Data and Mapping Standards

Standards, Guidelines and Methods for Reporting Data and Maps on the Ontario Community Health Profiles Partnership (OCHPP) Website

Updated on 28 November, 2025

OCHPP
Ontario Community
Health Profiles Partnership

Contents

What are OCHPP Data Standards?

Health data standards are agreed-upon and documented ways of defining health-related concepts to ensure data are accurate, complete, and useful. Data, maps, and other materials available on the OCHPP website may be used by researchers and health or community organizations to explore potential correlations that help explain observed differences in health outcomes. Epidemiological practice standards and small area analysis guidelines and consultation with health organizations were integral in the development of the standards employed by OCHPP. OCHPP also follows strict data and privacy principles. This document outlines the data and mapping standards used by OCHPP before we launch our data into tables and maps.

As part of OCHPP's commitment to providing the highest quality health data, core data guiding principles include:

- *Providing user-friendly data with the detail needed for appropriate use and understanding of the information*
- *Ensuring the sustainability and capacity to update data in the future*
- *Reducing the need for users to do their own data conversion through ongoing development of user-driven interactive site*
- *Highlighting health inequities identified in OCHPP data*
- *Ensuring comprehensiveness across the range of health planning needs*

Criteria for Indicators on OCHPP

Data Standard	Criteria for Selecting Indicators
Relevance	• Common or “core” indicators sourced from reputable organizations such as the Institute for Clinical and Evaluative Science (ICES) and Statistics Canada; • Based on consultation with OCHPP Partners to address their current and expected data priorities; • To supplement community initiatives and may be developed in coordination with other information providers; • To represent the complexity, size and diversity of Ontario’s population; • For a demonstrated relationship to health inequity or are being used in a similar context; • For comparability across time and place
Quality	• To report a consistent definition, requiring rigorous data collection methods used by reliable, external data providers
Integrity	• Table calculations are transparent and can be reproduced • Standards for small area analysis and reporting are applied • Limitations on data use and interpretation are reported • Each data table posted to OCHPP contains a “Technical Notes” tab which includes information on numerator and denominator sources used to generate the data. Inclusion and exclusion criteria for the data source are included in this information.

Data Sources: Strengths and Limitations

The data posted to the OCHPP website is sourced from reputable organizations, such as Statistic's Canada and ICES.

Data Source	Strengths	Limitations
Census of Population (Statistics Canada)	• The most comprehensive and consistent source of social and demographic information over time for all of Canada • Large number of variables available	• Statistics Canada's data management practices randomly rounds counts (up or down) and may suppress some counts • Produced every 5 years
Registered Persons Database (RPDB)	• Provides basic demographic information about anyone who enrolled for coverage under Ontario's Health Insurance Plan (OHIP). Health system interactions are connected through a unique OHIP health card number (HCN) • Health cards are usually renewed every 5 years, ensuring information in the system is periodically refreshed • System may be updated more frequently if an individual interacts with the health care system between renewal periods – allowing for a more current source of location-based data	• There are people who have HCNs and their information is in the RPDB, but they do not currently live in Ontario
Physician Claims (OHIP)	• Able to answer "who is using services" and "what kind"? • Only comprehensive source of population health coverage and provision of publicly paid health services • Laboratory and radiology claims include Community Health Centers (CHCs)	• Excludes CHCs for physician visits (e.g. diabetes) • No individual level socioeconomic or cultural information is available

