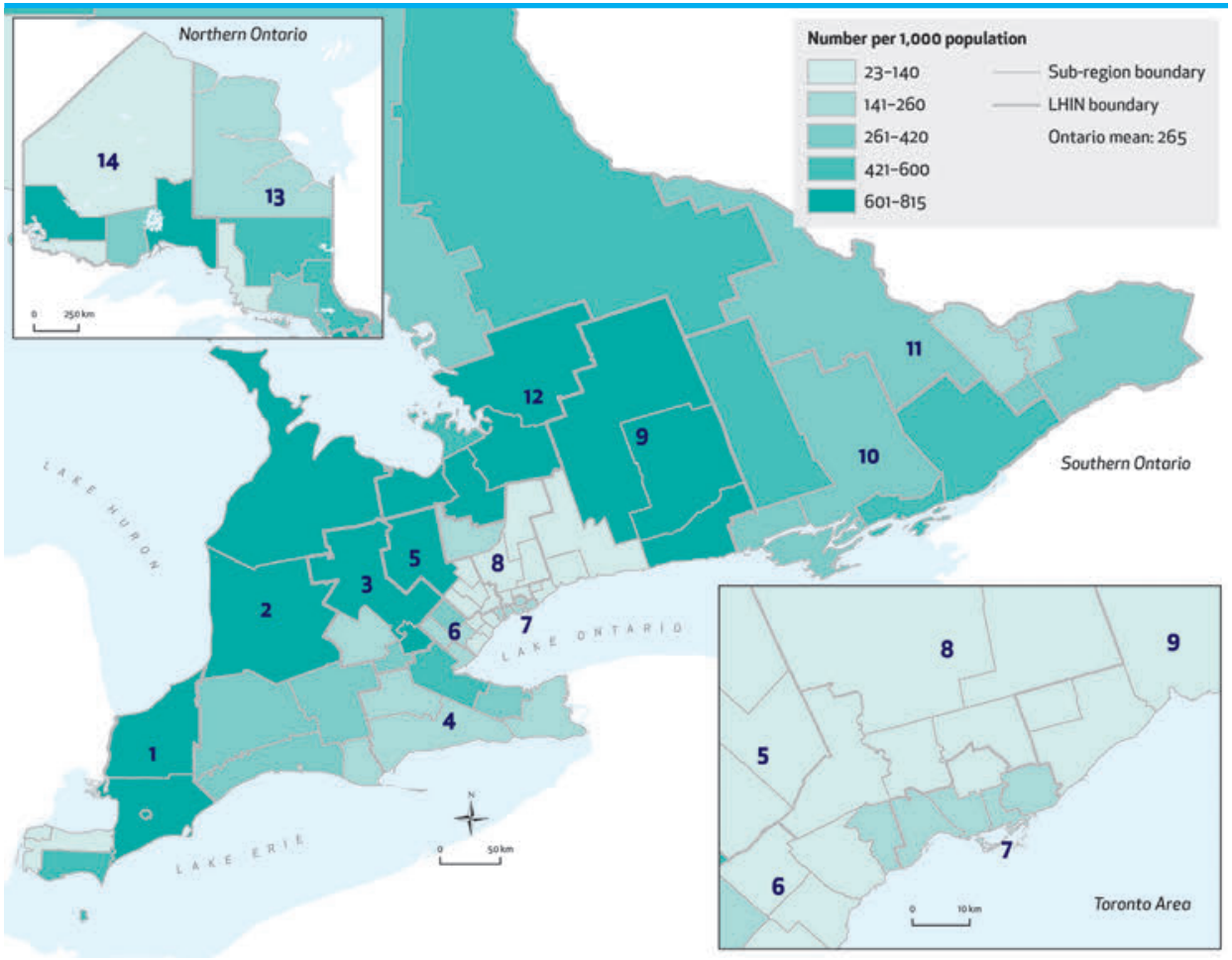


Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: Data were not available for Nurse Practitioner–Led Clinics, so access to nurse practitioners would have been underestimated in areas where those clinics were located.

EXHIBIT 66 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients who had access to a mental health worker per 1,000 population, by sub-region, in Ontario, March 31, 2016

Key Message

- Access to mental health and mental health support workers was uneven across Ontario.



Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: Data were not available for mental health workers in hospitals or community settings other than FHTs and CHCs, so access to mental health workers would have been underestimated where those services were available.

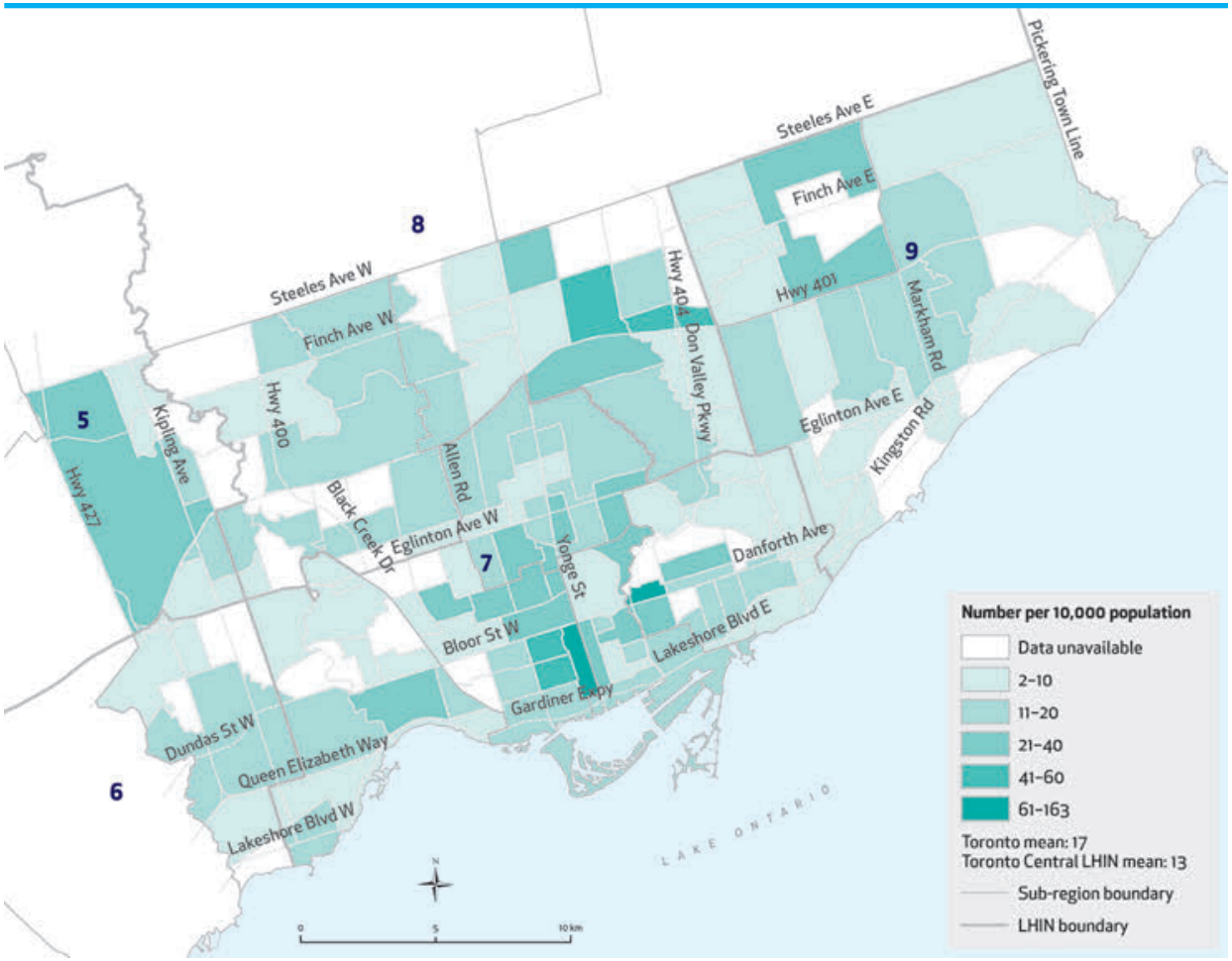
Primary Care Providers and Teams

Toronto

EXHIBIT 67 Number of primary care physicians per 10,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- Neighbourhoods in Toronto's downtown core had the highest number of primary care physicians per 10,000 population.
- These proportions do not account for flows of patients across boundaries, a phenomenon that is especially common in the Greater Toronto Area (see Exhibits 76–81).

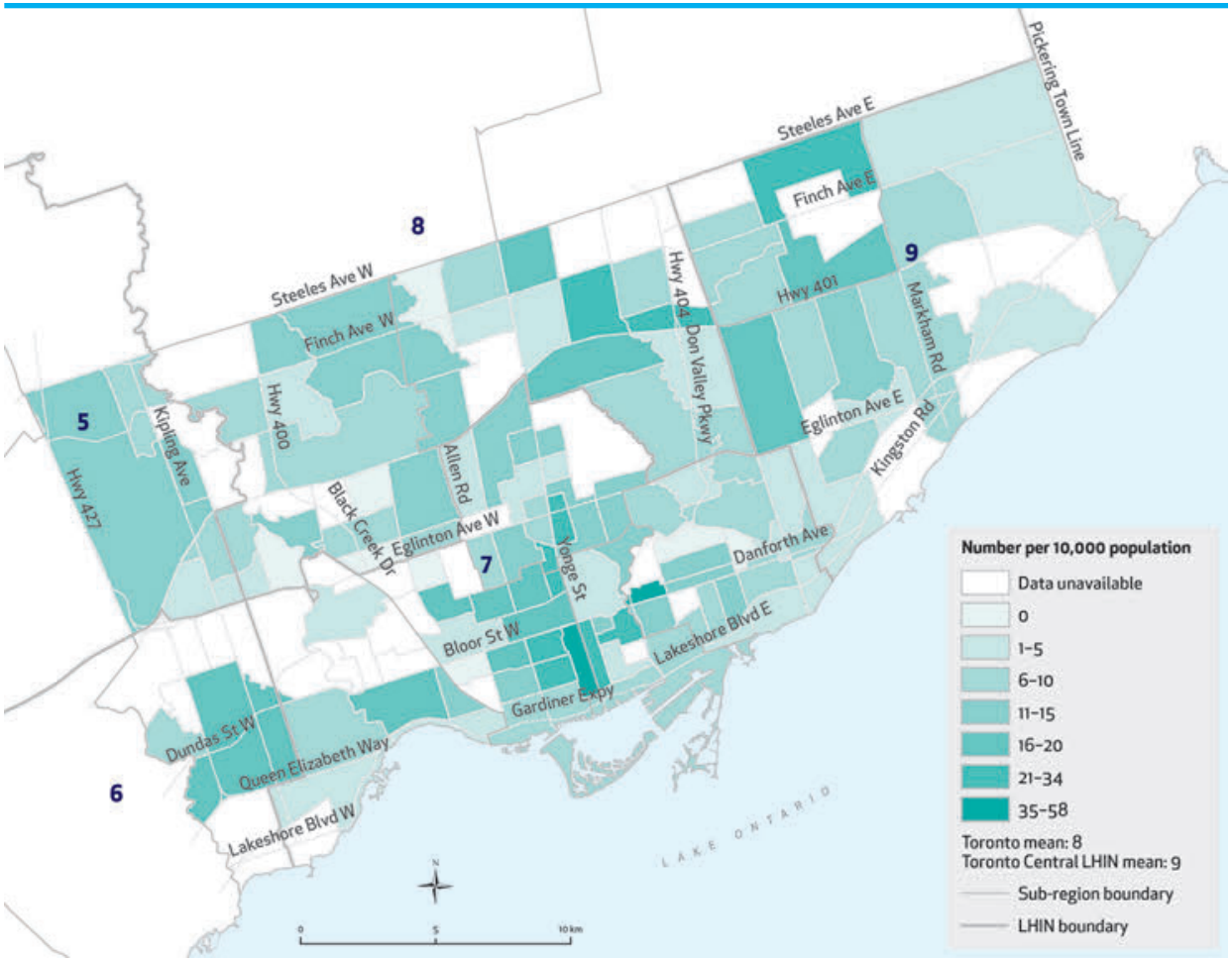


Data sources: CPDB, IPDB, RPDB.
Note: The number of primary care physicians per population is often used as a measure of primary care physician supply and availability. It may not be an accurate measure if an area is subject to large inflows or outflows of patients from or to other areas. For example, a major urban centre such as Toronto may appear to have a large number of primary care physicians per population, but that number might be an overestimate if those Toronto physicians are also treating patients who come in to Toronto from surrounding areas. In addition, the number of primary care physicians per capita does not take into account the extent of full-time versus part-time practice or the actual availability of physicians.

EXHIBIT 68 Number of comprehensive primary care physicians per 10,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- While fewer in number, the distribution of comprehensive primary care physicians across Toronto was similar to the distribution of all primary care physicians (see Exhibit 67).
- These proportions do not account for flows of patients across boundaries, a phenomenon that is especially common in the Greater Toronto Area (see Exhibits 76–81).

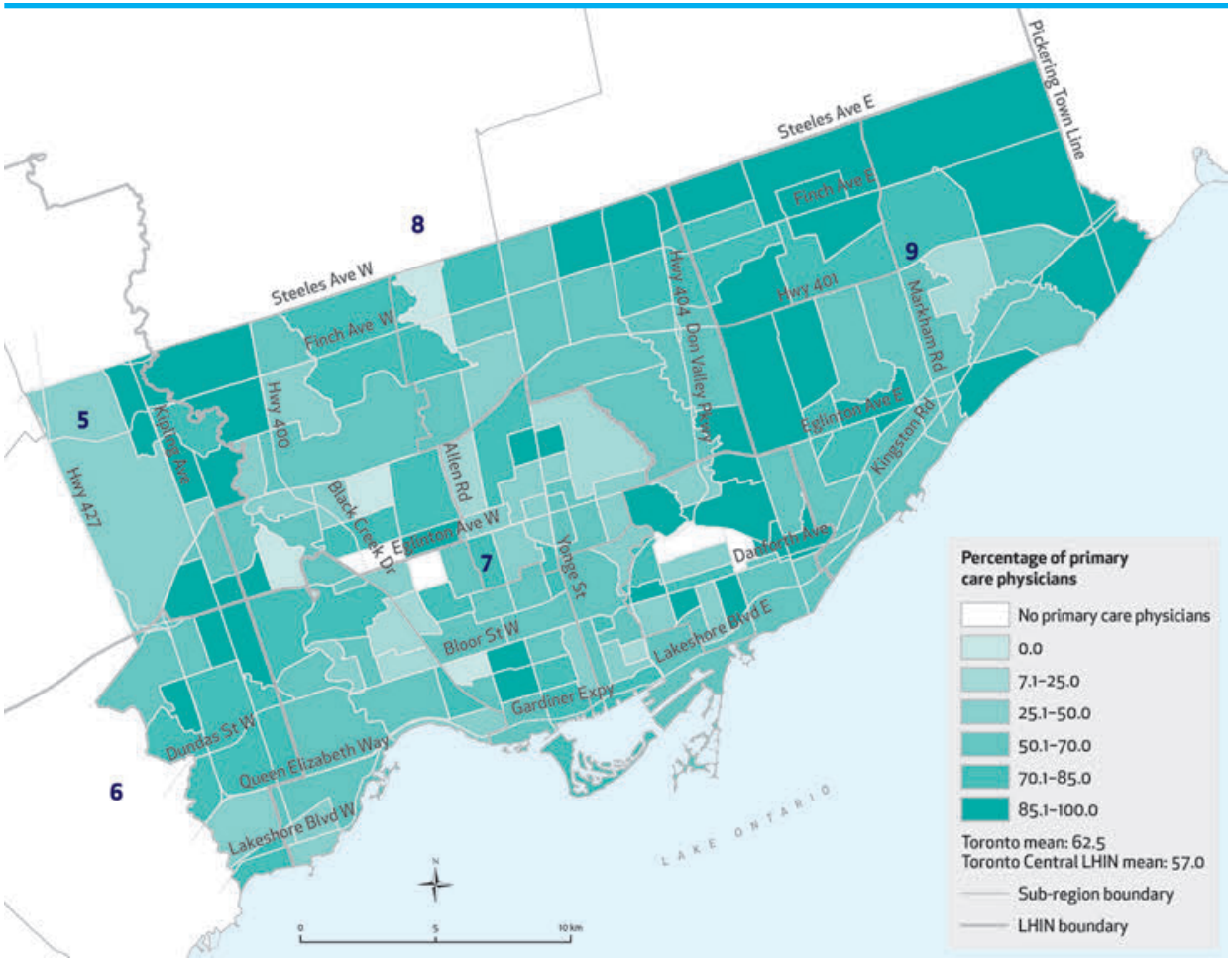


Data sources: CPDB, IPDB, OHIP, RPDB.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13]

EXHIBIT 69 Percentage of primary care physicians who were comprehensive primary care physicians, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- In Toronto, 2,230 (62.5%) of primary care physicians were comprehensive primary care physicians and 1,338 (37.5%) were non-comprehensive.
- The percentage of primary care physicians who provided comprehensive care varied widely across neighbourhoods. Lower proportions were found in neighbourhoods scattered across the western, central and eastern parts of the city.

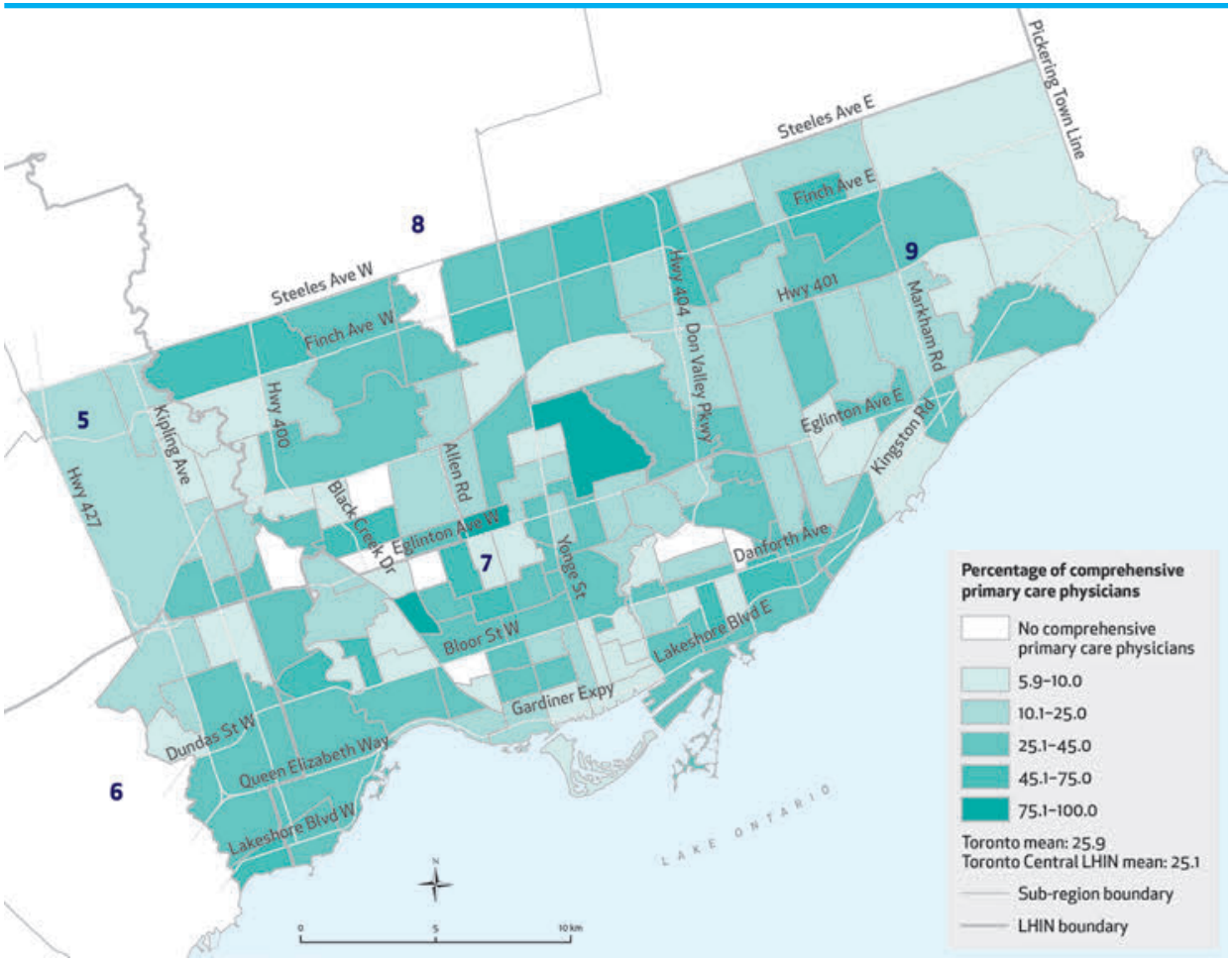


Data sources: CPDB, IPDB, OHIP.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13]

EXHIBIT 70 Percentage of comprehensive primary care physicians who were aged 65 and older, by neighbourhood, in Toronto, Ontario, 2015/16

Key Messages

- In Toronto, 545 (25.8%) comprehensive primary care physicians were aged 65 and older and 1,566 (74.2%) were younger than 65.
- Neighbourhoods in the western and northern parts of the Toronto Central LHIN had higher proportions of physicians aged 65 and older.

