Population Grouping Methodology in Action
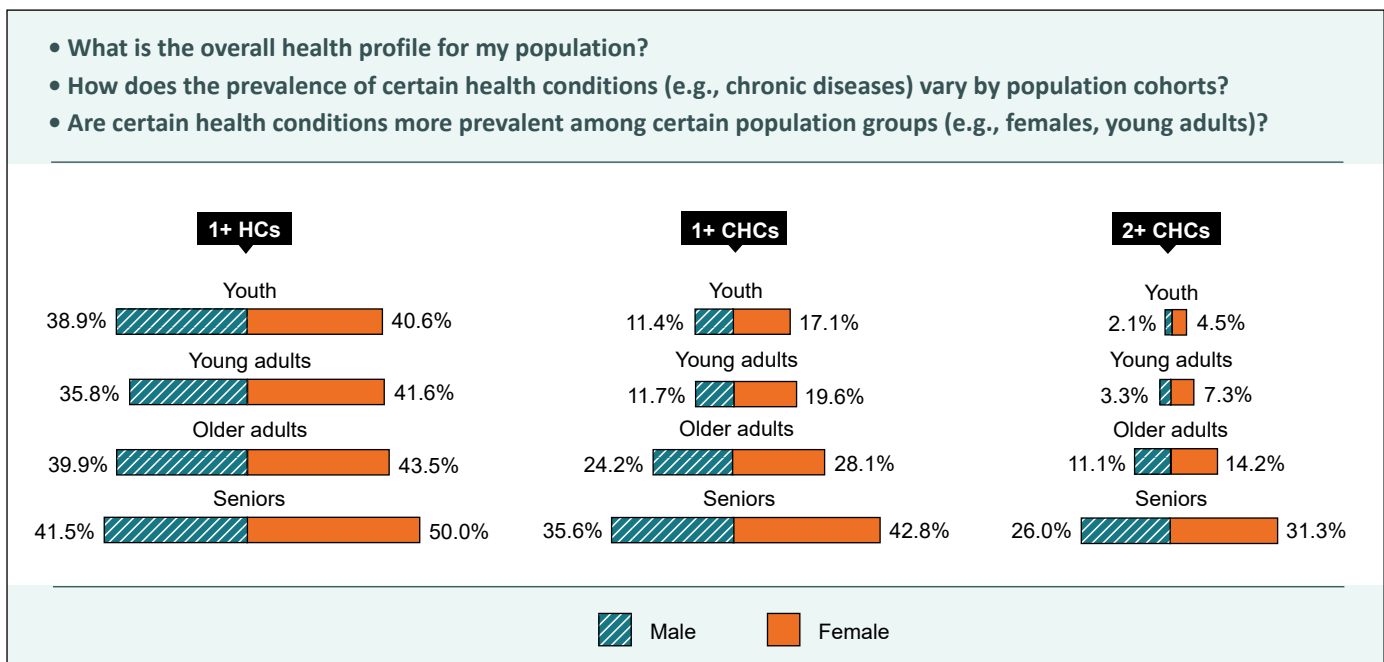
How it works

The Canadian Institute for Health Information (CIHI) Population Grouping Methodology (POP Grouper) uses clinical and demographic data to build clinical profiles and predict population health care needs. Health system planners at the provincial, regional and facility levels can use it to gather valuable insight about their population on resource needs and morbidity, as well as on how the health of their population compares with others and has changed over time. The POP Grouper can help answer questions such as "Are there any gaps between my population's health needs and the services being offered?" and "What's the impact of multi-morbidity on health system utilization?"

The following examples demonstrate possible applications of the methodology. They focus on 226 health conditions (HCs) and 82 non–mental health and non-cancer chronic health conditions (CHCs).

Profiling populations by basic demographics

Users can profile the overall health of their population to examine disease prevalence and multi-morbidity by age and sex.

- **What is the overall health profile for my population?**
- **How does the prevalence of certain health conditions (e.g., chronic diseases) vary by population cohorts?**
- **Are certain health conditions more prevalent among certain population groups (e.g., females, young adults)?**

1+ HCs

	Male	Female
Youth	38.9%	40.6%
Young adults	35.8%	41.6%
Older adults	39.9%	43.5%
Seniors	41.5%	50.0%

1+ CHCs

	Male	Female
Youth	11.4%	17.1%
Young adults	11.7%	19.6%
Older adults	24.2%	28.1%
Seniors	35.6%	42.8%

2+ CHCs

	Male	Female
Youth	2.1%	4.5%
Young adults	3.3%	7.3%
Older adults	11.1%	14.2%
Seniors	26.0%	31.3%

Male ▨   Female ▧

Note
Data reflects prevalence over a 2-year period based on client encounters with selected health care system settings.