Data Sources: Strengths and Limitations

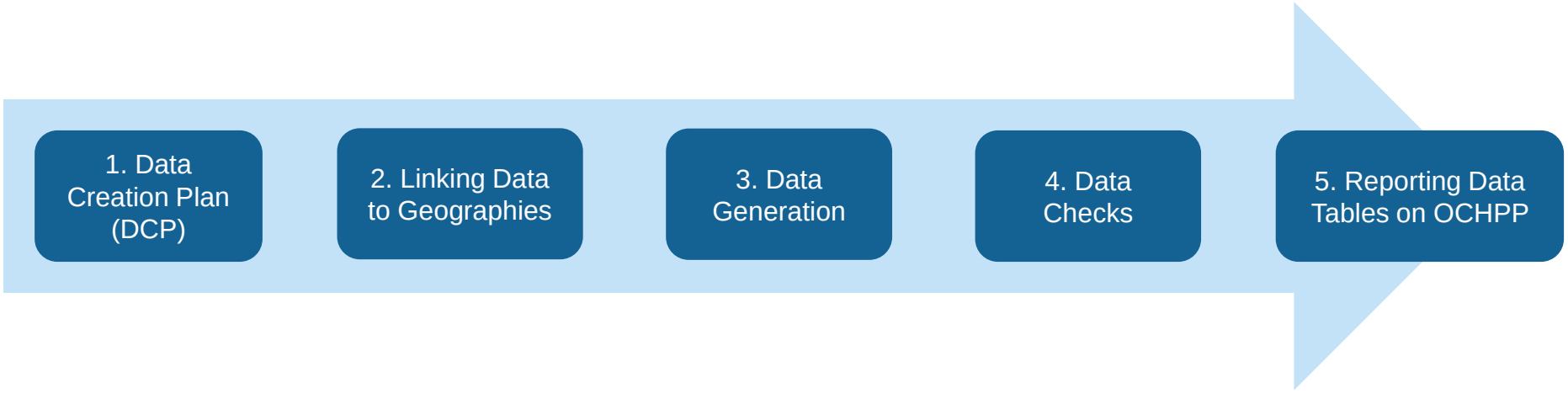
Data Source	Strengths	Limitations
Canadian Institute for Health Information (CIHI)		
CIHI: Discharge Abstract Database (DAD)	• Up-to-date postal codes • Current to one year time-lag	• Excludes out of hospital births • Missing approximately 2% of postal codes • Racialized groups and Indigenous identity introduced in 2022. Facility uptake was low in first year of implementation
CIHI: National Ambulatory Care Reporting System (NACRS)	• Current postal codes available	• Only available since 2001 • No SES or ethnicity information available
CIHI: Ontario Mental Health Reporting System (OMHRS)	• Captures hospitalizations in general, provincial psychiatric, and specialty psychiatric facilities	• Only available since 2006

Data Sources: Strengths and Limitations

Data Source	Strengths	Limitations
Vital Statistics *(original source: Vital Statistics, Ontario Office of Registrar General (ORG), distributed by Ontario Ministry of Health and Long-Term Care (MOHLTC), IntelliHEALTH Ontario)*		
Vital Statistics: Live Birth Database	• Includes country of birth • Links baby to mother for analysis of singleton low birthweight (LBW) by age, parity, pregnancy type	• Missing unregistered births • Births to out-of-province mothers are included in IntelliHEALTH total counts (e.g. mothers from Alberta giving birth in Ontario); whereas, births occurring outside of the province to Ontario mothers are not available (e.g. mothers from Ontario giving birth in Alberta)
Vital Statistics: Mortality Data	• Current postal codes available	• Only available since 2001 • No SES or ethnicity information available

Data Generation → Reporting Data Tables

Once an indicator from one of the data sources is selected to be posted to OCHPP, there is a process the data must go through to reach the website. The figure below shows the process of OCHPP data generation, with detailed information on each step provided in subsequent sections.



Data Generation and Reporting

1. Data Creation Plan (DCP)

OCHPP regularly updates (or creates) Data Creation Plan (DCP) documents before we generate new or updated data. The DCP serves as the guideline for generating the data and includes the following:

- *Numerator data source(s) (e.g. hospitalizations data that comes from CIHI)*
- *Denominator population source (e.g. population counts from RPDB)*
- *Age and/or sex groupings*
- *Inclusion and exclusion criteria for the indicator*
- *Geographies that the data will be generated and reported on*
- *Rates (e.g. rate/1000). In the majority of our health indicator data tables, we provide age standardized rates, prevalence rates, rate ratios and confidence intervals by age group*

Data Generation and Reporting

2. Linking Data to Geographies

How we link a person to place

To link a person to health care, OCHPP uses the Registered Persons Database (RPDB) at ICES as the source of population. RPDB provides basic demographic information about anyone who has ever received an OHIP card. OHIP cards include a unique HCN to link health care interactions to a person's age, sex and address, including postal code. The postal codes used at ICES come mainly from HCNs. Information from the health card is stored in the RPDB. Health cards are *usually* renewed every 5 years, a process that helps to ensure that information in the system is periodically refreshed, such as address, for example, should a person move and update the card within that time frame. The system may also be updated more frequently if an individual interacts with the health care system between renewal periods. This allows for a more current source of location-based data for health reporting than the Census and is the *preferred source used in OCHPP analysis.*