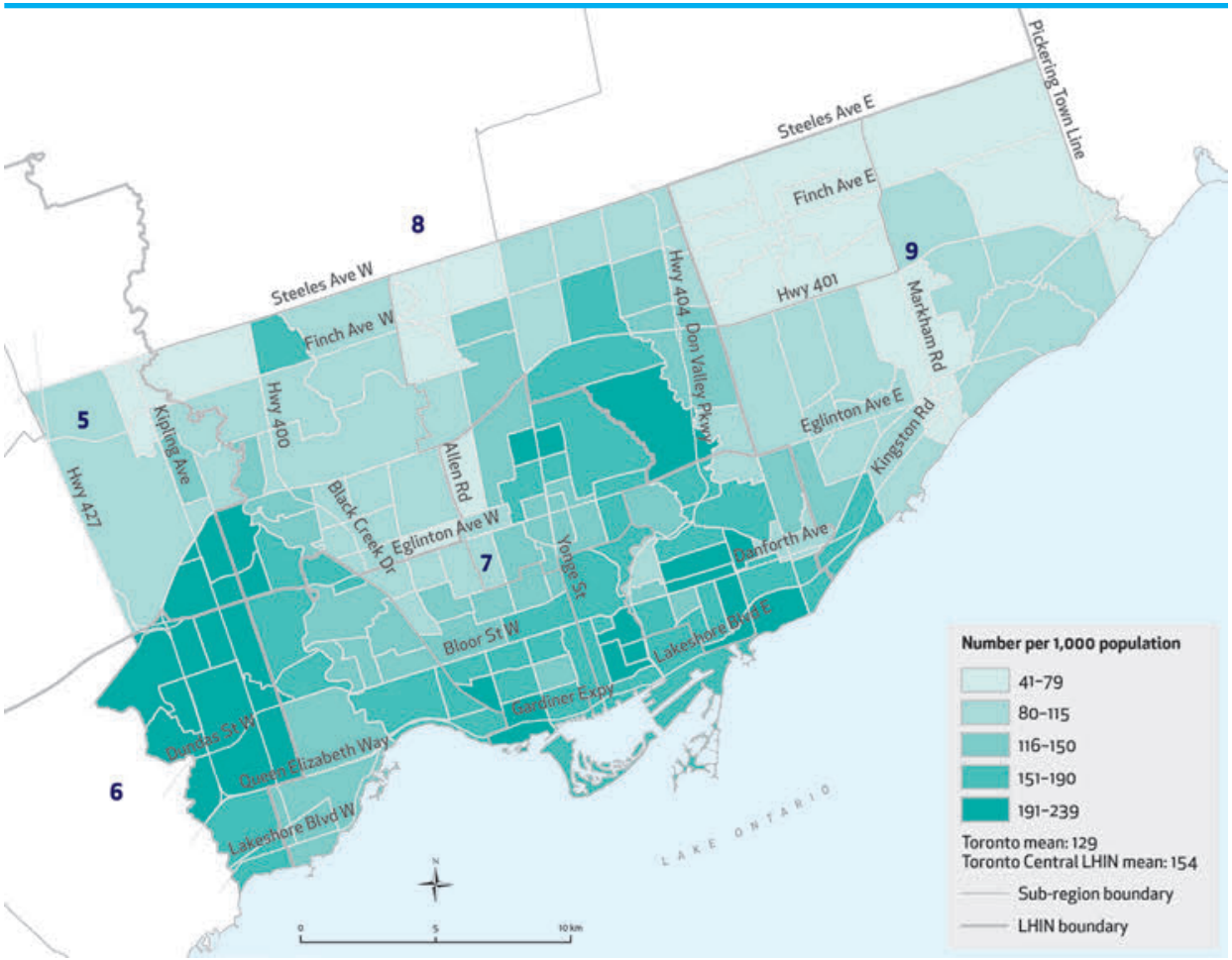


Data sources: CPDB, IPDB, OHIP.
Note: Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service and shadow billings that are used to track the scope of services provided (see Appendix B). Some primary care physicians provide comprehensive care for patients of all ages across multiple settings (e.g., office, home, hospital, emergency department), while others are more focused in specific areas (e.g., sports medicine, psychotherapy). Approximately two-thirds of Ontario's primary care physicians can be considered comprehensive.[13] The age of primary care physicians is a concern for planning, especially when communities are largely served by older physicians who are nearing retirement.

EXHIBIT 71 Number of Family Health Team (FHT) patients per 1,000 population, by neighbourhood, in Toronto, Ontario, March 31, 2016

Key Message

- FHTs were distributed unevenly across Toronto. The neighbourhoods with the lowest number of FHT patients per 1,000 population were in the northwestern and eastern parts of the city and in the northwestern part of the Toronto Central LHIN.

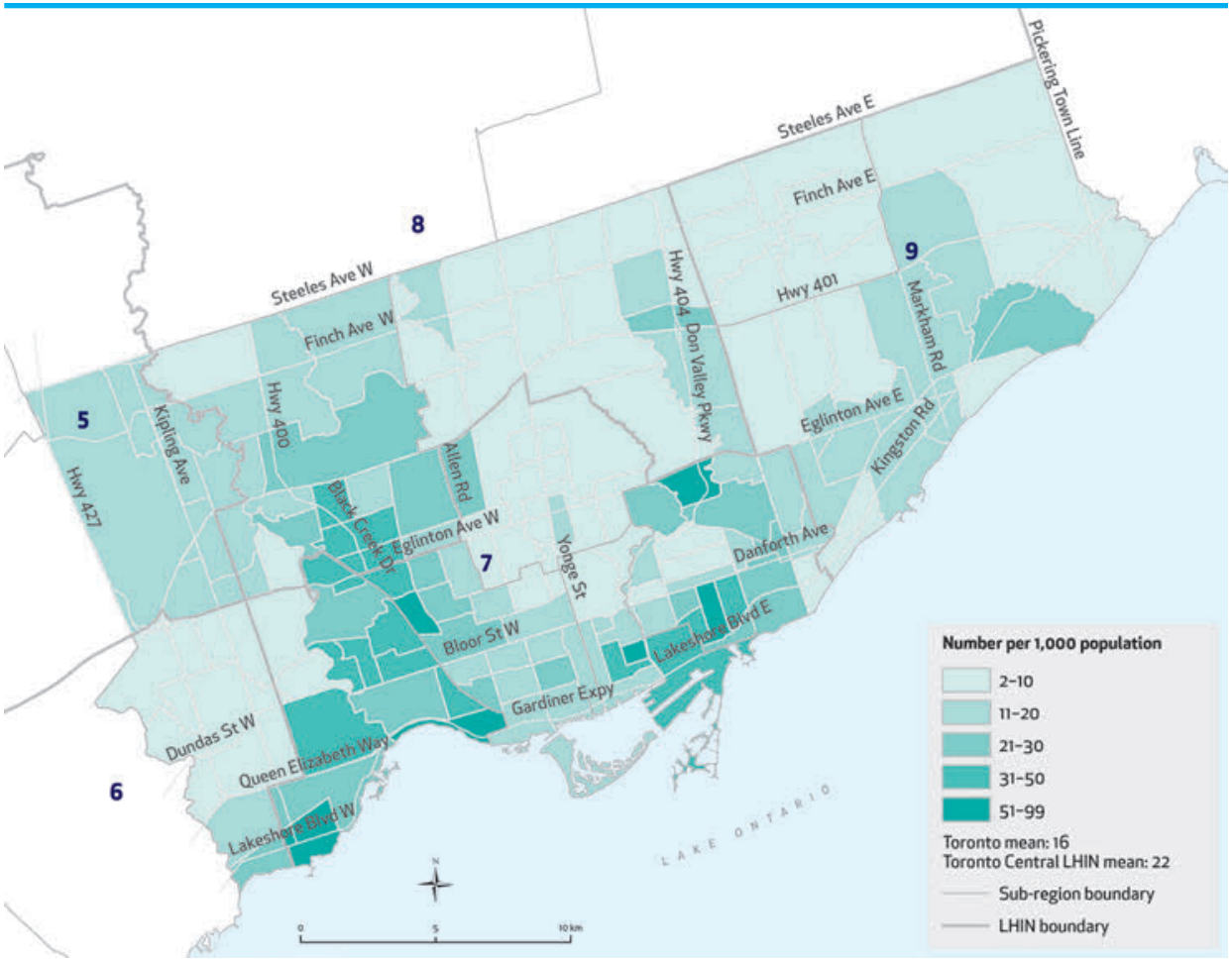


Data sources: CAPE, CPDB, OHIP, RPDB.
Note: FHTs are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. For that reason, they help to ensure that the primary care needs of the general population—and those with chronic conditions and special needs, in particular—are met. The number of FHT patients per 1,000 population is an indication of service availability in the population.

EXHIBIT 72 Number of Community Health Centre (CHC) clients per 1,000 population, by neighbourhood, in Toronto, Ontario, March 31, 2016

Key Messages

- CHCs were distributed unevenly across Toronto and were located mainly in the donut* areas characterized by low income levels and high immigration rates.
- Neighbourhoods in central and northern Toronto, and in the west and east ends of the city, had the fewest CHC clients per 1,000 population.

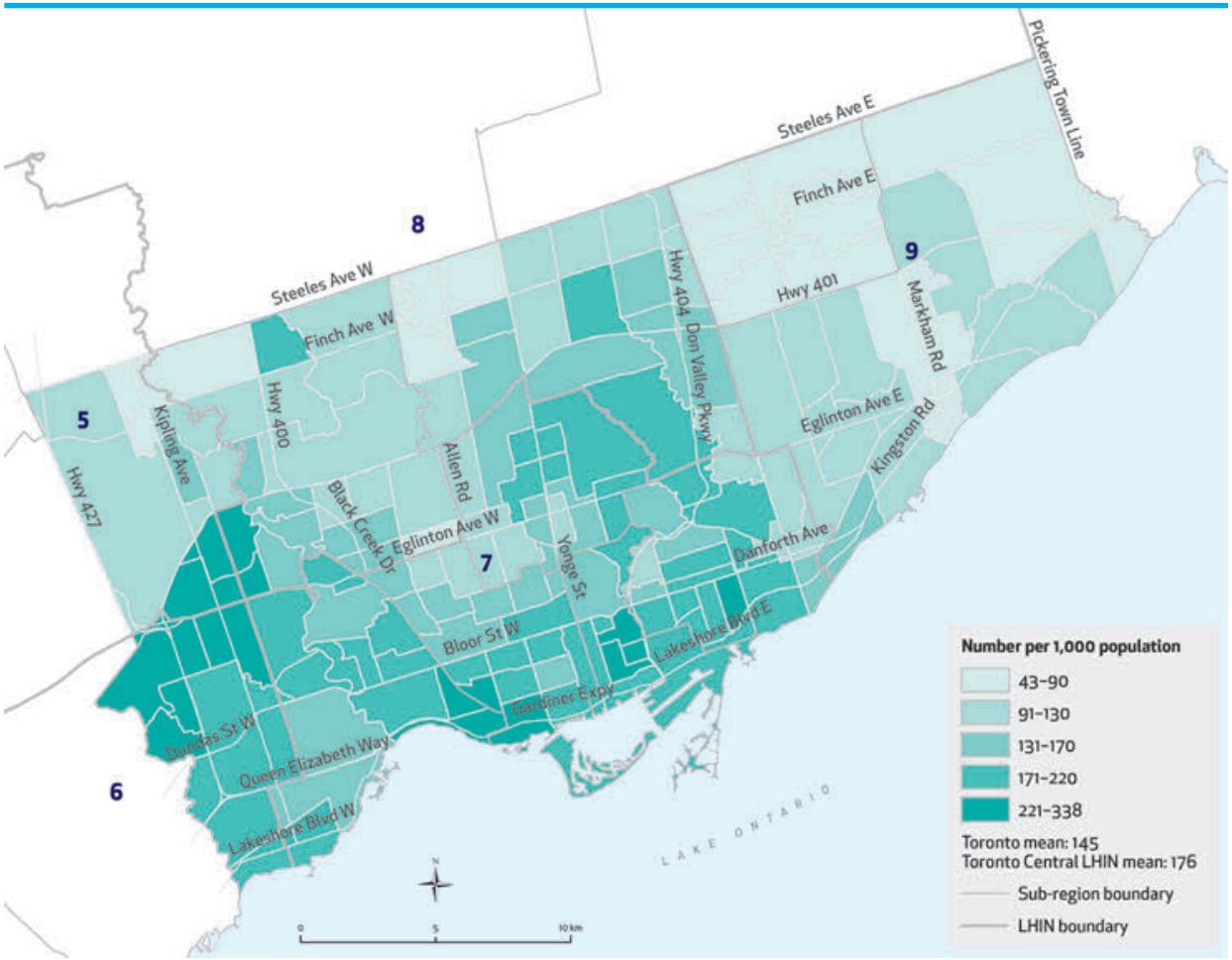


Data sources: CHC, RPDB.
*In the donut pattern, areas characterized by low income levels follow a circular pattern around the city (the donut), and areas characterized by high income levels are more predominant in the central (the hole of the donut) and peripheral parts of the city.[12]
Note: CHCs are characterized by community governance, a focus on population needs and social determinants of health, an expanded scope of health promotion, outreach and community development services and salaried interprofessional teams. They include health professionals such as nurse practitioners, social workers and pharmacists, and for that reason they are particularly important for meeting the primary care needs of the general population. In addition, CHCs have a particular focus on populations who experience barriers to accessing health care (e.g., recent immigrants, people who are homeless, those with serious mental illness or addictions). The number of CHCs per 1,000 population is an indication of service availability in the population.

EXHIBIT 73 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients per 1,000 population, by neighbourhood, in Toronto, Ontario, March 31, 2016

Key Messages

- When combined, FHTs and CHCs were unevenly distributed across Toronto, but to a lesser degree than either FHTs or CHCs alone.
- There were fewer neighbourhoods with low service availability in Toronto when FHTs and CHCs were combined. These low-availability neighbourhoods were mainly in the northwestern and northeastern parts of the city, and along the eastern and northwestern borders of the Toronto Central LHIN.

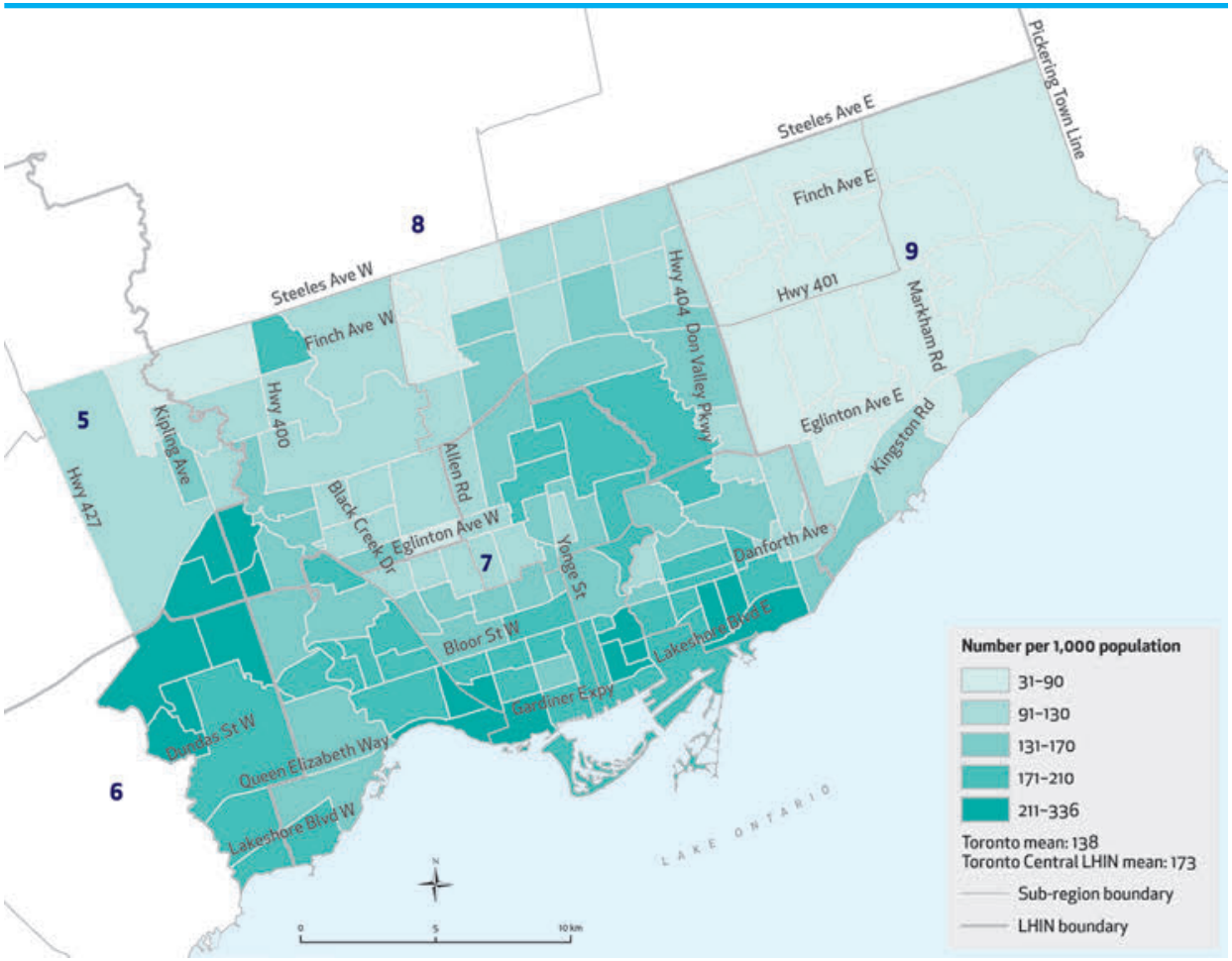


Data sources: CAPE, CHC, CPDB, RPDB.
Note: The number of FHTs and CHCs per 1,000 population is an indication of service availability in the population.

EXHIBIT 74 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients who had access to a nurse practitioner per 1,000 population, by neighbourhood, in Toronto, Ontario, March 31, 2016

Key Message

- Access to a nurse practitioner by FHT patients and CHC clients was uneven across Toronto and followed a pattern that was similar to the distribution of all FHT patients and CHC clients per 1,000 population (see Exhibit 73).

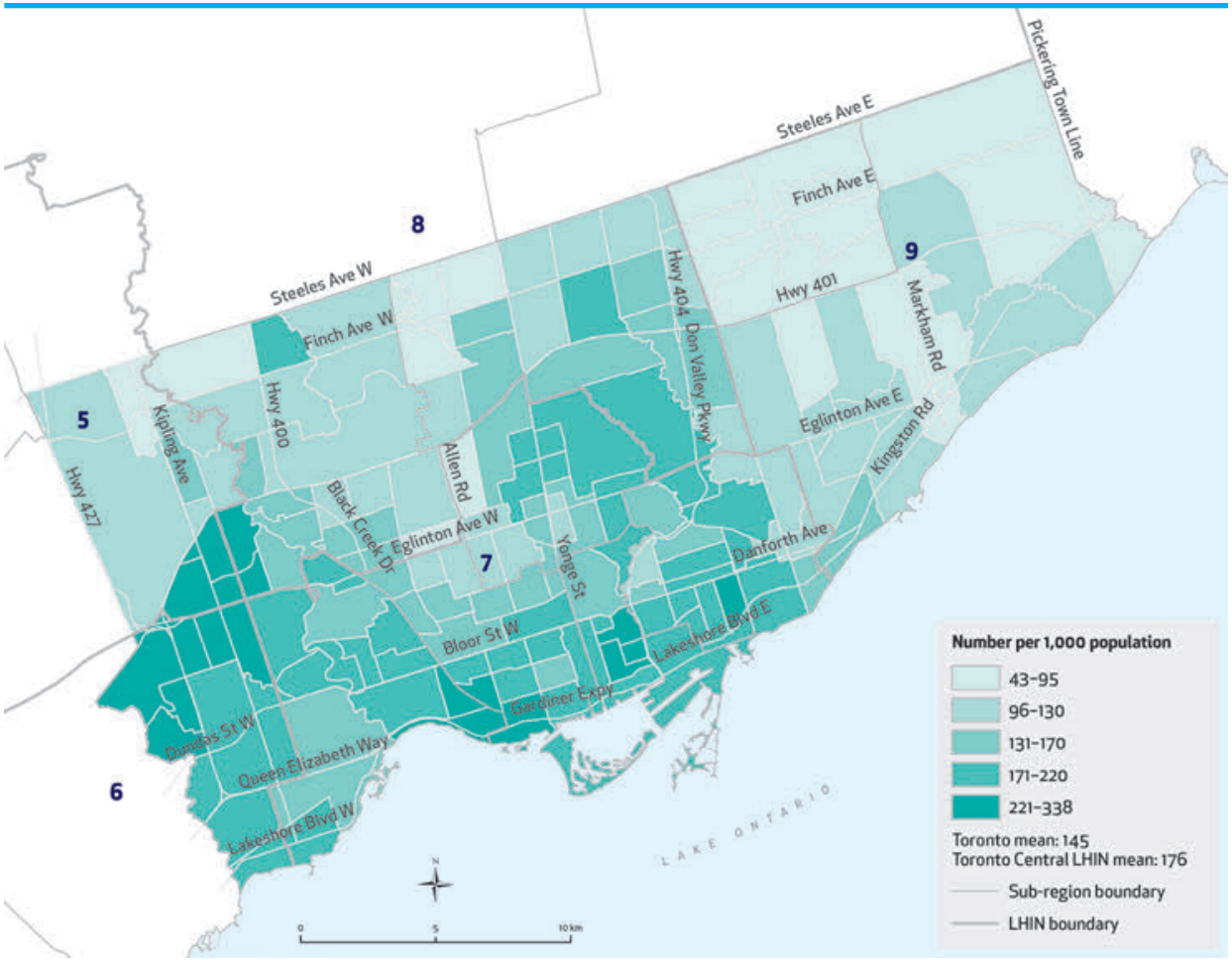


Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: Data were not available for Nurse Practitioner–Led Clinics, so access to nurse practitioners would have been underestimated in areas where those clinics were located.