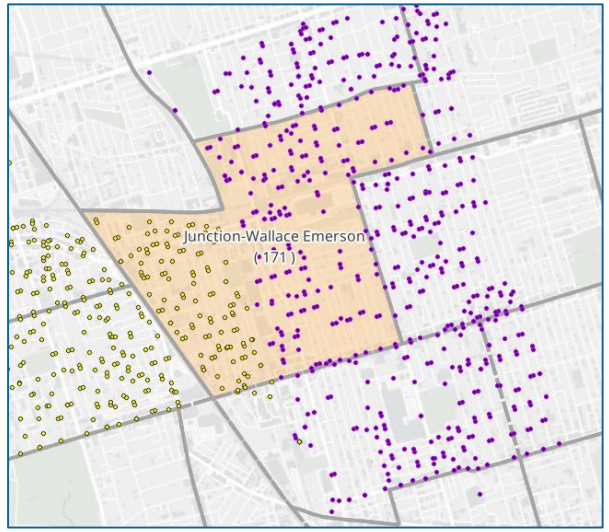
The information made available to OCHPP is from a de-identified OHIP registry that excludes identifiable information like a person's name and street address. The HCN is also removed and only the postal code from the address file remains. To match a postal code of a health card holder to their corresponding Census geography (like a Dissemination Area, DA), postal codes are run through Canada Post's Postal Code Conversion File Plus (PCCF+). PCCF+ is made available to OCHPP through ICES.

OCHPP's internal conversion file is then used to aggregate DAs to larger health geographies such as neighbourhoods/local areas, health regions etc. An example of this aggregation is shown in the following slide.

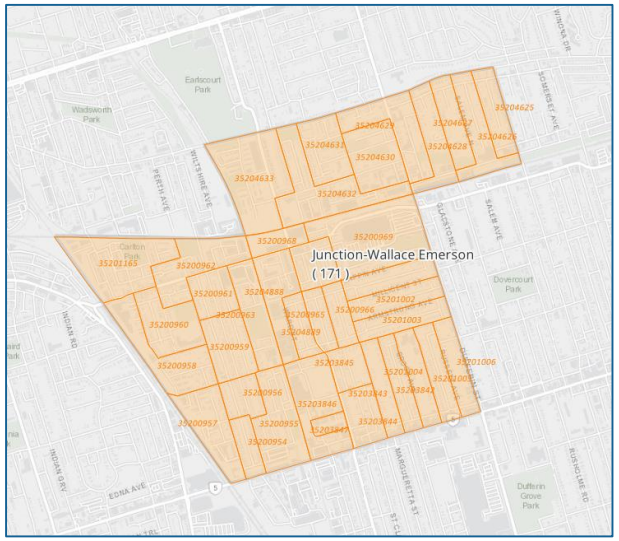
Data Generation and Reporting

2. Linking Data to Geographies

Postal Code Level



DA Level



Neighbourhood Level

The sequence of aggregation to a reportable OCHPP geography (such as neighbourhood-level).

Data Generation and Reporting

3. Generating the Data

1. Select persons with valid postal code from the RPDB applying necessary exclusions (such as excluding those with no health system contact in the last 10 years)
2. Link postal codes through PCCF+ to attach individuals to DAs
3. Use OCHPP's conversion file to link DAs to geographies (small areas and Ontario-wide)
4. Identify eligible or total population from the numerator data source using indicator-specific inclusion and exclusion criteria
5. Calculate numerator and denominator counts, crude rates, age-standardized rates, rate ratios, 95% confidence intervals, and significance

Data Generation and Reporting

4. Data Checks

OCHPP validates raw data to ensure internal consistency in the counts and statistical measures before approving the data tables for release. The data are first validated across the age and sex* fields within each table and then across all geographies that OCHPP report on. These measures also include adhering to privacy and data ownership standards under the First Nations principles of ownership, control, access and possession (OCAP) and ICES internal data stewardship policies.

Our rigorous standards include the following checks:

- *Ensure data is consistent with information in DCPs.*
- *Numerator and denominator counts, rates and other statistical column values (such as rate ratios) sum across age groups, and sex groups.*
- *Data limitations, representativeness of the sample are listed*
- *Small cells (values between 1-5) in the numerator or denominator are identified and suppressed. This includes any potential back-calculations from different age, sex / gender groupings or nested geographies. More information on small cell checks and methods are included in section* ***5*****: Reporting data tables on OCHPP**

If errors or omissions are discovered after release, data are re-run. Previous data is removed from the website and a new table with an explanation of the change(s) takes its place.