EXHIBIT 75 Combined number of Family Health Team (FHT) patients and Community Health Centre (CHC) clients who had access to a mental health worker per 1,000 population, by neighbourhood, in Toronto, Ontario, March 31, 2016

Key Message

- Access to a mental health worker by FHT patients and CHC clients was uneven across Toronto and followed a similar pattern to the one seen for the combined number of FHT patients and CHC clients per 1,000 population (see Exhibit 73).



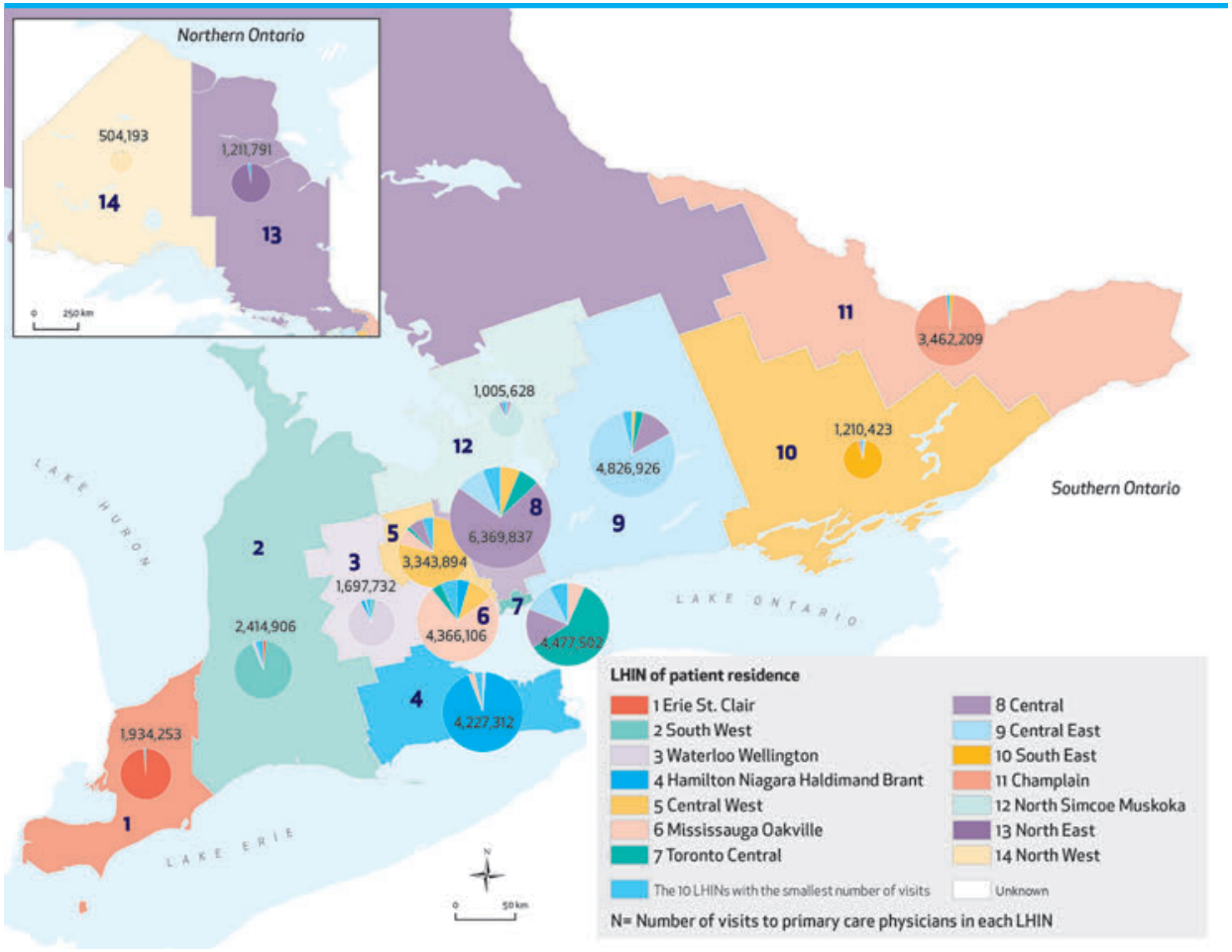
Data sources: CAPE, CHC, CPDB, OHIP, RPDB.
Note: Data were not available for mental health workers in hospitals or community settings other than FHTs and CHCs, so access to mental health workers would have been underestimated where those services were available.

Cross-LHIN Care

EXHIBIT 76 Mean annual proportion of primary care visits in a given Local Health Integration Network (LHIN) that were made by residents of that LHIN or by residents of other LHINs (includes inflow of primary care visits from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Most visits to primary care physicians in a given LHIN were made by residents of that LHIN (largest slice of each pie).
- LHINs where physician visits were more likely to be made by residents of other LHINs included the Central West, Mississauga Oakville, Toronto Central, Central and Central East LHINs.
- Fewer patients who lived in more rural and northern LHINs travelled across LHIN boundaries for primary care visits.

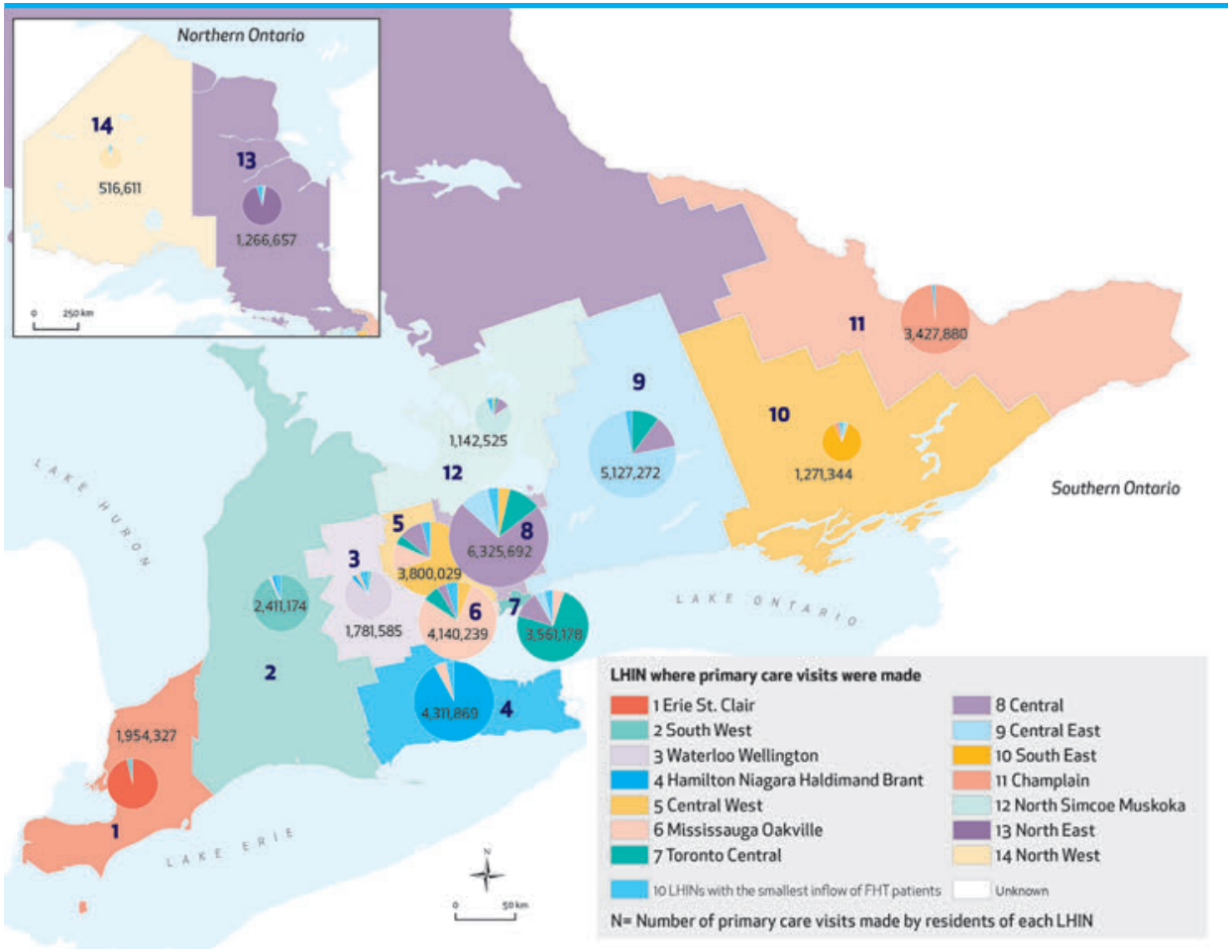


Data sources: OHIP, RPDB.
Note: Each pie (i.e., circle) represents the number of primary care visits made to physicians in a given LHIN; the size of the pie reflects the total number of visits to those physicians. Slices of the pie are colour-coded to show the LHINs of residence of the patients who made those visits (inflow). Within a given LHIN, the top four LHINs of residence of patients who made primary care visits in that LHIN are shown individually and the remaining 10 LHINs are summed together as one slice. Data for this map can be found in Appendix C (Exhibit C.1).

EXHIBIT 77 Mean annual proportion of primary care visits made by residents of a given Local Health Integration Network (LHIN) that were in their LHIN of residence or in other LHINs (includes outflow of primary care visits to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Most patients stay within their LHIN of residence for primary care visits (largest slice of each pie).
- LHINs where residents were more likely to cross LHINs for care included the Central West, Mississauga Oakville, Toronto Central, Central and Central East LHINs.
- The Toronto Central LHIN had the largest net inflow of patient visits (after accounting for residents who sought care in other LHINs) and the Central West and North Simcoe Muskoka LHINs had the largest net outflow (after accounting for visits by residents from other LHINs).

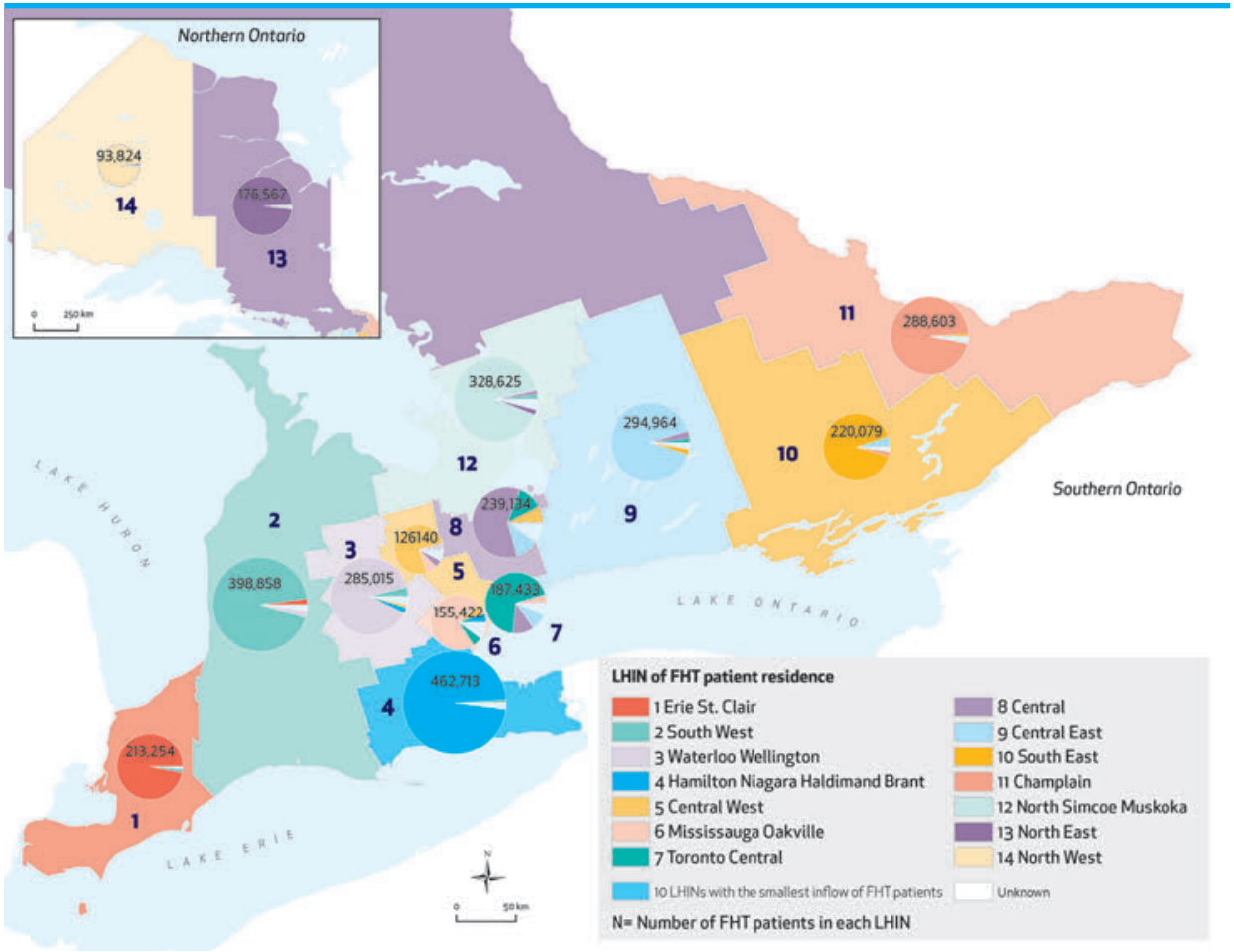


Data sources: OHIP, RPDB.
Note: Each pie (i.e., circle) represents the number of primary care visits made by patients living in a given LHIN; the size of the pie reflects the total number of visits those residents made. Slices of the pie are colour-coded to show the LHINs where residents had primary care visits (outflow). Within a given LHIN of patient residence, the top four LHINs where primary care visits were made are shown individually and the remaining 10 LHINs are summed together as one slice. Data for this map can be found in Appendix C (Exhibit C.2).

EXHIBIT 78 Proportion of Family Health Team (FHT) patients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of FHT patients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Most visits to FHTs in a given LHIN were made by residents of that LHIN (largest slice of each pie).
- The LHINs that had the largest proportion of FHT patients who resided in other LHINs were the Waterloo Wellington, Central West, Mississauga, Oakville, Toronto Central, Central, Central East and North Simcoe Muskoka LHINs. The more rural and remote northern LHINs had smaller inflows of FHT patients.

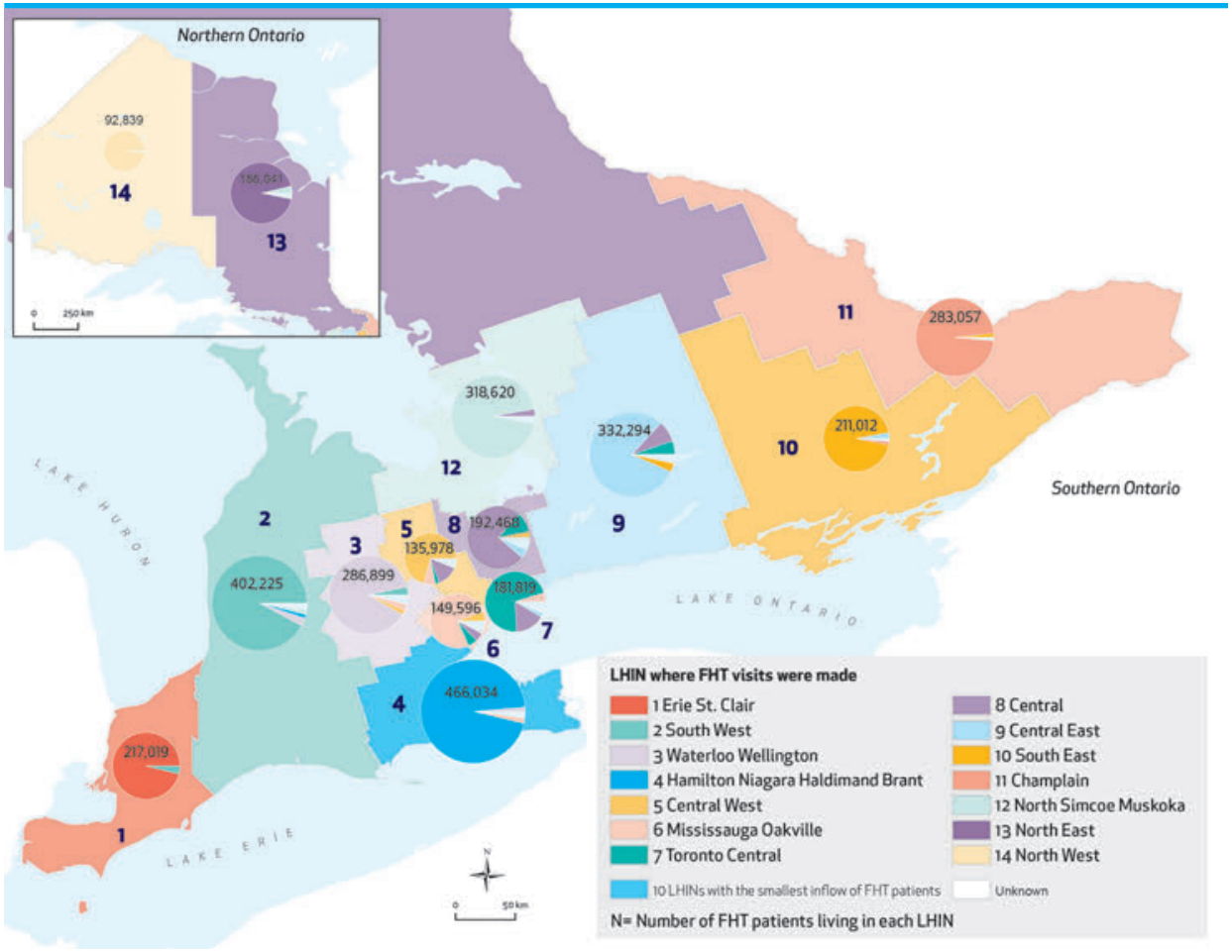


Data sources: CAPE, CPDB, OHIP, RPDB.
Note: Each pie (i.e., circle) represents the number of FHT patients in a given LHIN; the size of the pie reflects the total number of FHT patients. Slices of the pie are colour-coded to show the LHINs of residence of those FHT patients (inflow). Within a given LHIN, the top four LHINs of residence of FHT patients are shown individually and the remaining 10 LHINs are summed together as one slice. Data for this map can be found in Appendix C (Exhibit C.3).

EXHIBIT 79 Proportion of Family Health Team (FHT) patients who visited an FHT in their Local Health Integration Network (LHIN) of residence or in other LHINs (includes outflow of FHT patients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Most FHT patients stay within their LHIN of residence, the same LHIN as their physician, for care (largest slice of each pie).
- The LHINs with largest number of FHT patients who resided in a given LHIN but were rostered to FHTs in other LHINs included the Waterloo Wellington, Central West, Mississauga, Oakville, Toronto Central, Central and Central East LHINs. The more rural and remote northern LHINs had much smaller numbers of patients who travelled outside their LHIN of residence for FHT-based primary care.
- The Central LHIN had the largest net inflow of FHT patient visits (after accounting for residents who sought care in other LHINs) and the Central East LHIN had the largest net outflow (after accounting for visits by residents from other LHINs).

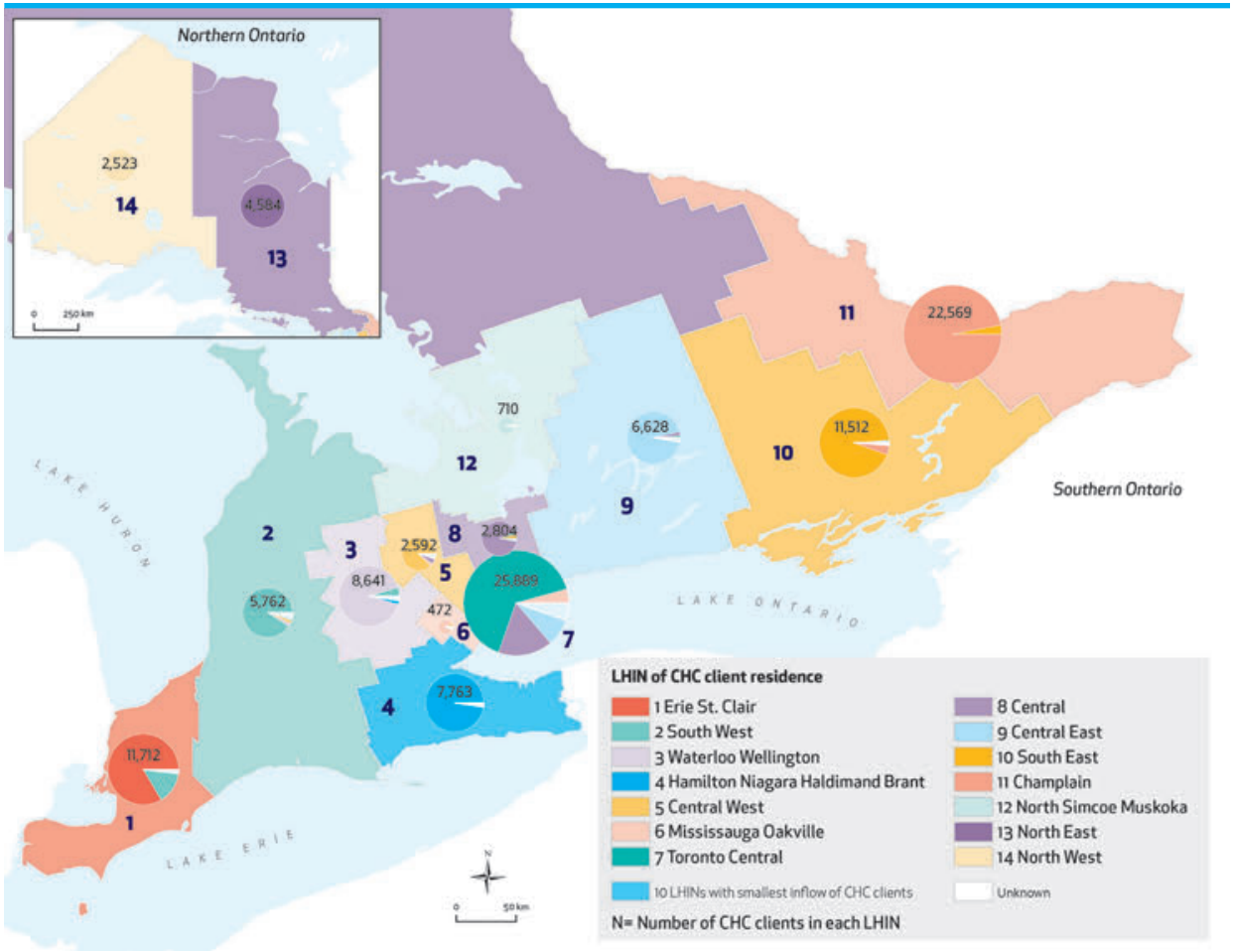


Data sources: CAPE, CPDB, OHIP, RPDB.
Note: Each pie (i.e., circle) represents the number of FHT patients living in a given LHIN; the size of the pie reflects the total number of FHT patients. Slices of the pie are colour-coded to show the LHINs where those patients received FHT care (outflow). Within a given LHIN of residence, the top 4 LHINs where those residents received FHT care are shown individually and the remaining 10 LHINs are summed together as one slice. Data for this map can be found in Appendix C (Exhibit C.4).