*See limitations on use of language on page 22.

Data Generation and Reporting

5. Reporting Data Tables on OCHPP

Methods to Account for Small Sample Size(s)

If numerator or denominator counts are between 1 and 5, the data are suppressed. This includes any potential back-calculations resulting in counts between 1 and 5. If data cannot be reported for 20% or more of the areas in a level of geography (20% or more of the data suppressed due to small cells) one of the following methods is chosen:

- *Combine several years of data (e.g. up to 5 years) or aggregate age groupings to obtain reportable information. The decision to combine years of data or several age groups takes into account factors including what the data is being used for and despite combining several years or age-groups, the need for the data is still important for communities.*
- *Report the event or indicator at a larger scale of geography e.g. only report the event at the Region level instead of a small area level;*
- *Report data for the total population instead of breaking it down by age and/or sex.*

If these methods are exhausted or not suitable for a particular indicator, and data cannot be reported for 80% or more of the tabulated areas, the indicator is not reported on OCHPP. The restriction may be limited to a specific geography or applied broadly across all geographies, omitting the indicator from our list of public data sets.

Data Generation and Reporting

5. Reporting Data Tables on OCHPP

Reporting Limits

Variations based on the size of the numerator and denominator can lead to instability in rates because the event is infrequent e.g. rare events or the number of people in the area to which the rate applies is small. For example, a small increase in the number of births among a small population of female teens could double the rate, but it reflects too small a number of events to be important for planning as it could be a one-time occurrence. See our reporting limits below. Note that zero is a valid count and that values between 1 and 5 are addressed separately.

Reporting Limits (Denominators)

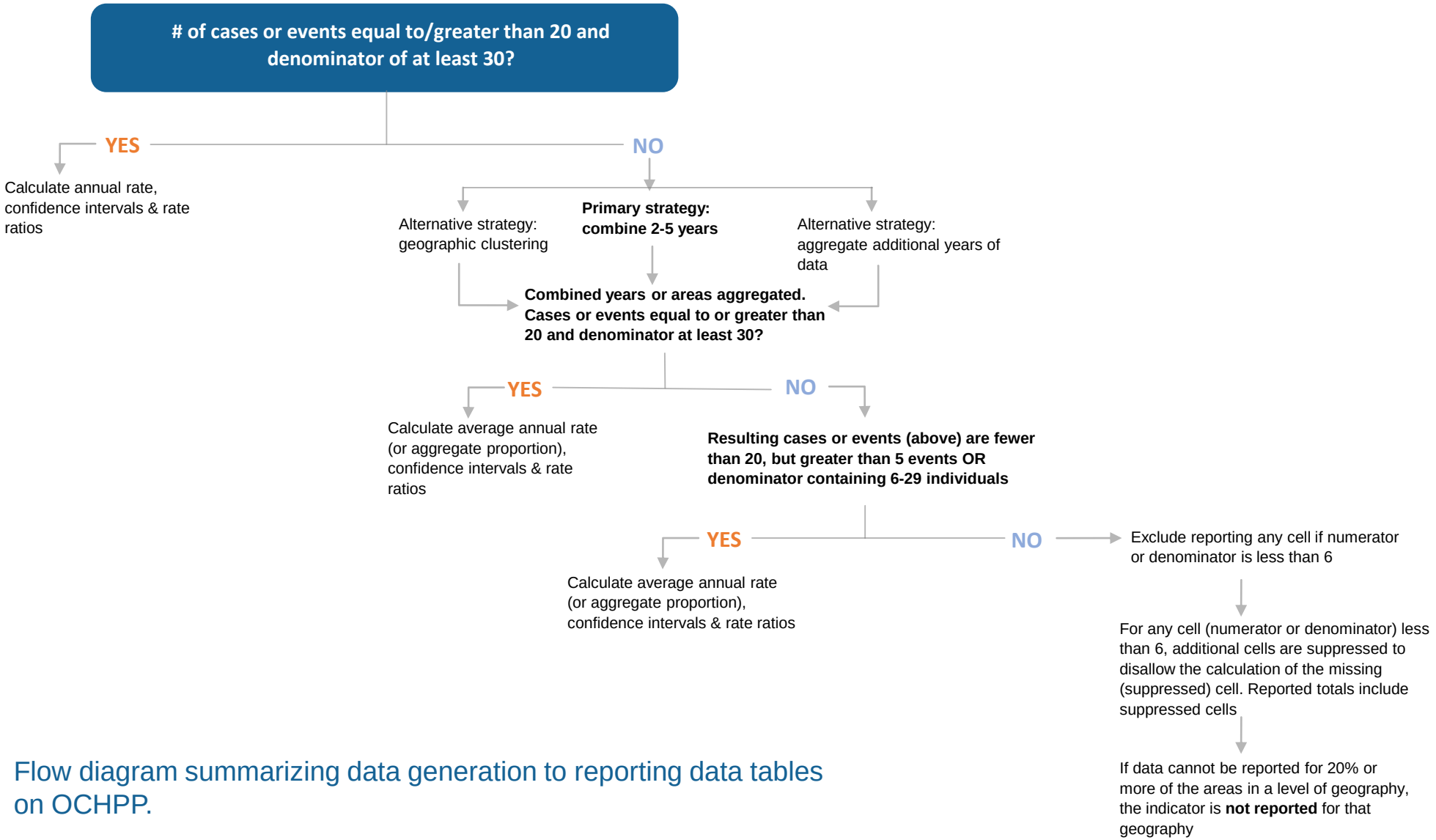
- Any calculations using values between 6 and 29 as a denominator, or any combination of variables that sum to a value between 6 and 29, should be reported with caution.

Reporting Limits (Numerators)

- Rates based on fewer than 20 events are likely to be unstable. Any calculations using values between 6 and 19, or any combination of variables that sum to a value between 6 and 19, should be reported with caution.

In all cases, caution is advised in drawing conclusions based on limited data.

Data Generation and Reporting



Flow diagram summarizing data generation to reporting data tables on OCHPP.

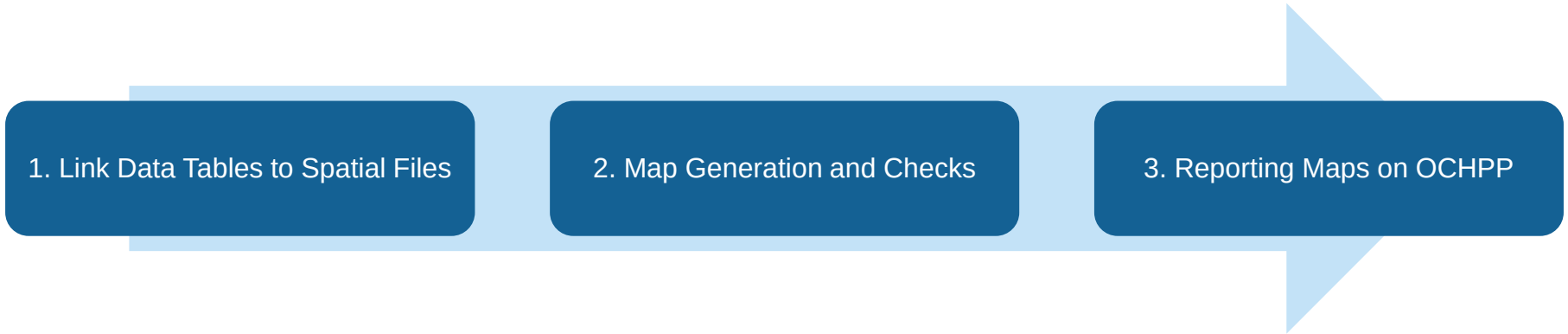
Map Generation → Reporting Maps

After data has been generated, checked and reported in data tables on the OCHPP website, we generate maps. The maps on OCHPP are all based on an individual's place of residence with the exception of location maps (such as location of hospitals). OCHPP adheres to established Geographic Information Systems (GIS) and cartographic principles to ensure the highest mapping standards.

Core mapping principles on OCHPP include:

- *Following cartographic design principles (legibility, visual contrast, figure-ground, hierarchical organization, and balance)*
- *Accurately representing spatial patterns of the data through map classes*
- *Maintaining geographic accuracy using standard map projections for North America*

The figure below shows a summary of the map generation and reporting process.



Map Generation and Reporting

1. Link Data Tables to Spatial Files

OCHPP boundary files are either:

1. Sourced externally, such as from the City of Toronto's Open Data Portal (for the most current definition of the City of Toronto neighbourhoods); or
2. Where OCHPP are the stewards of the original boundary files, generated in-house by refining existing boundary files.