EXHIBIT 80 Proportion of Community Health Centre (CHC) clients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of CHC clients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Most visits to CHCs in a given LHIN were made by residents of that LHIN (largest slice of each pie).
- The Toronto Central LHIN had the largest proportion of CHC clients coming from other LHINs. This is likely due to the fact that the Toronto Central LHIN had a larger number of CHCs than any of the surrounding LHINs. The Erie St. Clair LHIN also had a large proportion of CHC clients coming from outside LHINs, mostly from the South West LHIN. CHCs in more rural and remote northern LHINs had smaller numbers of outside clients.

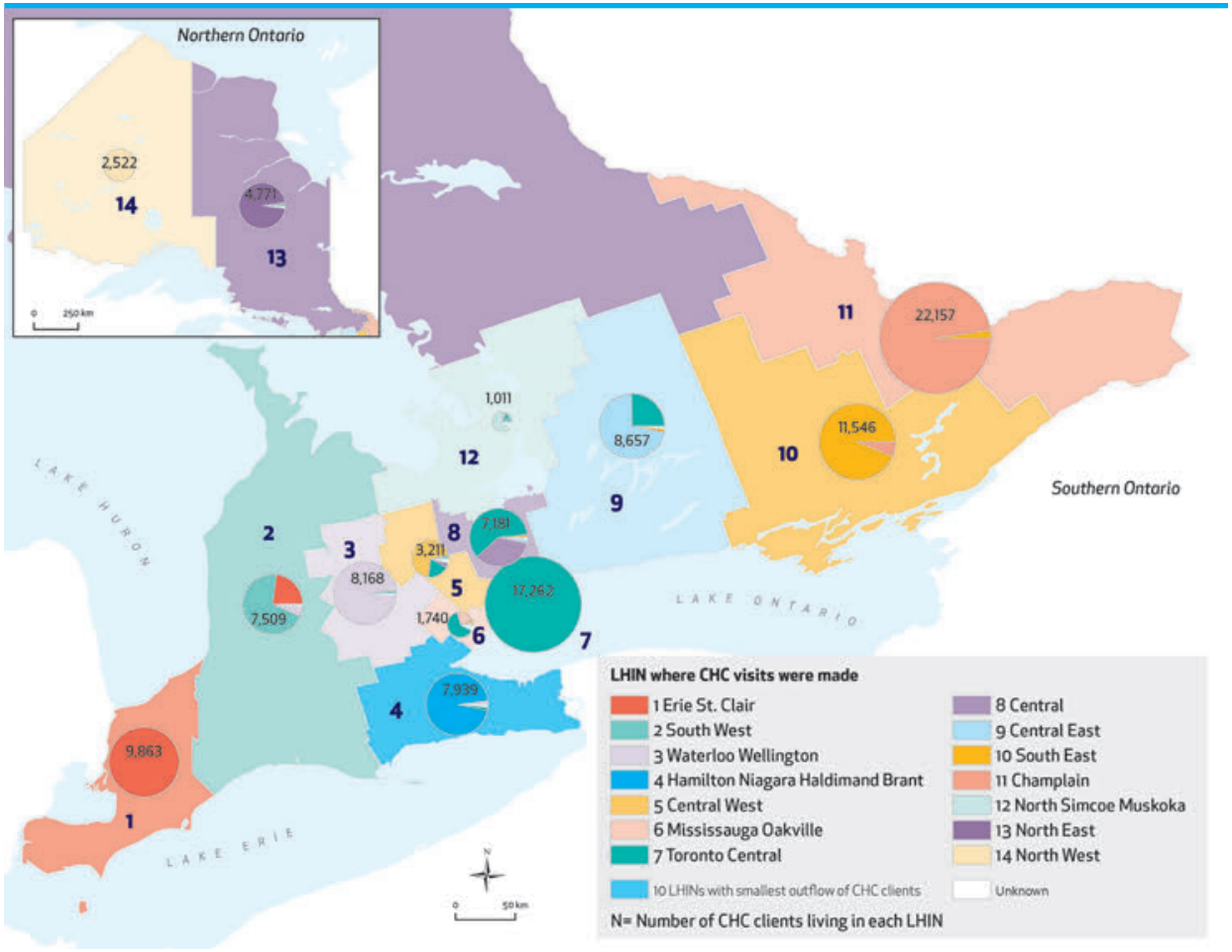


Data sources: CHC, RPDB.
Note: Each pie (i.e., circle) represents the number of CHC clients in a given LHIN; the size of the pie reflects the total number of CHC clients. Slices of the pie are colour-coded to show the LHINs of residence of those CHC clients (inflow), and the size of each slice reflects the relative proportion of CHC clients from those LHINs. Within a given LHIN, the top four LHINs of residence of CHC clients are shown individually and the remaining 10 LHINs are summed together as one slice. Some CHCs have a population or service focus (e.g., to serve the needs of Francophone, recent immigrant or Indigenous populations or to provide family planning services) rather than a geographic focus. Those CHCs would be expected to serve clients from other LHINs. Data for this map can be found in Appendix C (Exhibit C.5).

EXHIBIT 81 Proportion of Community Health Centre (CHC) clients who visited a CHC in their Local Health Integration Network (LHIN) of residence or in other LHINs (includes outflow of CHC clients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

Key Messages

- Residents of the Erie St. Clair, Toronto Central and North West LHINs almost exclusively stayed within their LHIN of residence for CHC care. In contrast, a substantial proportion of residents of the South West, Central West, Mississauga, Oakville, Central, Central East and North Simcoe Muskoka LHINs travelled to other LHINs for CHC care.
- The Toronto Central LHIN had the largest net inflow of CHC client visits (after accounting for residents who sought care in other LHINs) and the Mississauga Halton and Central LHINs had the largest net outflow (after accounting for visits by residents from other LHINs).



Data sources: CHC, RPDB.
Note: Each pie (i.e., circle) represents the number of CHC clients living in a given LHIN; the size of the pie reflects the total number of CHC clients. Slices of the pie are colour-coded to show the LHINs where those clients received CHC care (outflow). Within a given LHIN of residence, the top 4 LHINs where those residents received CHC care are shown individually and the remaining 10 LHINs are summed together as one slice. Data for this map can be found in Appendix C (Exhibit C.6).

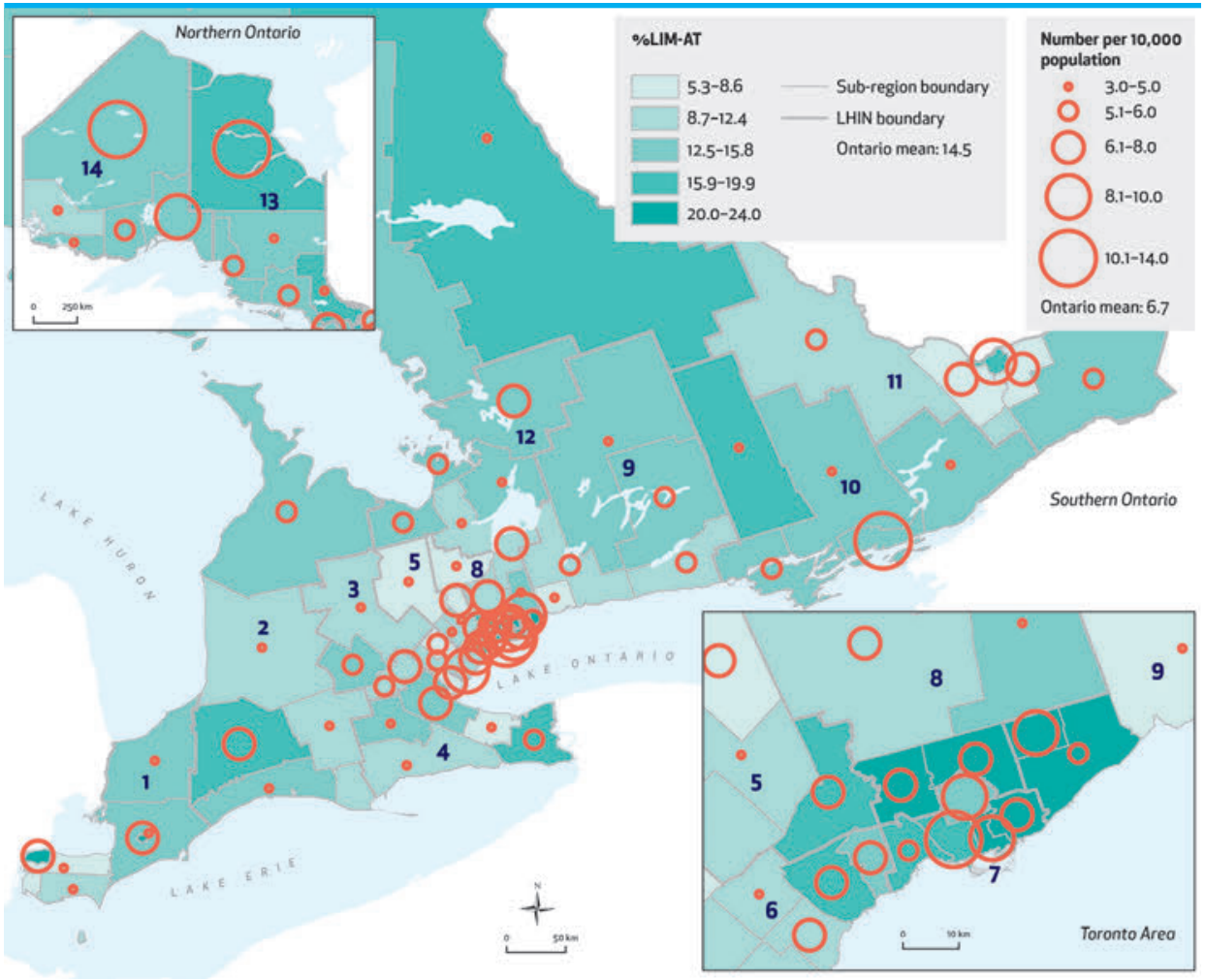
Gaps in Care

Ontario

EXHIBIT 82 Prevalence of low income (%LIM-AT)* in 2016 and number of comprehensive primary care physicians per 10,000 population** in 2015/16, by sub-region, in Ontario

Key Messages

- While areas characterized by low income (high %LIM-AT) were concentrated in major urban centres, low levels of physician supply occurred mainly in rural areas.
- The Nipissing-Temiskaming and Rural Hastings sub-regions had both a high prevalence of low income and low physician supply.

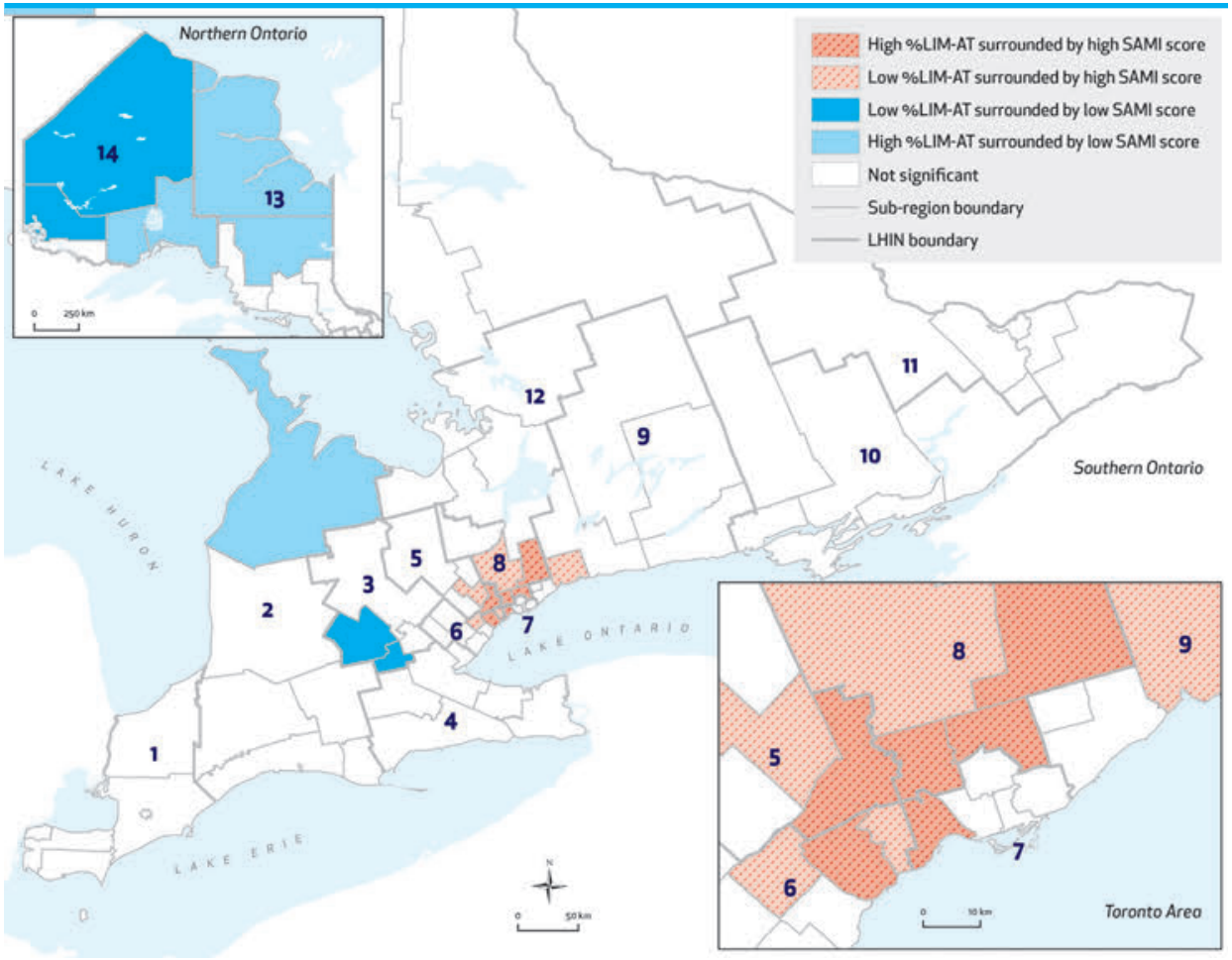


Data sources: 2016 Census of Canada, CPDB, IPDB, OHIP, RPDB.
*The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.
**The number of primary care physicians per population is often used as a measure of primary care physician supply and availability.
Note: This map helps to identify areas with low primary care physician supply (smaller circles) that overlay areas with high prevalence of low income (darker shaded areas), both of which can contribute to poor health outcomes. Identifying these areas can inform policies aimed at meeting health care needs in these areas.

EXHIBIT 83 Spatial relationship between prevalence of low income (%LIM-AT)* in 2016 and primary care need (SAMI score),** in 2015/16, by sub-region, in Ontario

Key Messages

- The East Mississauga, North Etobicoke Malton West Woodbridge, West Toronto, North York West, North York Central and Eastern York Region sub-regions had both a high prevalence of low income (high %LIM-AT) and high primary care need (high SAMI score).
- Both low income prevalence and primary care need may be underestimated in northern Ontario due to gaps in data.

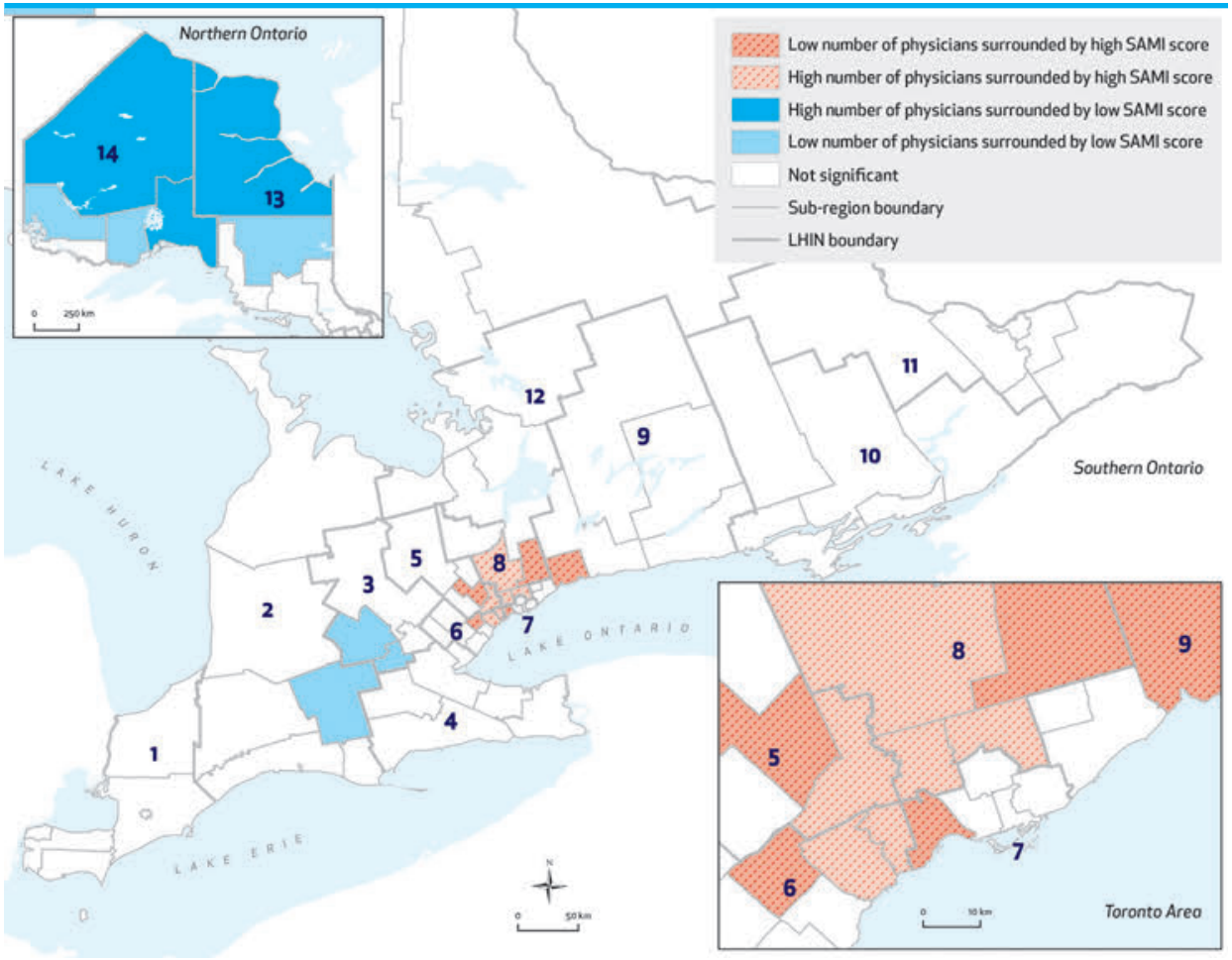


Data sources: 2016 Census of Canada, CIHI-DAD, OHIP, OMHRS, RPDB.
*The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.
**Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A sub-region SAMI score of 0.8 means that the sub-region had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the sub-region had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.
Note: The bivariate Local Index of Spatial Association (LISA) method was used to identify areas where clustering of high or low income prevalence were surrounded by high or low primary care need. Areas of concern have clustering of high %LIM surrounded by high SAMI score. Primary care need may have been underestimated in northern Ontario sub-regions where some primary care physicians, as well as other providers and services, are federally funded and therefore would not have been included.

EXHIBIT 84 Spatial relationship between number of comprehensive primary care physicians per 10,000 population* and primary care need (SAMI score),** by sub-region, in Ontario, 2015/16

Key Messages

- Areas that had both a low number of primary care physicians per 10,000 population and high primary care need were in the Greater Toronto Area, and included the North West Mississauga, Bramalea, West Toronto, Eastern York Region and Durham West sub-regions.
- Both the number of comprehensive care physicians and primary care need may be underestimated in northern Ontario due to data gaps.

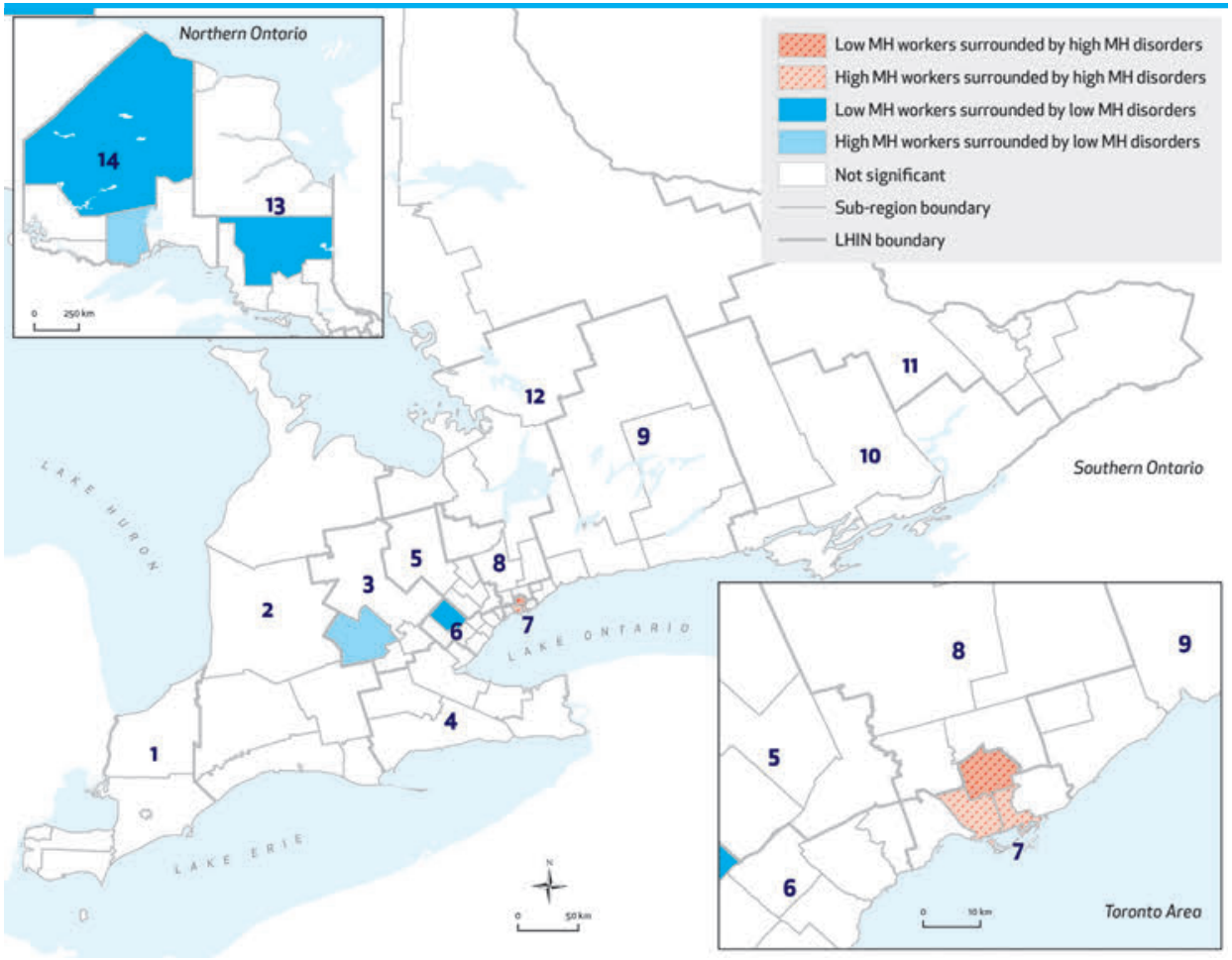


Data sources: CIHI-DAD, CPDB, IPDB, OHIP, OMHRS, RPDB.
*The number of comprehensive primary care physicians per population is often used as a measure of comprehensive primary care physician supply and availability.
**Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A sub-region SAMI score of 0.8 means that the sub-region had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the sub-region had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.
Note: The bivariate Local Index of Spatial Association (LISA) method was used to identify areas where clustering of high or low numbers of comprehensive primary care physicians per 10,000 population were surrounded by high or low primary care need. Areas of concern have clustering of low physician supply surrounded by high SAMI score. Primary care need may have been underestimated in northern Ontario sub-regions where some primary care physicians, as well as other providers and services, are federally funded and therefore would not have been included.

EXHIBIT 85 Spatial relationship between number of people diagnosed with a mental health (MH) disorder and number who had access to a MH worker, both per 1,000 population, by sub-region, in Ontario, 2015/16

Key Messages

- Areas of concern were all within the Toronto Central LHIN. The North Toronto sub-region had both low access to MH workers and high rates of MH disorders, and the Mid-West Toronto and Mid-East Toronto sub-regions had both high access to MH workers and high rates of MH disorders.
- Both the number of people diagnosed with a MH disorder and access to a MH worker may be underestimated in northern Ontario due to data gaps.



Data sources: CPDB, OHIP, RPDB.
Note: The bivariate Local Index of Spatial Association (LISA) method was used for two measures related to MH to identify areas where clustering of high or low numbers of MH disorders per 1,000 population were surrounded by high or low access to MH workers per 1,000 population. Areas of concern had clustering of high numbers of MH disorders surrounded by low access to MH workers or clustering of high numbers of MH disorders surrounded by high access to MH workers.

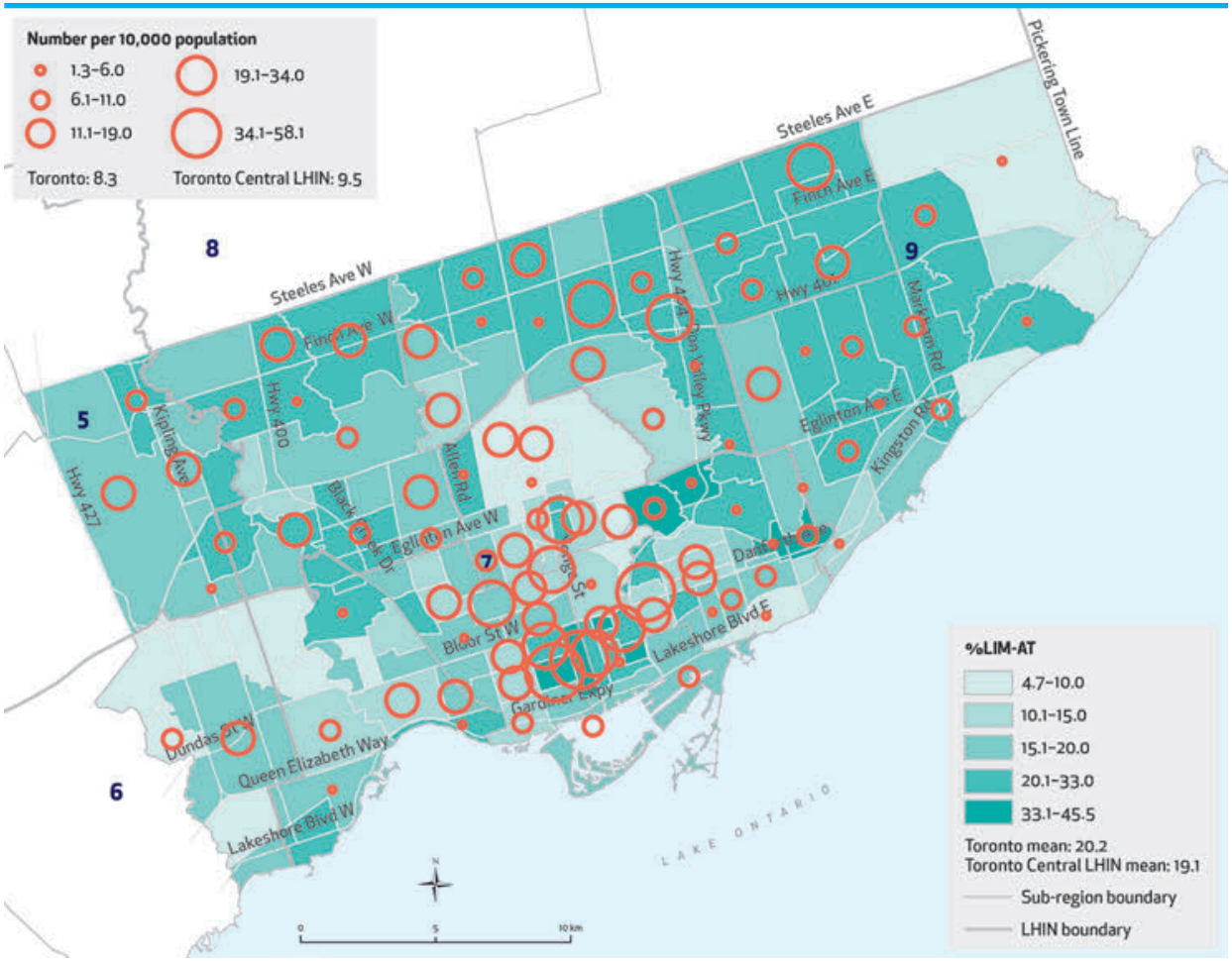
Gaps in Care

Toronto

EXHIBIT 86 Prevalence of low income (%LIM-AT)* in 2016 and number of comprehensive primary care physicians per 10,000 population** in 2015/16, by neighbourhood, in Toronto, Ontario

Key Message

- Areas in downtown Toronto, the northeastern and eastern parts of the Toronto Central LHIN and the southeastern portion of the West Toronto sub-region had both high prevalence of low income (high %LIM-AT) and low physician supply.

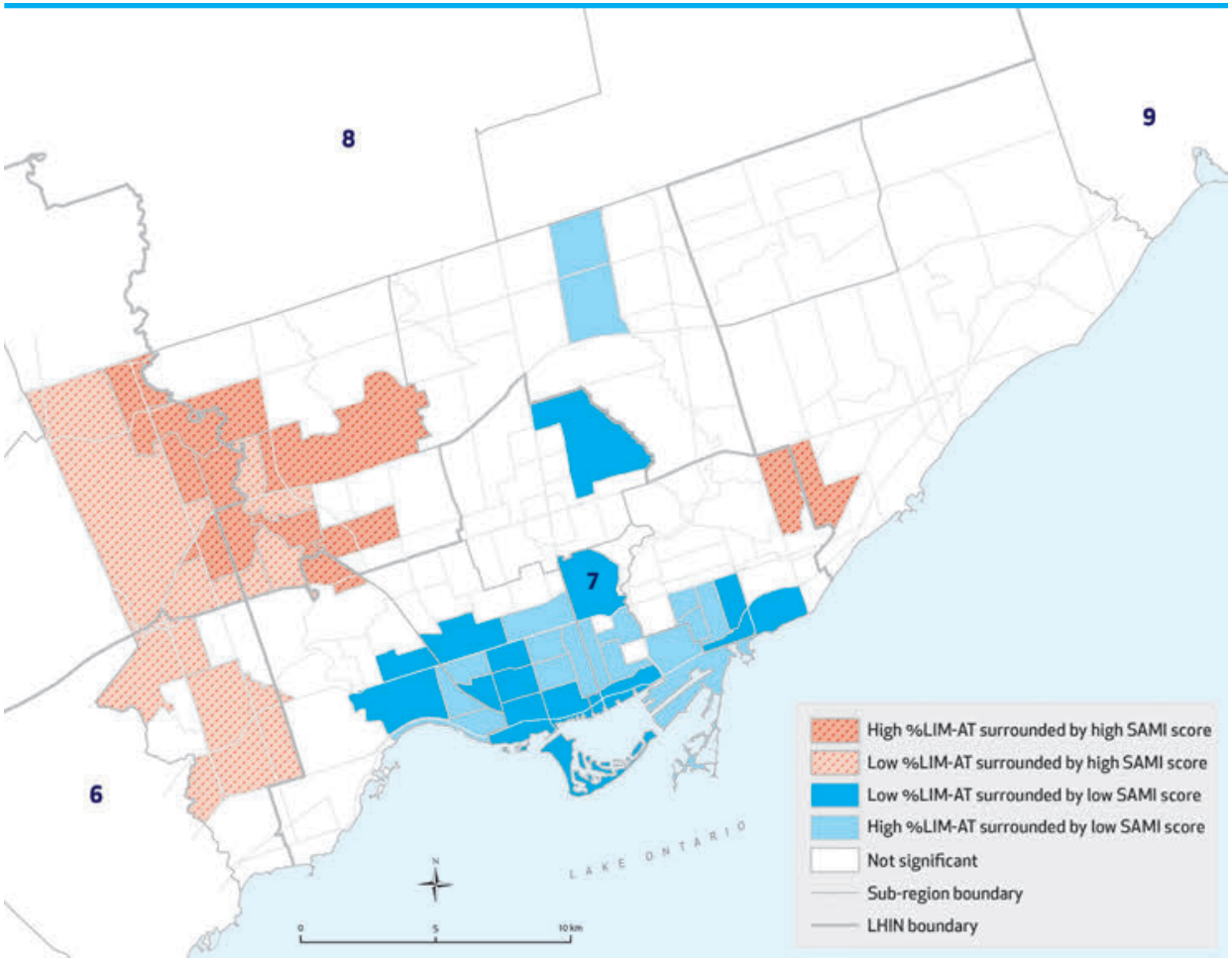


Data sources: 2016 Census of Canada, CPDB, IPDB, RPDB.
*The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.
**The number of primary care physicians per population is often used as a measure of primary care physician supply and availability.
Note: This map helps to identify areas with low primary care physician supply (smaller circles) that overlay areas with high prevalence of low income (darker shaded areas), both of which can contribute to poor health outcomes. Identifying these areas can inform policies aimed at meeting health care needs in these areas.

EXHIBIT 87 Spatial relationship between prevalence of low income (%LIM-AT)* in 2016 and primary care need (SAMI score)** in 2015/16, by neighbourhood, in Toronto, Ontario

Key Message

- Toronto areas with both high prevalence of low income (high %LIM-AT) and high primary care need (high SAMI score) were largely in the northwestern and eastern parts of the city.

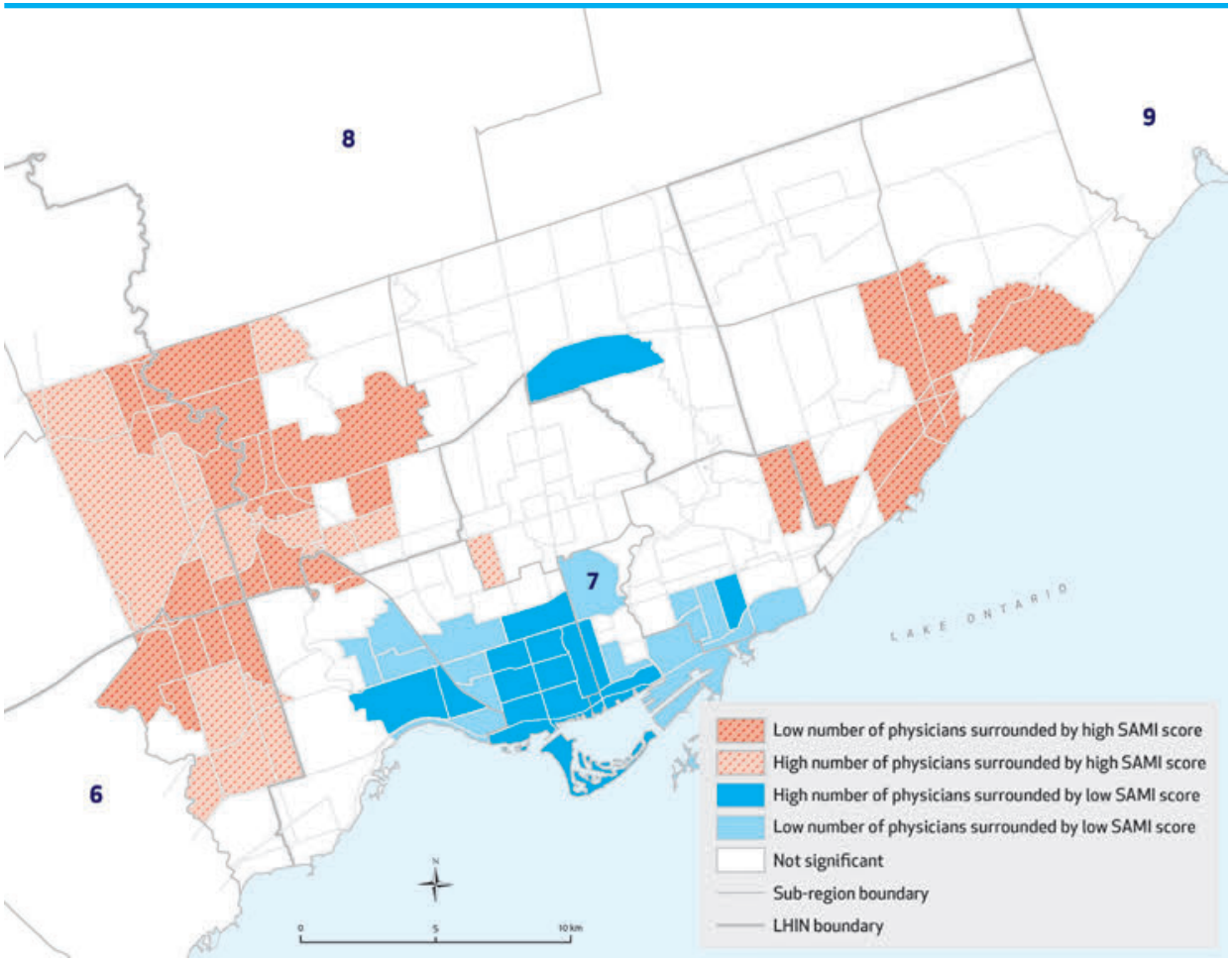


Data sources: 2016 Census of Canada, CIHI-DAD, OHIP, OMHRS, RPDB.
*The low income measure after tax (LIM-AT) from Statistics Canada's 2016 Census of Population is set at 50% of adjusted mean household income after tax, and the percentage of the population living below the LIM-AT was used as a measure of low income prevalence.
**Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A sub-region SAMI score of 0.8 means that the neighbourhood had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the neighbourhood had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.
Note: The bivariate Local Index of Spatial Association (LISA) method was used to identify areas where clustering of high or low income prevalence were surrounded by areas with high or low primary care need. Areas of concern had clustering of high %LIM surrounded by high SAMI score.

EXHIBIT 88 Spatial relationship between number of comprehensive primary care physicians per 10,000 population* and primary care need (SAMI score),** by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- The Toronto areas with both low primary care physician supply and high primary care need (high SAMI score) were in the northwestern and eastern parts of the city.

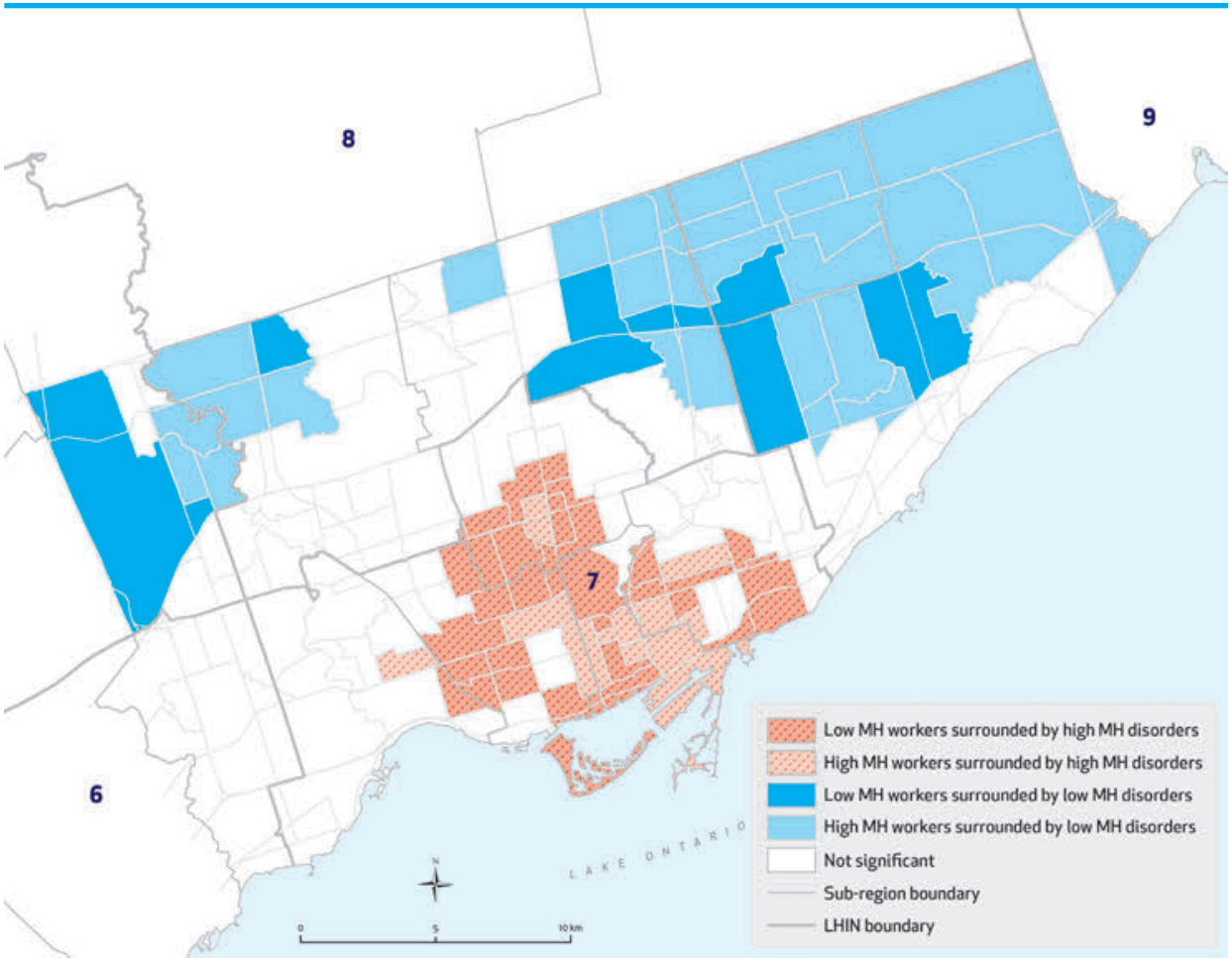


Data sources: 2016 Census of Canada, CIHI-DAD, CPDB, IPDB, OHIP, OMHRS, RPDB.
*The number of comprehensive primary care physicians per population is often used as a measure of comprehensive primary care physician supply and availability.
**Primary care need was measured using the Standardized ACG Morbidity Index (SAMI), which is derived from the Johns Hopkins Adjusted Clinical Group (ACG) system of physician and hospital diagnoses. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A sub-region SAMI score of 0.8 means that the neighbourhood had 20% fewer expected visits than the provincial average. Conversely, a SAMI score of 1.2 means that the neighbourhood had 20% more expected visits than the provincial average. Because the SAMI relies on the diagnoses generated during health care encounters, a limitation of this approach is that it does not reflect unmet needs.
Note: The bivariate Local Index of Spatial Association (LISA) method was used to identify areas where clustering of high or low number of comprehensive primary care physicians per 10,000 population were surrounded by areas with high or low primary care need. Areas of concern have clustering of low physician supply surrounded by high SAMI score.