Boundary files are updated and linked to data tables by completing the following process:

A. Download the current DA boundary file from Statistics Canada's website (e.g. Census 2021 Dissemination Areas)
B. Link Statistics Canada's boundary file to each OCHPP boundary file. This is accomplished by spatially joining DAs to all of the polygons that make up each OCHPP reporting geography.
C. Dissolve DAs by geographic area (e.g. Modified SRs, Ontario Health atHome areas, Regions, or small areas).
D. Review each output for discrepancies.
E. Download data tables for each geography of interest from the OCHPP website, reformat and link each geography to its specific boundary file.

The last task is described in more detail in **Step 2: Map Generation and Checks**

Map Generation and Reporting

2. Map Generation and Checks

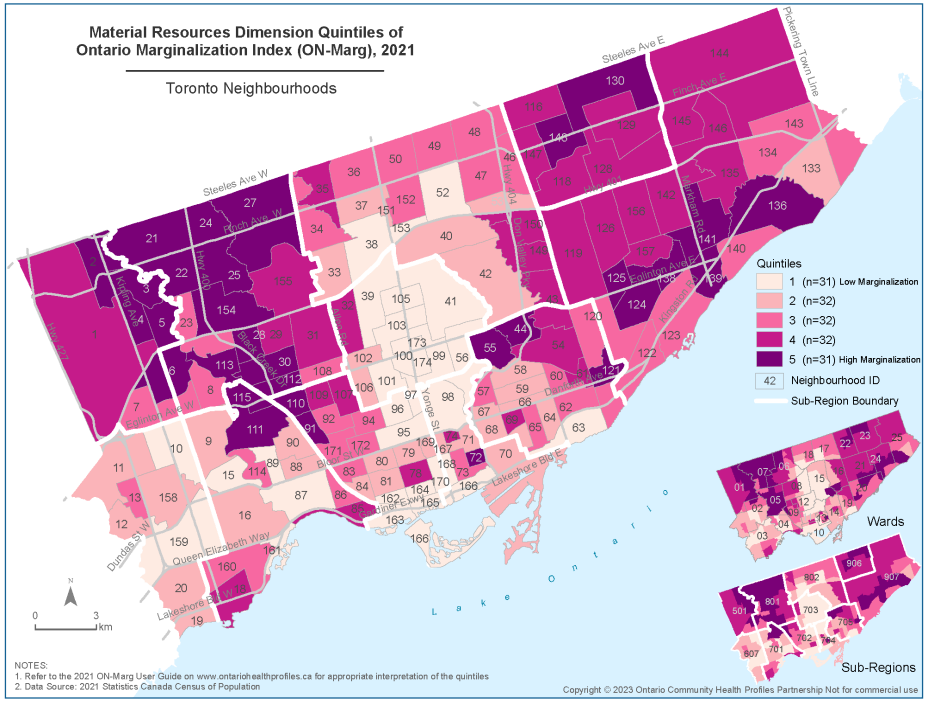
Health and socio-demographic data on OCHPP are typically mapped using choropleth (shaded) maps. Our standard is to map the total age-standardized rate (ASR), or in cases where a variable does not have an ASR, the total prevalence rate or percentage is mapped for the largest age aggregation reported in the table. "Total" here refers to male and female combined, where appropriate. Note that data already goes through rigorous data checks before it is mapped. Therefore, the checks for maps are less extensive.

1. OCHPP data from website linked to map boundary files
2. ASR (or rate/percentage) for the "Total" sex within the largest age aggregation column in the data is selected to be shown on the map
3. The ASR, rate or percentage are displayed on the map using a map classification method.
4. Overall ASR, rates or percentage, symbology, map classes, and formatting checked by GIS team