EXHIBIT 89 Spatial relationship between number of people diagnosed with a mental health (MH) disorder and number who had access to a MH worker, both per 1,000 population, by neighbourhood, in Toronto, Ontario, 2015/16

Key Message

- Neighbourhoods with both low access to MH workers and high rates of MH disorders were in downtown Toronto, and extended to much of the central, northern and eastern parts of the Toronto Central LHIN.



Data sources: CPDB, IPDB, OHIP, RPDB.
Note: The bivariate Local Index of Spatial Association (LISA) method was used for two measures related to MH to identify areas where clustering of high or low numbers of MH disorders per 1,000 population were surrounded by high or low access to MH workers per 1,000 population. Areas of concern had clustering of high numbers of MH disorders surrounded by low access to MH workers, or clustering of high numbers of MH disorders surrounded by high access to MH workers.

Discussion

The aim of this report is to fill important data gaps in the context of supporting new LHIN responsibilities for primary care planning and the creation of 76 LHIN sub-regions across the province. Analyses focused on understanding current patterns of primary care need, use, providers and teams, as well as cross-LHIN care and gaps in care. A variety of mapping techniques were used to present these analyses across the 76 sub-regions in Ontario and the 140 neighbourhoods in the city of Toronto.

Primary Care Need

The dimensions of primary care need considered in this report included:

- low income (strongly associated with poor health and problems accessing care)
- recent immigration (associated with barriers to care)
- disability (those who always experience difficulties with activities of daily living resulting in need for additional support)
- seniors living alone (with increased support needs in the face of deteriorating health and function)
- seniors with disability living alone (associated with special support needs)
- a measure of primary care need called the Standardized ACG Morbidity Index (SAMI)
- enrolment in a primary care enrolment model (associated with receiving more comprehensive care)
- mental health diagnoses, including psychotic, non-psychotic and substance-use disorders, and social, family or occupational issues (for which needs are often unmet in our health care system).

Across the sub-regions, low-income populations were concentrated in major urban centres, such as Toronto and Windsor, and in northeastern Ontario. The percentage of recent immigrants was highest in the Great Toronto Area (GTA), while the percentage of seniors living alone was highest in the Toronto Central

LHIN and in parts of northern Ontario. The percentage of the population who always experienced difficulties with activities of daily living, both in the general population and among seniors, was highest in northern Ontario and in the rural parts of eastern Ontario. The percentage of seniors living alone who always experienced difficulties with activities of daily living was highest in northwestern Ontario and in the Toronto Central LHIN. Primary care need was highest in the LHINs surrounding Toronto and in the Niagara and Windsor areas. The percentage of the population not enrolled in a primary care enrolment model (PEM) was highest in northern Ontario and in Toronto. Areas with the highest number of people diagnosed with a mental health disorder per 1,000 population were scattered across the province and included urban and rural areas in both northern and southern Ontario. Psychotic mental health disorders were more concentrated in major urban centres. Substance-use disorders were highest in northwestern Ontario but were also high in many urban and rural areas of southern Ontario. The overall pattern of primary care need pointed to major urban centres and northern Ontario as areas where high-need patients were most concentrated.

In Toronto, concentrations of low-income individuals followed the established donut pattern,[12] where areas characterized by low income levels follow a circular pattern around the city (the donut), and areas characterized by high income levels are more predominant in the central (the hole of the donut) and peripheral parts of the city. Recent immigration was highest in northern Toronto and in the North St. James Town, Thorncliffe Park, Flemingdon Park, Taylor-Massey and Woodbine-Lumsden neighbourhoods. The percentage of seniors living alone was highest in the downtown core and in central Toronto. Neighbourhoods with the highest percentage of people who always experienced difficulties with activities of daily living—in the general population, among seniors and among seniors living alone—were scattered across the southern part of the city. Primary care need was highest in the eastern and northwestern parts of the city, and patients not enrolled in PEMs were most concentrated in the central, southern and western parts of the city. Areas with the highest number of people diagnosed with a mental health disorder per 1,000 population were concentrated in the southern and central parts of the city. These patterns are consistent with known relationships between income and health, such that the downtown core and other areas of the city that reflect the donut pattern had the greatest primary care need.

Primary Care Service Use

Measures of health care use included:

- visits to primary care physicians
- continuity to primary care physicians
- new enrolment in PEMs
- after-hours primary care visits
- avoidable hospital admissions for ambulatory care–sensitive conditions (ACSCs)
- emergency department (ED) visits
- visits to specialist physicians.

Across Ontario sub-regions, the number of primary care visits per 1,000 population was highest in the northwestern portion of the GTA and in Windsor, and lowest in northern Ontario and some rural areas in southern Ontario. Continuity of primary care was lowest in the James and Hudson Bay Coasts sub-region. New enrolment in PEMs was highest in the mainly rural areas of southern Ontario. After-hours primary care visits were highest in the sub-regions surrounding Toronto and lowest in northern and rural areas of the province. The number of avoidable hospitalizations for ACSCs (which can be prevented with timely and appropriate care) per 100,000 population was highest in the more rural areas of the province, including eastern and northern Ontario. This pattern of avoidable hospitalizations is consistent with higher hospitalization rates in rural hospitals that often have greater relative bed capacity than overcrowded hospitals in urban centres. Rural hospital admission rates for ACSCs may also be higher because of the long distances many people live from hospitals, necessitating more admissions for observation. Patterns of ED visits rates were broadly similar to those for ACSC hospitalizations. Rural areas tended to have much higher ED visit rates than urban centres, because there are few alternative sources of care delivery in rural areas and primary care is often provided through EDs. In contrast, rates of visits to specialist physicians were highest in major urban centres, especially in Toronto and the GTA. The greater availability of specialist physicians in major urban centres is the most likely explanation for these patterns. Overall, patterns of health care use in Ontario sub-regions pointed to northern Ontario as having relatively low primary care use, low continuity, low rates of new enrolment in PEMs, fewer after-hours visits and less specialist care, while having higher ACSC admissions and ED use. Many of these sub-regions also had high primary care need,

suggesting a mismatch between primary care need and primary care use that could contribute to a higher use of hospitals and EDs. Urban areas of the province had relatively higher numbers of primary care visits per 1,000 population but generally lower continuity of care, lower rates of new enrolment in PEMs, and lower ACSC admission rates and ED use. These findings suggest a relatively higher use of primary care in urban areas, possibly contributing to lower use of hospitals and EDs.

In Toronto, the number of primary care visits per 1,000 population was highest in the northwestern and eastern parts of the city. Continuity of primary care was lowest in the downtown core and in some areas within the donut that are characterized by low income levels and high immigration rates. New enrolment in PEMs was highest along the lakeshore in downtown Toronto and in some low-income, high-immigration areas of the city. After-hours primary care visits were highest in northwestern and northeastern Toronto and lowest in the northern and central parts of the Toronto Central LHIN. The pattern of hospital admissions for ACSCs in Toronto largely followed the donut pattern, with more avoidable hospital admissions in the donut (neighbourhoods characterized by low income levels) and fewer avoidable hospitalizations in central Toronto (the hole of the donut), where neighbourhoods are characterized by high income levels. ED visits were also highest in the donut, especially in the downtown core and in northwestern parts of the city. In contrast, specialist visits were highest in the hole of the donut, the location of Toronto's most educated and wealthiest residents; this pattern most likely reflects an expectation for more specialist care and a better ability to navigate the health care system among those residents. Overall, higher primary care use in Toronto occurred in the donut areas of higher primary care need, suggesting concordance between primary care need and use in the city.

Primary Care Providers and Teams

Measures of primary care providers and teams included:

- the number of primary care physicians and comprehensive primary care physicians
- the percentage of comprehensive primary care physicians aged 65 and older
- the availability and distribution of Family Health Teams (FHTs) and Community Health Centres (CHCs), including access to nurse practitioners and mental health workers.

Across the province's sub-regions, the number of primary care physicians per 10,000 population was highest in some areas of northern Ontario and in major urban centres and lowest in mainly rural areas. This finding should be interpreted with caution as populations in northern Ontario may not be fully captured in provincial data, and in the GTA a substantial amount of primary care is provided across LHIN boundaries. The number of primary care physicians should also be interpreted in light of the finding that only about two-thirds of them were providing comprehensive primary care. The proportion of physicians providing comprehensive primary care was lowest in northern Ontario and in major urban centres and highest in the areas surrounding major urban centres. Sub-regions with a high proportion of primary care physicians aged 65 and older were in some northern and rural areas and in Toronto; these areas may have special planning needs as older physicians are more likely to retire.

The distribution of patients receiving care from FHTs was highly uneven across sub-regions, ranging from 27 to 926 patients per 100,000 population; the highest proportions were found in mainly rural areas and smaller centres, and the lowest proportions were found in the sub-regions surrounding Toronto. CHC clients were distributed somewhat differently, with the highest proportions in rural eastern and northern Ontario and the lowest proportions mainly in the rural areas of central Ontario. When FHT patients and CHC clients were combined, the pattern strongly resembled the pattern for FHT patients alone; this is because FHTs care for more than 10 times as many people as CHCs. The proportion of FHT patients and CHC clients with access to a nurse practitioner or mental health worker per 1,000 population followed a similar pattern to that for FHT patients alone. Overall, rural areas of the province had fewer primary care physicians per population, but many had higher proportions of the population in FHTs or CHCs.

Toronto appeared to have more primary care physicians per 10,000 population, but a lower proportion of them provided comprehensive care and a higher proportion were aged 65 or older. Primary care physician supply in Toronto should also be interpreted in light of cross-LHIN care. Among all sub-regions, the GTA had the lowest proportion of its population in an FHT or CHC. Across Toronto neighbourhoods, the number of primary care

physicians per 10,000 population was highest in central areas that were close to hospitals and lowest in scattered areas in the northwestern and eastern parts of the city; this pattern does not reflect the inflow and outflow of patients across LHIN boundaries. The proportion of comprehensive primary care physicians aged 65 and older reached 100% in a few central Toronto neighbourhoods. The distribution of FHT patients per population was uneven within Toronto, with an almost six-fold variation across neighbourhoods. The highest proportions of FHT patients were in the northern, southern and eastern portions of the Toronto Central LHIN, and the lowest proportions were in the northwestern and eastern portions of the city. The number of CHC clients per 1,000 population followed a different pattern, with the highest proportions living in the donut areas of low income and high immigration and the lowest proportions living in the wealthier central areas of the city. The location of CHC clients more closely resembled the pattern for health care need than did the location of FHT patients. When combined, proportions of FHT patients and CHC clients complemented each other, especially within the Toronto Central LHIN. Areas in the northwestern and eastern portions of the city were characterized by low proportions of interprofessional team care, even when FHTs and CHCs were combined. The distribution pattern of access to nurse practitioners and mental health workers closely resembled the distribution of FHT patients. Overall, only the distribution pattern of CHC clients was concordant with areas of highest primary care need.

Cross-LHIN Care

The types of cross-boundary care considered in this report were primary care visits, FHT patients and CHC clients, in order to look at primary care in a given LHIN provided to people living in other LHINs (inflow), and people residing in a given LHIN who receive care in other LHINs (outflow). Cross-border care is more likely to occur for people living close to LHIN boundaries and for those who reside in one LHIN but seek primary care in another LHIN (e.g., in a LHIN close to where they work). Cross-border care needs to be considered when planning for health human resources in primary care. Across Ontario sub-regions, the largest inflow of primary care visits, FHT patients and CHC clients was to the Toronto Central LHIN, followed by other GTA LHINs. Outflows were also substantial in the GTA. The amount of cross-LHIN care was relatively low in LHINs outside the GTA.

Quantifying the amount of care across boundaries is important for interpreting information about the supply of care providers and teams in relation to population needs. For example, the Toronto Central LHIN has a relatively high number of primary care physicians per population, but it also has a substantial inflow of patients from other LHINs, resulting in an overestimation of physician supply in the Toronto Central LHIN and an underestimation in some surrounding LHINs.

Gaps in Care

Identifying gaps in primary care was a major objective of this report. Several gaps have already been identified. For example, the need for primary care was highest in northern Ontario and in major urban centres, yet enrolment in PEMs and access to interprofessional care provided through FHTs and CHCs was low in many of these areas. Specialist care was concentrated in major urban centres, especially in high-income areas, and was much less available in rural and northern areas and in urban areas with the highest need.

This report also includes several examples of how a geographic information system (GIS) can be used to identify gaps in care. The types of gaps considered using GIS included:

- an overlay of low income (a measure of health care need) with the number of primary care physicians per 10,000 population (a measure of health care supply)
- a spatial correlation between low income prevalence and a measure of primary care need (SAMI score)
- a spatial correlation between primary care need (SAMI score) and the number of primary care physicians per 10,000 population
- a spatial correlation between rates of mental health disorders (the number of people diagnosed with a mental health disorder per 1,000 population) and the availability of mental health workers (the number of people who had access to a mental health worker per 1,000 population).

Ontario sub-regions with both low income and low primary care physician supply were in the largely rural areas of northeastern, southeastern and southwestern Ontario. Spatial correlations showed sub-regions in and around Toronto with both low income and high primary care need; sub-regions in the GTA with both low primary care physician supply and high primary care need; and subregions in the Toronto Central LHIN with both low access to mental health workers and high rates of mental health disorders. Overall, these spatial patterns showed pockets of high need and low supply in some northern and rural areas, as well as in Toronto and the GTA.

Toronto neighbourhoods with both low income and low primary care physician supply were scattered inside the donut of low income—largely outside the downtown core. Spatial correlations showed neighbourhoods in the eastern and northwestern parts of the city with both low income and high primary care need, and with both low primary care physician supply and high primary care need. Many neighbourhoods in the Toronto Central LHIN had both low access to mental health workers and high rates of mental health disorders. Overall, these spatial patterns demonstrate areas of high need and low supply in the eastern and northwestern areas of the city for primary care physicians, and in the central and southern parts of the city for mental health care.

Limitations

The results presented in this report should be interpreted in light of several limitations.

1. The report relied heavily on administrative data from health care contacts, including hospital admissions and visits to physicians, emergency departments, Family Health Teams (FHTs) and Community Health Centres (CHCs) in Ontario. Because federally funded services predominate in northern areas of the province and those health care contacts would not be captured in the study data, many of the study measures are likely underestimated in those areas. Data for CHC clients were incorporated whenever possible, but not all measures could include CHC data due to limitations in data availability at the time of analyses. In addition, because the study data only captured Ontarians with health care coverage, CHC clients may not be adequately represented since 10%–15% of them do not have health care coverage. Other populations that were uninsured provincially, such as refugee claimants and immigrants in the first three months after landing in Canada, would not have been included. Some homeless people whose health cards were lost or stolen would also have been missed.

2. The data were based on physician counts and not on full-time equivalents such that part-time work by physicians was not taken into account. As a result, physician supply was likely overestimated.

3. Only geographic access to care was taken into account. While geographic access is necessary, other factors are required for effective access to care including: whether individual or groups of physicians were accepting new patients, wait times for appointments, the availability of timely and after-hours care, appropriateness of languages spoken for specific populations and cultural safety.

4. The needs of Indigenous and Francophone populations could not be adequately addressed using the data in this report. To the extent that their needs were identified geographically, they were likely underestimated by undercounting populations and their health care contacts, and by overestimating the availability of health care providers in the north (e.g., where high turnover and long travel times require higher numbers of workers).

5. Contact-level data were not available for interprofessional members of FHTs (e.g., nurse practitioners, social workers), and their roles can be highly variable across teams. For that reason, the extent to which patients enrolled in FHTs were actually using interprofessional services is unclear.

6. These analyses were based on population residential locations. Although most people access primary health care close to their homes, this may not be the case for those in rural areas (where services may be quite far away), and for those who commute to work across major urban centres (where the location of their workplaces may be more relevant for accessing primary care). For these reasons, physician counts per population in major urban centres may be overestimates of actual availability. Accordingly, counts in peri-urban areas may be underestimates of actual availability if many local residents seek primary care close their workplaces in downtown areas.

7. The exhibits showing spatial correlations do not necessarily identify areas of highest or lowest needs for services. The GIS methods used to identify the clustering of two variables indicate where sub-regions or neighbourhoods with similar measures cluster and should not be used to assess the needs of individual sub-regions or neighbourhoods.

Conclusions

The purpose of this report is to provide data for primary care planning based on a geographic analysis of health care need, health care use, primary care providers and teams, cross-LHIN care and gaps in care across Ontario. There was wide geographic variation in each of these domains, both across Ontario and within the city of Toronto. Areas with the highest need for primary care were often those with lower levels of primary care use and availability, particularly for specialist care provided by primary care teams. Major urban centres had areas of concentration of high-need populations and relatively low access to interprofessional teams. Some urban centres appeared to have higher numbers of primary care physicians per population than other parts of Ontario, but many of those areas also had large inflows of visits to primary care physicians. For that reason, the movement of patients across sub-region and LHIN boundaries needs to be incorporated into measures of the supply of primary care providers.

Rural areas tended to have older populations and higher levels of disability; their residents had greater access to interprofessional teams but there were relatively fewer primary care physicians per population and less specialist care. Many parts of northern Ontario had high primary care need and relatively low availability of all forms of primary care. Data gaps in northern Ontario preclude making firm conclusions about the need for care or service provision, and the need for better data in northern Ontario is among the major conclusions of this report.

By far the greatest variation in distribution per population was found for primary care teams, including Family Health Teams (FHTs) and Community Health Centres (CHCs), with more than ten-fold variation in availability across sub-regions, as well as high variation within Toronto. These patterns mainly originated with physician self-selection into new payment models, as only physicians in new models were eligible to join FHTs. Those factors appeared not to align well with health care needs, as many of the FHTs were concentrated in lower-need areas; this is in contrast to CHCs, which largely serve high-need areas.

Policies about physician payment and teams, the targeting of new FHTs and CHCs and satellites, and outreach efforts to support community-based

physicians will be needed to help fill some of these primary care gaps. This report also demonstrates the existence of substantial cross-border care, especially in the Greater Toronto Area, which needs to be considered in primary care planning.

It is hoped that this report will be helpful in identifying disparities between primary care need and care provision, both in primary care planning and in targeting new services and models of care to areas of greatest unmet need.

Several initiatives are now underway to establish new primary care teams and satellites and new primary care models through which existing teams can support patient needs for community-based care.

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Appendices

APPENDIX A Project Team

Name	Affiliations
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APPENDIX B Study Measures and Analyses

Description	Numerator	Denominator	Data Source(s) and Year
Low income; living alone among seniors; difficulties with activities of daily living[1]			
Low-income measure after tax (LIM-AT) is a fixed percentage (50%) of median adjusted after-tax income of private households. The household after-tax income is adjusted by an equivalence scale to take economies of scale into account. This adjustment for different household sizes reflects the fact that the needs of a household increase, but at a decreasing rate, as the number of members increases. Living alone among seniors refers to the population aged 65 and older who lived alone in private households or dwellings. Persons in private occupied dwellings refers to a person or a group of people who occupy the same dwelling and do not have a usual place of residence elsewhere in Canada. Difficulties with activities of daily living refers to difficulties a person may have doing certain activities as a result of physical, mental or other health-related conditions or problems.			2016 Census of Canada
Recent immigration			
Percentage of the population who immigrated to Canada in the previous 10 years.	Total number of immigrants who landed in Canada between October 2002 and September 2012	Total number of immigrants to Canada in the population in 2012	IRCC, RPDB 2002–2012
Primary care need (SAMI score)[2,3,4,5]			
The Johns Hopkins Adjusted Clinical Groups (ACG) system is used to develop the standardized ACG morbidity index (SAMI). SAMI represents the mean ACG weight of expected resources use that is used as a validated measure of health care service needs in the Canadian population. The ACG system uses OHIP diagnostic codes and data from CIHI-DAD to place patients into one or more of 32 adjusted diagnosis groups (ADGs). Patients are then assigned to one of 90 mutually exclusive ACGs based on age, sex and number of ADGs they were assigned to. Each ACG has a weight that indicates the expected level of health care need. SAMI measures the expected number of primary care visits based on a provincial average of 1.0. A SAMI score of 0.8 in a given region (e.g., sub-region or neighbourhood) means that the region has 20% fewer expected health care visits than the provincial average. Conversely, a SAMI score of 1.2 means that the region has 20% more expected health care visits than the provincial average.			CIHI-DAD, OHIP, OMHRS, RPDB 2015/16
Non-enrolment in a primary care enrolment model (PEM)			
Percentage of the population not enrolled in a PEM. People can voluntarily enrol with a primary care physician who participates in any of the Ontario PEMs (e.g., Family Health Groups, Family Health Networks, Family Health Organizations, Comprehensive Care Models).	Number of people not enrolled in a PEM	Total number of people who had a valid health card number and were alive on March 31, 2016	CAPE, RPDB 2015/16

[1] Statistics Canada. Dictionary, Census of Population, 2016. Accessed June 5, 2018 at http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm.

[2] Glazier RH, Klein-Geltink J, Kopp A, Sibley LM. Capitation and enhanced fee-for-service models for primary care reform: a population-based evaluation. *CMAJ*. 2009; 180(11):E72-81.

[3] Sibley, LM, Glazier RH. Evaluation of the equity of age-sex adjusted primary care capitation payments in Ontario, Canada. *Health Policy*. 2012; 104(2):186-92.

[4] Reid R, Bogdanovic B, Roos NP, et al. *Do Some Physician Groups See Sicker Patients than Others? Implications for Primary Care Policy in Manitoba*. Winnipeg, MB: Manitoba Centre for Health Policy and Evaluation; 2001. Accessed June 5, 2018 at http://mchp-appserv.cpe.umanitoba.ca/reference/acg2001.pdf.

[5] Glazier RH, Zagorski BM, Rayner J. *Comparison of Primary Care Models in Ontario by Demographics, Case Mix and Emergency Department Use, 2008/09 to 2009/10*. ICES Investigative Report. Toronto, ON: Institute for Clinical Evaluative Sciences; 2012.

APPENDIX B Study Measures and Analyses (continued)

Description	Numerator	Denominator	Data Source(s) and Year
Mental health disorders			
Annual crude rates of: the number of people per 1,000 population diagnosed with any mental health disorder; psychotic mental health disorders; non-psychotic mental health disorders; substance-use disorders; and social, family and occupational issues.	The number of individuals who had OHIP claims for the following mental health conditions: **Psychotic disorders** 295 Schizophrenia 296 Manic-depressive psychoses, involutional melancholia 297 Other paranoid states 298 Other psychoses **Non-psychotic disorders** 300 Anxiety neurosis, hysteria, neurasthenia, obsessive-compulsive neurosis, reactive depression 301 Personality disorders 302 Sexual deviations 306 Psychosomatic illness 309 Adjustment reaction 311 Depressive disorder **Substance-use disorders** 303 Alcoholism 304 Drug dependence **Social, family and occupational issues** 897 Economic problems 898 Marital difficulties 899 Parent-child problems 900 Problems with aged parents or in-laws 901 Family disruption/divorce 902 Education problems 904 Social maladjustment 905 Occupational problems 906 Legal problems 909 Other problems of social adjustment **Any mental health disorder** All codes listed above	Total number of people who had a valid health card number and were alive on March 31, 2016	OHIP, RPDB 2015/16
Visits to primary care physicians			
Mean annual number of visits to a primary care physician per 1,000 population. Mean annual rate was calculated using data from a two-year period.	Number of people who had core primary care visits to a general practitioner or family physician (GP/FP), community medicine physician or pediatrician. **Physician specialty** 00, 05, 26 **Fee code** A001, A003, A007, A903, E075, G212, G271, G372, G373, G365, G538, G539, G590, G591, K005, K013, K017, P004, A261, K267, K269, K130, K131, K132	Total number of people who had a valid health card number and were alive on March 31, 2016	CHC, OHIP, RPDB 2014/15 to 2015/16

APPENDIX B Study Measures and Analyses (continued)

Description	Numerator	Denominator	Data Source(s) and Year
Continuity to physicians			
Percentage of the population with at least three primary visits who had low continuity to any primary care physician, their own primary care physician or a physician in a PEM. The Usual Provider Continuity (UPC) index was used to calculate continuity using two years of OHIP data according to the formula: UPC = ni / N, where ni is the number of visits to a usual provider in a defined time period and N is the total number of visits. For a UPC index score to be calculated, a person must have made at least three primary care visits during the two-year period. Visits were restricted to those made to GP/FPs, community medicine physicians or pediatricians for primary care. Emergency department (ED) and inpatient visits were excluded. Low continuity refers to patients who made fewer than 50% of their visits to the same provider.	Number of people with low continuity to any primary care physician in two years; number of people with low continuity to their own primary care physician in two years; and number of people with low continuity to PEM physicians in two years.	Total number of people with at least three primary care visits	CHC, OHIP, RPDB 2014/15 to 2015/16
Virtual rostering			
Most patients receiving care from a GP/FP working in a PEM are enrolled with that physician. Patients not enrolled in a PEM can be attributed to a family physician based on their pattern of care. Using the virtual rostering approach, patients are attributed to the family physician who billed (or shadow billed, as is the case in capitation models) the largest dollar amount of core primary care services for that patient in the previous two years. This dollar amount is calculated based on the fee-for-service schedule. Virtual rostering was applied to patients who were not in the Client Agency Enrolment Program (CAPE) database as follows: • All visits to physicians providing primary care were obtained—physician codes 00 (GP/FP), 05 (community medicine physician) and 26 (pediatrician)—for the two-year period preceding the index date for the following core primary care fee codes: A001, A003, A007, A261, A903, E075, G212, G271, G365, G372, G373, G538, G539, G590, G591, K005, K013, K017, K267, K269, P004. • Cost of services (cost per service × number of services) was derived by linking to a standard pricing file. • For each patient, the highest-billing physician was selected.			CAPE, OHIP, RPDB 2014/15 to 2015/16
New enrolment in PEMs			
Crude rate of new patient enrolments in PEMs within the previous five years.	The number of new patient enrolments in five years using the OHIP billing code Q200	Total number of people who had a valid health card number and were alive on March 31, 2016	OHIP, RPDB 2011/12 to 2015/16
After-hours visits			
Number, proportion and crude rate of after-hours visits among all primary care visits .	Number of after-hours visits (includes visits to the ED for assessment) **Fee code** Q012 (after-hour visits) A888 (ED assessments)	Total number of people who had a valid health card number and were alive on March 31, 2016 Total number of primary care visits	OHIP, RPDB 2015/16

APPENDIX B Study Measures and Analyses (continued)

Description	Numerator	Denominator	Data Source(s) and Year
Avoidable hospitalizations			
Annual rate of hospitalizations for ambulatory care–sensitive conditions (ACSCs) per 100,000 population.	Number of acute care hospital admissions for the following ACSCs: asthma, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF) or diabetes **Inclusions (by ICD-10 diagnosis)** • Hospital admissions with ICD-10 code(s) for: ◦ Asthma: codes beginning with J45 ◦ COPD: J41, J42, J43, J44, J47 ◦ CHF: I500, J81 (excluding cases with cardiac procedures and those that are not coded as abandoned on onset) ◦ Diabetes: E10.1, E10.6, E10.7, E10.9, E11.0, E11.1, E11.6, E11.7, E11.9, E13.0, E13.1, E13.6, E13.7, E13.9, E14.0, E14.1, E14.6, E14.7, E14.9 • All discharges from acute care hospitals **Exclusions** • In-hospital complications (i.e., DXTYPE M and 2) • Admissions with the following CCI codes: 1HB53, 1HB54, 1HB55, 1HD53, 1HD54, 1HD55, 1HZ53, 1HZ55, 1HZ85, 1IJ50, 1IJ76 • Cases where death occurs before discharge	Total number of people aged 75 and younger on March 31, 2016	CIHI-DAD, RPDB 2015/16
Emergency department (ED) visits			
Annual rate of ED visits per 1,000 population.	Number of people who visited an ED	Total number of people who had a valid health card number and were alive on March 31, 2016	NACRS, RPDB 2015/16
Visits to specialist physicians			
Annual crude rate of visits to a specialist physician per 1,000 population.	Number of people who visited a specialist physician	Total number of people who had a valid health card number and were alive on March 31, 2016	IPDB, OHIP, RPDB 2015/16

APPENDIX B Study Measures and Analyses (continued)

Description	Numerator	Denominator	Data Source(s) and Year
Comprehensive primary care physicians[6]			
Comprehensive primary care physicians form a subset of all primary care physicians. Primary care comprehensiveness is based on a primary care physician's fee-for-service billings and shadow billings that are used to track the scope of services provided. A physician is defined as being in a comprehensive primary care practice by meeting the following criteria, which are applied in a hierarchical manner: 1. The physician worked a minimum of 44 days during the year. 2. More than 50% of services provided were for core primary care. 3. These core primary care services fell within a minimum of seven of 22 activity areas.			CPDB, IPDB, OHIP, RPDB 2015/16
Family Health Teams (FHTs) and Community Health Centres (CHCs)[7,8]			
FHTs, introduced in 2006, are interprofessional teams that typically include primary care physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians and other health professionals. Within the FHT model, primary care physicians are paid through a blended capitation model (Family Health Networks [FHNs] and Family Health Organizations [FHOs]) or a blended salary model. Other health professionals are paid through salary. FHNs, introduced in 2001, involve three or more physicians working together as a group—in close proximity but not necessarily in the same office space. In FHNs: physicians commit to enroll patients; care is provided through regular office hours and extended hours based on the number of physicians in the network; services are paid through a blended capitation model plus some incentives and bonuses for services provided to enrolled patients. FHOs, introduced in 2005, share the same features as FHNs but offer a larger basket of services that are included in capitation. CHCs are usually characterized by: community governance; a focus on particular population needs and social determinants of health; an expanded scope of health promotion, outreach and community development services; and salaried interprofessional teams.			CAPE, CHC, CPDB, OHIP, RPDB 2015/16
Access to a mental health worker			
Combined number of FHT patients and CHC clients who had access to a mental health worker per 1,000 population.	Number of patients affiliated with an FHT that had a mental health worker and all CHC clients	Total number of people who had a valid health card number and were alive on March 31, 2016	CHC, CPDB, RPDB March 31, 2016

[6] Schultz SE, Glazier RH. Identification of physicians providing comprehensive primary care in Ontario: a retrospective analysis using linked administrative data. *CMAJ Open.* 2017; 5(4):E856-63.

[7] Glazier RH, Hutchison B, Kopp A. *Comparison of Family Health Teams to Other Ontario Primary Care Models, 2004/05 to 2011/12.* Toronto, ON: Institute for Clinical Evaluative Sciences; 2015.

[8] Green ME, Gozdyra P, Frymire E, Glazier RH. *Geographic Variation in the Supply and Distribution of Comprehensive Primary Care Physicians in Ontario, 2014/15.* Toronto, ON: Institute for Clinical Evaluative Sciences; 2017.

APPENDIX C Supplementary Data on Cross-LHIN Care

EXHIBIT C.1 Mean annual number and proportion of primary care visits in a given Local Health Integration Network (LHIN) that were made by residents of that LHIN or by residents of other LHINs (includes inflow of primary care visits from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN of patient residence	Number (%) of primary care visits														
	LHIN where primary care visits were made														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Unknown
1	1,869,454 (96.65)	40,785 (1.69)	2,967 (0.17)	7,870 (0.19)	3,263 (0.10)	5,590 (0.13)	7,685 (0.17)	5,567 (0.09)	3,622 (0.08)	542 (0.04)	2,881 (0.08)	542 (0.05)	1,073 (0.09)	759 (0.15)	1,340 (2.04)
2	17,831 (0.92)	2,222,752 (92.04)	47,960 (2.82)	38,630 (0.91)	8,116 (0.24)	11,108 (0.25)	16,544 (0.37)	11,102 (0.17)	7,109 (0.15)	1,513 (0.12)	4,015 (0.12)	15,957 (1.59)	5,575 (0.46)	1,157 (0.23)	1,802 (2.75)
3	4,300 (0.22)	39,495 (1.64)	1,523,260 (89.72)	45,469 (1.08)	32,241 (0.96)	62,446 (1.43)	20,353 (0.45)	22,032 (0.35)	15,293 (0.32)	3,597 (0.30)	3,677 (0.11)	3,654 (0.36)	2,599 (0.21)	371 (0.07)	2,796 (4.27)
4	3,106 (0.16)	24,779 (1.03)	41,200 (2.43)	3,882,725 (91.85)	40,356 (1.21)	199,349 (4.57)	39,229 (0.88)	31,601 (0.50)	24,457 (0.51)	4,618 (0.38)	6,546 (0.19)	5,294 (0.53)	1,920 (0.16)	1,239 (0.25)	5,446 (8.31)
5	4,187 (0.22)	9,435 (0.39)	17,957 (1.06)	41,051 (0.97)	2,638,789 (78.91)	453,946 (10.40)	165,726 (3.70)	390,536 (6.13)	57,907 (1.20)	1,956 (0.16)	6,924 (0.20)	5,569 (0.55)	1,777 (0.15)	615 (0.12)	3,651 (5.57)
6	6,711 (0.35)	11,015 (0.46)	20,747 (1.22)	112,308 (2.66)	246,522 (7.37)	3,227,792 (73.93)	292,101 (6.52)	142,173 (2.23)	43,601 (0.90)	2,781 (0.23)	7,991 (0.23)	6,919 (0.69)	2,181 (0.18)	440 (0.09)	16,954 (25.87)
7	9,956 (0.51)	10,157 (0.42)	7,251 (0.43)	22,324 (0.53)	58,887 (1.76)	180,528 (4.13)	2,646,709 (59.11)	436,290 (6.85)	151,670 (3.14)	4,799 (0.40)	14,997 (0.43)	6,119 (0.61)	3,608 (0.30)	1,897 (0.38)	5,983 (9.13)
8	3,826 (0.20)	13,820 (0.57)	11,472 (0.68)	24,592 (0.58)	227,724 (6.81)	125,647 (2.88)	686,172 (15.32)	4,565,742 (71.68)	606,555 (12.57)	3,731 (0.31)	13,977 (0.40)	26,116 (2.60)	3,849 (0.32)	744 (0.15)	11,721 (17.89)
9	4,472 (0.23)	10,770 (0.45)	6,961 (0.41)	17,898 (0.42)	45,246 (1.35)	47,308 (1.08)	514,899 (11.50)	593,978 (9.32)	3,825,742 (79.26)	25,522 (2.11)	13,649 (0.39)	9,522 (0.95)	6,146 (0.51)	1,984 (0.39)	3,171 (4.84)
10	1,268 (0.07)	2,632 (0.11)	2,073 (0.12)	5,541 (0.13)	2,711 (0.08)	4,785 (0.11)	14,524 (0.32)	8,654 (0.14)	49,523 (1.03)	1,120,650 (92.58)	52,183 (1.51)	1,365 (0.14)	2,379 (0.20)	1,753 (0.35)	1,302 (1.99)
11	2,489 (0.13)	3,198 (0.13)	4,327 (0.25)	5,430 (0.13)	4,681 (0.14)	10,725 (0.25)	16,485 (0.37)	11,523 (0.18)	10,104 (0.21)	31,268 (2.58)	3,306,839 (95.51)	2,855 (0.28)	7,173 (0.59)	2,853 (0.57)	7,929 (12.10)
12	831 (0.04)	12,534 (0.52)	3,984 (0.23)	7,169 (0.17)	21,309 (0.64)	18,054 (0.41)	27,768 (0.62)	124,677 (1.96)	16,084 (0.33)	3,396 (0.28)	2,655 (0.08)	895,705 (89.07)	6,604 (0.55)	400 (0.08)	1,352 (2.06)
13	3,209 (0.17)	7,597 (0.31)	3,255 (0.19)	6,512 (0.15)	6,799 (0.20)	7,063 (0.16)	14,894 (0.33)	11,591 (0.18)	6,072 (0.13)	2,701 (0.22)	10,345 (0.30)	22,003 (2.19)	1,159,141 (95.66)	4,512 (0.89)	960 (1.47)
14	529 (0.03)	2,147 (0.09)	1,438 (0.08)	3,669 (0.09)	615 (0.02)	1,741 (0.04)	6,193 (0.14)	2,342 (0.04)	1,620 (0.03)	1,330 (0.11)	3,621 (0.10)	1,320 (0.13)	5,318 (0.44)	484,355 (96.07)	369 (0.56)
Shared**	*	6 (0.00)	16 (0.00)	42 (0.00)	388 (0.01)	830 (0.02)	675 (0.00)	610 (0.00)	151 (0.00)	*	*	*	*	*	*
Unknown	*	3,781 (0.16)	2,860 (0.17)	6,079 (0.14)	6,243 (0.19)	9,191 (0.21)	7,540 (0.17)	11,415 (0.18)	7,413 (0.15)	*	*	*	*	*	*
Total number of primary care visits	**1,934,253**	**2,414,906**	**1,697,732**	**4,227,312**	**3,343,894**	**4,366,106**	**4,477,502**	**6,369,837**	**4,826,926**	**1,210,423**	**3,462,209**	**1,005,628**	**1,211,791**	**504,193**	**65,529**

*Cell value supressed for reasons of privacy and confidentiality.
**Postal code spans two LHINs.
LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, 1,934,253 primary care visits were made in LHIN 1; 1,869,454 (96.65%) of those visits were made by residents of LHIN1; 17,831 (0.92%) were made by residents of LHIN 2, etc.

EXHIBIT C.2 Mean annual number and proportion of primary care visits made by residents of a given Local Health Integration Network (LHIN) that were in their LHIN of residence or in other LHINs (includes outflow of primary care visits to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN where primary care visits were made	Number (%) of primary care visits															
	LHIN of patient residence															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Shared**	Unknown
1	1,869,454 (95.66)	17,831 (0.74)	4,300 (0.24)	3,106 (0.07)	4,187 (0.11)	6,711 (0.16)	9,956 (0.28)	3,826 (0.06)	4,472 (0.09)	1,268 (0.10)	2,489 (0.07)	831 (0.07)	3,209 (0.25)	529 (0.10)	*	*
2	40,785 (2.09)	2,222,752 (92.19)	39,495 (2.22)	24,779 (0.57)	9,435 (0.25)	11,015 (0.27)	10,157 (0.29)	13,820 (0.22)	10,770 (0.21)	2,632 (0.21)	3,198 (0.09)	12,534 (1.10)	7,597 (0.60)	2,147 (0.42)	6 (0.22)	3,781 (4.90)
3	2,967 (0.15)	47,960 (1.99)	1,523,260 (85.50)	41,200 (0.96)	17,957 (0.47)	20,747 (0.50)	7,251 (0.20)	11,472 (0.18)	6,961 (0.14)	2,073 (0.16)	4,327 (0.13)	3,984 (0.35)	3,255 (0.26)	1,438 (0.28)	16 (0.59)	2,860 (3.71)
4	7,870 (0.40)	38,630 (1.60)	45,469 (2.55)	3,882,725 (90.05)	41,051 (1.08)	112,308 (2.71)	22,324 (0.63)	24,592 (0.39)	17,898 (0.35)	5,541 (0.44)	5,430 (0.16)	7,169 (0.63)	6,512 (0.51)	3,669 (0.71)	42 (1.54)	6,079 (7.88)
5	3,263 (0.17)	8,116 (0.34)	32,241 (1.81)	40,356 (0.94)	2,638,789 (69.44)	246,522 (5.95)	58,887 (1.65)	227,724 (3.60)	45,246 (0.88)	2,711 (0.21)	4,681 (0.14)	21,309 (1.87)	6,799 (0.54)	615 (0.12)	388 (14.20)	6,243 (8.09)
6	5,590 (0.29)	11,108 (0.46)	62,446 (3.51)	199,349 (4.62)	453,946 (11.95)	3,227,792 (77.96)	180,528 (5.07)	125,647 (1.99)	47,308 (0.92)	4,785 (0.38)	10,725 (0.31)	18,054 (1.58)	7,063 (0.56)	1,741 (0.34)	830 (30.38)	9,191 (11.92)
7	7,685 (0.39)	16,544 (0.69)	20,353 (1.14)	39,229 (0.91)	165,726 (4.36)	292,101 (7.06)	2,646,709 (74.32)	686,172 (10.85)	514,899 (10.04)	14,524 (1.14)	16,485 (0.48)	27,768 (2.43)	14,894 (1.18)	6,193 (1.20)	675 (24.71)	7,540 (9.78)
8	5,567 (0.28)	11,102 (0.46)	22,032 (1.24)	31,601 (0.73)	390,536 (10.28)	142,173 (3.43)	436,290 (12.25)	4,565,742 (72.18)	593,978 (11.58)	8,654 (0.68)	11,523 (0.34)	124,677 (10.91)	11,591 (0.92)	2,342 (0.45)	610 (22.33)	11,415 (14.80)
9	3,622 (0.19)	7,109 (0.29)	15,293 (0.86)	24,457 (0.57)	57,907 (1.52)	43,601 (1.05)	151,670 (4.26)	606,555 (9.59)	3,825,742 (74.62)	49,523 (3.90)	10,104 (0.29)	16,084 (1.41)	6,072 (0.48)	1,620 (0.31)	151 (5.53)	7,413 (9.61)
10	542 (0.03)	1,513 (0.06)	3,597 (0.20)	4,618 (0.11)	1,956 (0.05)	2,781 (0.07)	4,799 (0.13)	3,731 (0.06)	25,522 (0.50)	1,120,650 (88.15)	31,268 (0.91)	3,396 (0.30)	2,701 (0.21)	1,330 (0.26)	*	*
11	2,881 (0.15)	4,015 (0.17)	3,677 (0.21)	6,546 (0.15)	6,924 (0.18)	7,991 (0.19)	14,997 (0.42)	13,977 (0.22)	13,649 (0.27)	52,183 (4.10)	3,306,839 (96.47)	2,655 (0.23)	10,345 (0.82)	3,621 (0.70)	*	*
12	925 (0.05)	15,957 (0.66)	3,654 (0.21)	5,294 (0.12)	5,569 (0.15)	6,919 (0.17)	6,119 (0.17)	26,116 (0.41)	9,522 (0.19)	1,365 (0.11)	2,855 (0.08)	895,705 (78.40)	22,003 (1.74)	1,320 (0.26)	*	*
13	1,073 (0.05)	5,575 (0.23)	2,599 (0.15)	1,920 (0.04)	1,777 (0.05)	2,181 (0.05)	3,608 (0.10)	3,849 (0.06)	6,146 (0.12)	2,379 (0.19)	7,173 (0.21)	6,604 (0.58)	1,159,141 (91.51)	5,318 (1.03)	*	*
14	759 (0.04)	1,157 (0.05)	371 (0.02)	1,239 (0.03)	615 (0.02)	440 (0.01)	1,897 (0.05)	744 (0.01)	1,984 (0.04)	1,753 (0.14)	2,853 (0.08)	400 (0.04)	4,512 (0.36)	484,355 (93.76)	*	*
Unknown	1,340 (0.07)	1,802 (0.07)	2,796 (0.16)	5,446 (0.13)	3,651 (0.10)	16,954 (0.41)	5,983 (0.17)	11,721 (0.19)	3,171 (0.06)	1,302 (0.10)	7,929 (0.23)	1,352 (0.12)	960 (0.08)	369 (0.07)	*	*
Total number of primary care visits	**1,954,327**	**2,411,174**	**1,781,585**	**4,311,869**	**3,800,029**	**4,140,239**	**3,561,178**	**6,325,692**	**5,127,272**	**1,271,344**	**3,427,880**	**1,142,525**	**1,266,657**	**516,611**	**2,732**	**77,129**

*Cell value supressed for reasons of privacy and confidentiality.
**Postal code spans two LHINs.
LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, 1,954,327 primary care visits were made by residents of LHIN 1; 1,869,454 (95.66%) of those visits were made in LHIN 1; 40,785 (2.09%) were made in LHIN 2, etc.