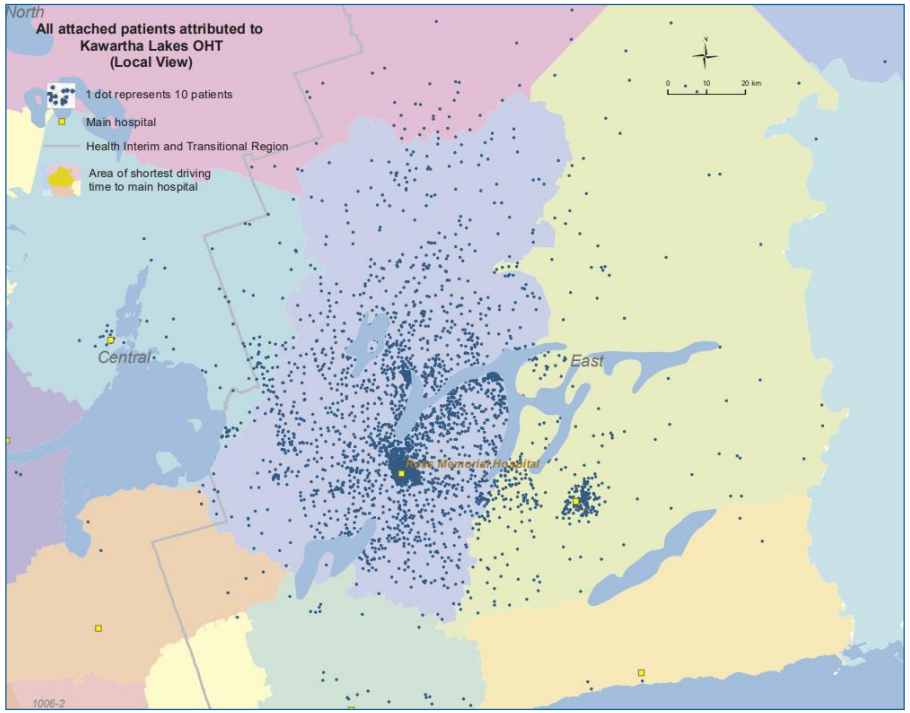
Map Generation and Reporting

Reporting One Variable on a Map

- When mapping a single variable, choropleth or proportional symbols are used to depict rates or rate ratios. These maps are not suitable for displaying counts or frequencies.
- Dot density maps can be used for displaying counts or frequencies, but not for displaying rates or rate ratios. OCHPP maps age standardized rates for our standard health indicators when possible to enable comparison over time for the same geography



Choropleth Map



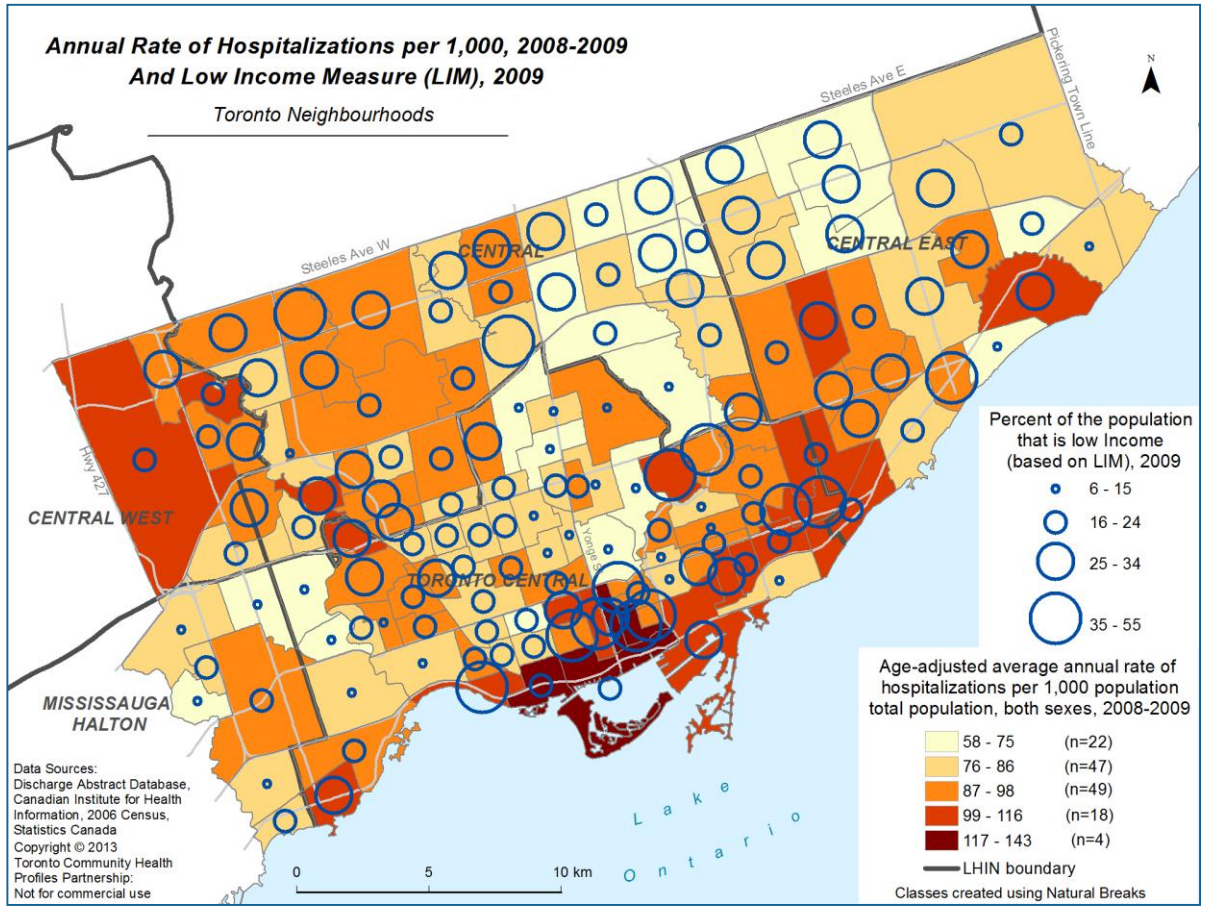
Dot Density Map

Map Generation and Reporting

Reporting Two Variables on a Map

To show two variables on a map (‘one on top of the other’), variables must use two different types of data presentations. These include either choropleth, proportional symbols or dot density.

More information on map types and mapping methods used by OCHPP are available in our “How to read the maps” document on the OCHPP website.



Overlay Map – using choropleth and proportional symbols to show two variables

OCHPP Data Ethics and Limitations

Limitations for Reporting Data at an Area-Level

Small area and Ontario-wide rates represent an “average” of the individuals living in the area. Area rates cannot be assumed to apply to all individuals within an area, due to communities having individuals, families and households with mixed socio-economic status (SES). For example, if 40% of a neighbourhood’s residents are low income (as defined by low-income cut offs after-tax), and 40% of residents report using a health care service, it cannot be assumed that all those using the service were the low income residents.

Ethical Considerations on Reporting Indigenous Data

As of 2025, the OCHPP project will publish datasets and maps on the OCHPP website that include data for Indigenous populations in parts of Northern Ontario. These areas roughly align within the boundaries of the former North East and North West LHINs and where agreements are currently in place between ICES and Indigenous partners and in adherence to the principles of OCAP. Regions with predominantly Indigenous populations that fall outside the scope of ICES Indigenous partnership agreements are excluded from OCHPP data retrieval, analysis, and public dissemination of research findings.

Use of Language

OCHPP acknowledges that the use of language such as references to sex which may connote sex assigned at birth (but now changed) and male/female does not include those who do not identify as such currently. We are limited in the way data terms are provided to us but are mindful of the concerns of those who may query this use of language. Revisions to terminology and language are part of our website’s and documentation review process and will be revised on an on-going basis

Appendix

Acronyms

CHC – Community Health Center

CIHI – Canadian Institute for Health Information

CIHI-DAD – Canadian Institute for Health Information Discharge Abstract Database

CT – Census tract

DA – Dissemination area

DCP – Data creation plan

GIS – Geographic Information Systems

HCN – Health card number

ICES – Institute for Clinical and Evaluative Science

MOHLTC – Ontario Ministry of Health and Long-Term Care

NACRS – National Ambulatory Care Reporting System

OCAP – Ownership, control, access and possession

OCHPP – Ontario Community Health Profiles Partnership

OHIP – Ontario Health Insurance Plan

OMHRS – Ontario Mental Health Reporting System

ORG – Ontario Office of Registrar General

PCCF+ – Postal code conversion file plus

Appendix

Data Source References

RPDB: https://www.ontariohealthprofiles.ca/o_documents/aboutTheDataON/RPDB_vs_Census.pdf

Census: https://www12.statcan.gc.ca/census-recensement/index-eng.cfm

CIHI-DAD: https://www.cihi.ca/en/discharge-abstract-database-dad-metadata

NACRS: https://www.cihi.ca/en/national-ambulatory-care-reporting-system-nacrs-metadata

OMHRS: https://www.cihi.ca/en/ontario-mental-health-reporting-system-metadata

ICES: https://www.ices.on.ca/about-ices-data/