EXHIBIT C.3 Number and proportion of Family Health Team (FHT) patients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of FHT patients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN of FHT patient residence	Number (%) of FHT Patients													
	LHIN where FHT visits were made													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	204,920 (96.09)	8,035 (2.01)	479 (0.17)	430 (0.09)	144 (0.11)	205 (0.13)	258 (0.14)	214 (0.09)	173 (0.06)	92 (0.04)	1,579 (0.55)	295 (0.09)	138 (0.08)	57 (0.06)
2	3,751 (1.76)	370,533 (92.90)	11,251 (3.95)	4,747 (1.03)	1,100 (0.87)	838 (0.54)	1,003 (0.54)	697 (0.29)	648 (0.22)	329 (0.15)	756 (0.26)	6,080 (1.85)	385 (0.22)	107 (0.11)
3	571 (0.27)	9,461 (2.37)	253,801 (89.05)	4,365 (0.94)	5,353 (4.24)	7,125 (4.58)	918 (0.49)	1,048 (0.44)	1,612 (0.55)	335 (0.15)	644 (0.22)	1,288 (0.39)	294 (0.17)	84 (0.09)
4	518 (0.24)	2,316 (0.58)	6,276 (2.20)	440,161 (95.13)	1,200 (0.95)	7,519 (4.84)	1,681 (0.90)	1,291 (0.54)	866 (0.29)	1,616 (0.73)	993 (0.34)	1,107 (0.34)	371 (0.21)	119 (0.13)
5	110 (0.05)	375 (0.09)	3,338 (1.17)	870 (0.19)	96,449 (76.46)	9,900 (6.37)	3,631 (1.94)	18,024 (7.54)	785 (0.27)	442 (0.20)	415 (0.14)	1,481 (0.45)	124 (0.07)	34 (0.04)
6	174 (0.08)	526 (0.13)	3,089 (1.08)	4,209 (0.91)	8,542 (6.77)	113,608 (73.10)	8,339 (4.45)	7,843 (3.28)	915 (0.31)	303 (0.14)	847 (0.29)	1,001 (0.30)	144 (0.08)	56 (0.06)
7	286 (0.13)	974 (0.24)	1,377 (0.48)	1,992 (0.43)	2,077 (1.65)	8,812 (5.67)	129,230 (68.95)	28,090 (11.75)	4,211 (1.43)	930 (0.42)	1,328 (0.46)	1,785 (0.54)	272 (0.15)	455 (0.48)
8	153 (0.07)	467 (0.12)	852 (0.30)	875 (0.19)	6,006 (4.76)	3,252 (2.09)	21,131 (11.27)	143,654 (60.07)	9,323 (3.16)	341 (0.15)	1,042 (0.36)	5,071 (1.54)	228 (0.13)	73 (0.08)
9	1,378 (0.65)	527 (0.13)	840 (0.29)	971 (0.21)	979 (0.78)	1,253 (0.81)	16,844 (8.99)	26,538 (11.10)	266,428 (90.33)	11,196 (5.09)	1,318 (0.46)	3,420 (1.04)	363 (0.21)	239 (0.25)
10	158 (0.07)	316 (0.08)	376 (0.13)	451 (0.10)	186 (0.15)	263 (0.17)	696 (0.37)	560 (0.23)	6,220 (2.11)	198,035 (89.98)	2,970 (1.03)	519 (0.16)	197 (0.11)	65 (0.07)
11	231 (0.11)	423 (0.11)	494 (0.17)	497 (0.11)	220 (0.17)	248 (0.16)	531 (0.28)	534 (0.22)	845 (0.29)	4,746 (2.16)	271,925 (94.22)	724 (0.22)	1,522 (0.86)	117 (0.12)
12	147 (0.07)	1,690 (0.42)	801 (0.28)	771 (0.17)	2,202 (1.75)	1,165 (0.75)	1,613 (0.86)	8,564 (3.58)	1,346 (0.46)	271 (0.12)	503 (0.17)	297,669 (90.58)	1,824 (1.03)	54 (0.06)
13	382 (0.18)	1,638 (0.41)	602 (0.21)	858 (0.19)	398 (0.32)	305 (0.20)	439 (0.23)	400 (0.17)	595 (0.20)	623 (0.28)	1,824 (0.63)	6,856 (2.09)	169,953 (96.25)	1,168 (1.24)
14	85 (0.04)	232 (0.06)	130 (0.05)	178 (0.04)	51 (0.04)	64 (0.04)	115 (0.06)	63 (0.03)	120 (0.04)	111 (0.05)	300 (0.10)	220 (0.07)	382 (0.22)	90,788 (96.76)
Unknown	390 (0.18)	1,345 (0.34)	1,309 (0.46)	1,338 (0.29)	1,233 (0.98)	865 (0.56)	1,004 (0.54)	1,614 (0.67)	877 (0.30)	709 (0.32)	2,159 (0.75)	1,109 (0.34)	370 (0.21)	408 (0.43)
Total number of FHT patients	**213,254**	**398,858**	**285,015**	**462,713**	**126,140**	**155,422**	**187,433**	**239,134**	**294,964**	**220,079**	**288,603**	**328,625**	**176,567**	**93,824**

LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, there were 213,254 FHT patients in LHIN 1; 204,920 (96.09%) of them resided in LHIN 1; 3,751 (1.76%) resided in LHIN 2, etc.

EXHIBIT C.4 Number and proportion of Family Health Team (FHT) patients who visited an FHT in their Local Health Integration (LHIN) of residence or in other LHINs (includes outflow of FHT patients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN where FHT visits were made	Number (%) of FHT Patients														
	LHIN of FHT patient residence														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Unkown
1	204,920 (94.42)	3,751 (0.93)	571 (0.20)	518 (0.11)	110 (0.08)	174 (0.12)	286 (0.16)	153 (0.08)	1,378 (0.41)	158 (0.07)	231 (0.08)	147 (0.05)	382 (0.21)	85 (0.09)	390 (2.65)
2	8,035 (3.70)	370,533 (92.12)	9,461 (3.30)	2,316 (0.50)	375 (0.28)	526 (0.35)	974 (0.54)	467 (0.24)	527 (0.16)	316 (0.15)	423 (0.15)	1,690 (0.53)	1,638 (0.88)	232 (0.25)	1,345 (9.13)
3	479 (0.22)	11,251 (2.80)	253,801 (88.46)	6,276 (1.35)	3,338 (2.45)	3,089 (2.06)	1,377 (0.76)	852 (0.44)	840 (0.25)	376 (0.18)	494 (0.17)	801 (0.25)	602 (0.32)	130 (0.14)	1,309 (8.89)
4	430 (0.20)	4,747 (1.18)	4,365 (1.52)	440,161 (94.45)	870 (0.64)	4,209 (2.81)	1,992 (1.10)	875 (0.45)	971 (0.29)	451 (0.21)	497 (0.18)	771 (0.24)	858 (0.46)	178 (0.19)	1,338 (9.08)
5	144 (0.07)	1,100 (0.27)	5,353 (1.87)	1,200 (0.26)	96,449 (70.93)	8,542 (5.71)	2,077 (1.14)	6,006 (3.12)	979 (0.29)	186 (0.09)	220 (0.08)	2,202 (0.69)	398 (0.21)	51 (0.05)	1,233 (8.37)
6	205 (0.09)	838 (0.21)	7,125 (2.48)	7,519 (1.61)	9,900 (7.28)	113,608 (75.94)	8,812 (4.85)	3,252 (1.69)	1,253 (0.38)	263 (0.12)	248 (0.09)	1,165 (0.37)	305 (0.16)	64 (0.07)	865 (5.87)
7	258 (0.12)	1,003 (0.25)	918 (0.32)	1,681 (0.36)	3,631 (2.67)	8,339 (5.57)	129,230 (71.08)	21,131 (10.98)	16,844 (5.07)	696 (0.33)	531 (0.19)	1,613 (0.51)	439 (0.24)	115 (0.12)	1,004 (6.82)
8	214 (0.10)	697 (0.17)	1,048 (0.37)	1,291 (0.28)	18,024 (13.26)	7,843 (5.24)	28,090 (15.45)	143,654 (74.64)	26,538 (7.99)	560 (0.27)	534 (0.19)	8,564 (2.69)	400 (0.22)	63 (0.07)	1,614 (10.96)
9	173 (0.08)	648 (0.16)	1,612 (0.56)	866 (0.19)	785 (0.58)	915 (0.61)	4,211 (2.32)	9,323 (4.84)	266,428 (80.18)	6,220 (2.95)	845 (0.30)	1,346 (0.42)	595 (0.32)	120 (0.13)	877 (5.95)
10	92 (0.04)	329 (0.08)	335 (0.12)	1,616 (0.35)	442 (0.33)	303 (0.20)	930 (0.51)	341 (0.18)	11,196 (3.37)	198,035 (93.85)	4,746 (1.68)	271 (0.09)	623 (0.33)	111 (0.12)	709 (4.81)
11	1,579 (0.73)	756 (0.19)	644 (0.22)	993 (0.21)	415 (0.31)	847 (0.57)	1,328 (0.73)	1,042 (0.54)	1,318 (0.40)	2,970 (1.41)	271,925 (96.07)	503 (0.16)	1,824 (0.98)	300 (0.32)	2,159 (14.66)
12	295 (0.14)	6,080 (1.51)	1,288 (0.45)	1,107 (0.24)	1,481 (1.09)	1,001 (0.67)	1,785 (0.98)	5,071 (2.63)	3,420 (1.03)	519 (0.25)	724 (0.26)	297,669 (93.42)	6,856 (3.69)	220 (0.24)	1,109 (7.53)
13	138 (0.06)	385 (0.10)	294 (0.10)	371 (0.08)	124 (0.09)	144 (0.10)	272 (0.15)	228 (0.12)	363 (0.11)	197 (0.09)	1,522 (0.54)	1,824 (0.57)	169,953 (91.35)	382 (0.41)	370 (2.51)
14	57 (0.03)	107 (0.03)	084 (0.03)	119 (0.03)	34 (0.03)	56 (0.04)	455 (0.25)	73 (0.04)	239 (0.07)	65 (0.03)	117 (0.04)	54 (0.02)	1,168 (0.63)	90,788 (97.79)	408 (2.77)
Total number of FHT patients	**217,019**	**402,225**	**286,899**	**466,034**	**135,978**	**149,596**	**181,819**	**192,468**	**332,294**	**211,012**	**283,057**	**318,620**	**186,041**	**92,839**	**14,730**

LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, there were 217,019 FHT patients living in LHIN 1; 204,920 (94.42%) of them were patients of an FHT in LHIN 1; 8,035 (3.70%) were patients of an FHT in LHIN 2, etc.

EXHIBIT C.5 Number and proportion of Community Health Centre (CHC) clients in a given Local Health Integration Network (LHIN) who were residents of that LHIN or residents of other LHINs (includes inflow of CHC clients from other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN of CHC client residence	Number (%) of CHC clients													
	LHIN where CHC visits were made													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	9,690 (82.74)	82 (1.42)	14 (0.16)	23 (0.30)	*	0 (0.00)	17 (0.07)	*	*	10 (0.09)	11 (0.05)	0 (0.00)	*	*
2	1,711 (14.61)	5,237 (90.89)	408 (4.72)	30 (0.39)	*	0 (0.00)	69 (0.27)	*	18 (0.27)	10 (0.09)	10 (0.04)	*	*	*
3	55 (0.47)	132 (2.29)	7,838 (90.71)	48 (0.62)	*	*	57 (0.22)	*	7 (0.11)	6 (0.05)	14 (0.06)	*	0 (0.00)	*
4	39 (0.33)	42 (0.73)	157 (1.82)	7,471 (96.24)	*	8 (1.69)	150 (0.58)	*	15 (0.23)	21 (0.18)	19 (0.08)	*	*	*
5	15 (0.13)	96 (1.67)	18 (0.21)	16 (0.21)	2,267 (87.46)	38 (8.05)	596 (2.30)	129 (4.60)	18 (0.27)	*	8 (0.04)	*	*	*
6	27 (0.23)	*	37 (0.43)	37 (0.48)	73 (2.82)	395 (83.69)	1,104 (4.26)	20 (0.71)	15 (0.23)	8 (0.07)	13 (0.06)	*	*	*
7	30 (0.26)	*	32 (0.37)	21 (0.27)	27 (1.04)	11 (2.33)	16,913 (65.33)	60 (2.14)	91 (1.37)	28 (0.24)	40 (0.18)	0 (0.00)	*	*
8	19 (0.16)	12 (0.21)	25 (0.29)	*	116 (4.48)	8 (1.69)	4,311 (16.65)	2,515 (89.69)	133 (2.01)	13 (0.11)	13 (0.06)	7 (0.99)	*	*
9	24 (0.20)	11 (0.19)	25 (0.29)	17 (0.22)	25 (0.96)	*	2,195 (8.48)	15 (0.53)	6,180 (93.24)	120 (1.04)	29 (0.13)	7 (0.99)	*	*
10	7 (0.06)	*	9 (0.10)	12 (0.15)	*	0 (0.00)	50 (0.19)	0 (0.00)	44 (0.66)	10,731 (93.22)	685 (3.04)	0 (0.00)	*	*
11	17 (0.15)	*	20 (0.23)	22 (0.28)	*	0 (0.00)	63 (0.24)	*	10 (0.15)	496 (4.31)	21,515 (95.33)	*	6 (0.13)	*
12	6 (0.05)	116 (2.01)	12 (0.14)	8 (0.10)	13 (0.50)	*	70 (0.27)	24 (0.86)	52 (0.78)	15 (0.13)	12 (0.05)	670 (94.37)	*	*
13	22 (0.19)	*	8 (0.09)	27 (0.35)	*	0 (0.00)	59 (0.23)	*	10 (0.15)	14 (0.12)	49 (0.22)	8 (1.13)	4,553 (99.32)	10 (0.40)
14	*	*	*	*	0 (0.00)	0 (0.00)	16 (0.06)	0 (0.00)	*	*	*	0 (0.00)	*	2,486 (98.53)
Unknown	*	12 (0.21)	*	23 (0.30)	49 (1.89)	0 (0.00)	219 (0.85)	26 (0.93)	27 (0.41)	*	*	*	*	*
Total number of CHC clients	**11,712**	**5,762**	**8,641**	**7,763**	**2,592**	**472**	**25,889**	**2,804**	**6,628**	**11,512**	**22,569**	**710**	**4,584**	**2,523**

* Cell value suppressed for reasons of privacy and confidentiality.
LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, there were 11,712 CHC clients in LHIN 1; 9,690 (82.74%) of them resided in LHIN 1; 1,711 (14.61%) resided in LHIN 2, etc.

EXHIBIT C.6 Number and proportion of Community Health Centre (CHC) clients who visited a CHC in their Local Health Integration Network (LHIN) of residence or in other LHINs (includes outflow of CHC clients to other LHINs), by LHIN, in Ontario, 2014/15 to 2015/16

LHIN where CHC visits were made	Number (%) of CHC clients														
	LHIN of CHC client residence														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Unknown
1	9,690 (98.25)	1,711 (22.79)	55 (0.67)	39 (0.49)	15 (0.47)	27 (1.55)	30 (0.17)	19 (0.26)	24 (0.28)	7 (0.06)	17 (0.08)	6 (0.59)	22 (0.46)	*	*
2	82 (0.83)	5,237 (69.74)	132 (1.62)	42 (0.53)	96 (2.99)	*	*	12 (0.17)	11 (0.13)	*	*	116 (11.47)	*	*	12 (1.92)
3	14 (0.14)	408 (5.43)	7,838 (95.96)	157 (1.98)	18 (0.56)	37 (2.13)	32 (0.19)	25 (0.35)	25 (0.29)	9 (0.08)	20 (0.09)	12 (1.19)	8 (0.17)	*	*
4	23 (0.23)	30 (0.40)	48 (0.59)	7,471 (94.11)	16 (0.50)	37 (2.13)	21 (0.12)	7 (0.10)	17 (0.20)	12 (0.10)	22 (0.10)	8 (0.79)	27 (0.57)	*	*
5	*	*	*	*	2,267 (70.60)	73 (4.20)	27 (0.16)	116 (1.62)	25 (0.29)	*	*	13 (1.29)	*	*	49 (7.85)
6	*	*	*	8 (0.10)	38 (1.18)	395 (22.70)	11 (0.06)	8 (0.11)	*	*	*	*	*	*	*
7	17 (0.17)	69 (0.92)	57 (0.70)	150 (1.89)	596 (18.56)	1,104 (63.45)	16,913 (97.98)	4,311 (60.03)	2,195 (25.36)	50 (0.43)	63 (0.28)	70 (6.92)	59 (1.24)	16 (0.63)	219 (35.10)
8	*	*	*	*	129 (4.02)	20 (1.15)	60 (0.35)	2,515 (35.02)	15 (0.17)	0 (0.00)	*	24 (2.37)	*	0 (0.00)	26 (4.17)
9	*	18 (0.24)	7 (0.09)	15 (0.19)	18 (0.56)	15 (0.86)	91 (0.53)	133 (1.85)	6,180 (71.39)	44 (0.38)	10 (0.05)	52 (5.14)	10 (0.21)	*	27 (4.33)
10	10 (0.10)	10 (0.13)	6 (0.07)	21 (0.26)	*	8 (0.46)	28 (0.16)	13 (0.18)	120 (1.39)	10,731 (92.94)	496 (2.24)	15 (1.48)	14 (0.29)	*	*
11	11 (0.11)	10 (0.13)	14 (0.17)	19 (0.24)	8 (0.25)	13 (0.75)	40 (0.23)	13 (0.18)	29 (0.33)	685 (5.93)	21,515 (97.10)	12 (1.19)	49 (1.03)	*	*
12	0 (0.00)	*	*	*	*	*	0 (0.00)	*	7 (0.08)	0 (0.00)	*	670 (66.27)	8 (0.17)	0 (0.00)	*
13	*	*	0 (0.00)	*	*	*	*	*	*	*	6 (0.03)	*	4,553 (95.43)	*	*
14	*	*	*	*	*	*	*	*	*	*	*	*	10 (0.21)	2,486 (98.60)	*
Total number of CHC clients	**9,863**	**7,509**	**8,168**	**7,939**	**3,211**	**1,740**	**17,262**	**7,181**	**8,657**	**11,546**	**22,157**	**1,011**	**4,771**	**2,522**	**624**

* Cell value suppressed for reasons of privacy and confidentiality.
LHINs: 1 Erie St. Clair; 2 South West; 3 Waterloo Wellington; 4 Hamilton Niagara Haldimand Brant; 5 Central West; 6 Mississauga Halton; 7 Toronto Central; 8 Central; 9 Central East; 10 South East; 11 Champlain; 12 North Simcoe Muskoka; 13 North East; 14 North West.
Note: For example, there were 9,863 CHC clients living in LHIN 1; 9,690 (98.25%) of them were clients of a CHC in LHIN 1; 82 (0.83%) were clients of a CHC in LHIN 2, etc.

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