CIHI

Understanding health care resource needs

Users can explore variations in health care utilization and cost by health condition.
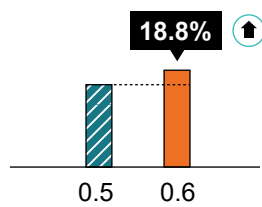
- **What is the cost to health systems for preventable diseases compared with other diseases?**
- **How does the use of emergency department services vary by population cohorts with different disease profiles?**
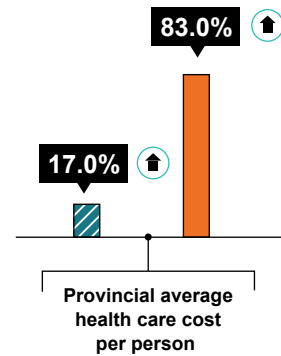- **What is the impact to health system resources as individuals age or acquire more chronic health conditions?**

Average number
of GP visits*

30.0% ⬆

4.0   5.2
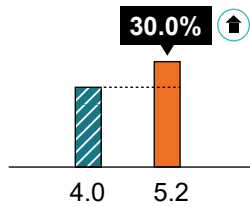
Average number
of ED visits*

18.8% ⬆

0.5   0.6

Cost weights*

83.0% ⬆

17.0% ⬆

Provincial average
health care cost
per person

▨ Population with 1+ HCs   ▮ Population with 1+ CHCs

Notes
* Predicted numbers in the year following the 2-year study period.
GP: General practitioner.
ED: Emergency department.

Exploring trends over time

The POP Grouper groups many years of health care data, allowing users to examine trends over time for their population of interest.

- **How is the clinical complexity of the population changing over time?**
- **Is the population with chronic conditions becoming younger (or older) over time?**

Number of CHCs
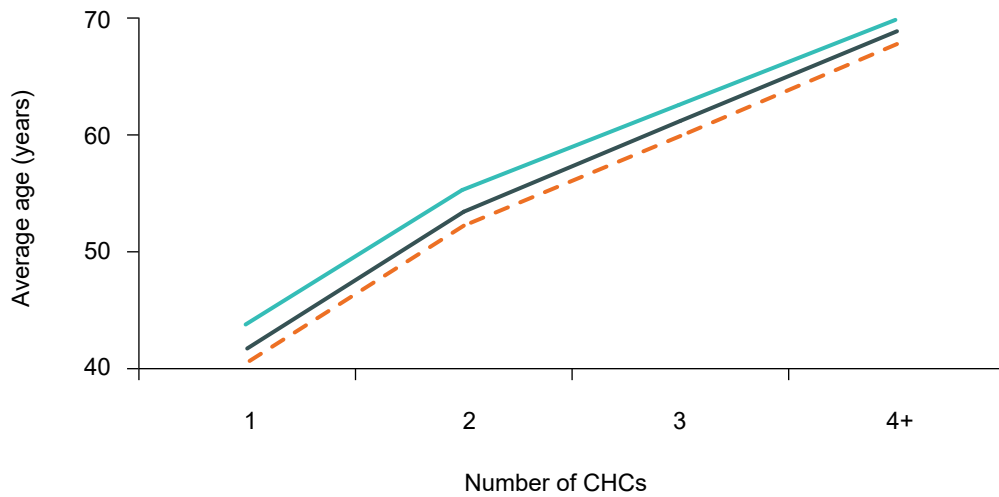
— — 2015–2016   —— 2016–2017   —— 2017–2018

Among individuals with multiple CHCs, the top 5 CHCs for each of the 3 periods are

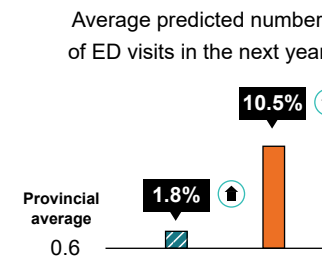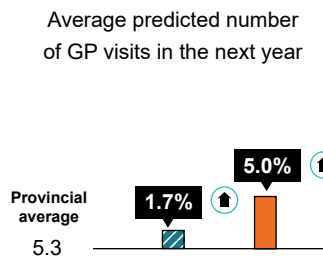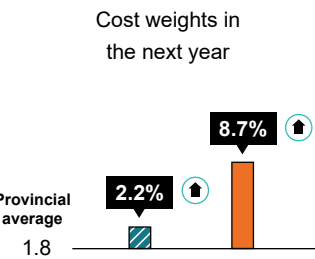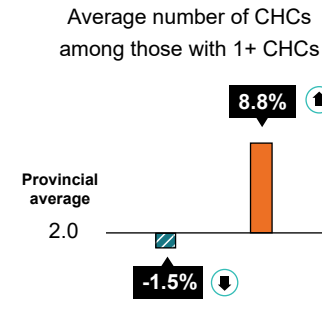| Hypertension	Diabetes mellitus	Other disease/disorder of the bladder and urethra	Cataract/ lens disorder	Osteoarthritis
1	2	3	4	5

3

Comparing populations across regions

Users can compare the health of their population with that of other jurisdictions, including other provinces and smaller jurisdictions.

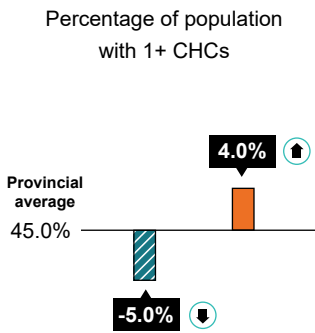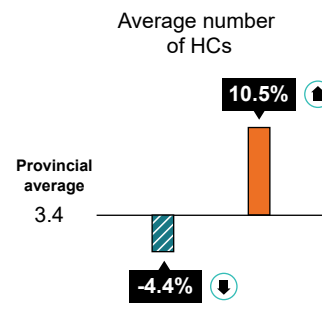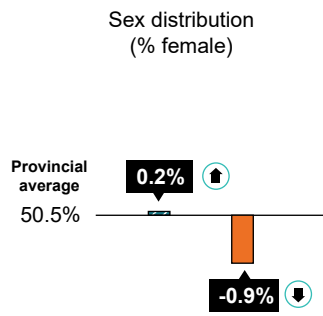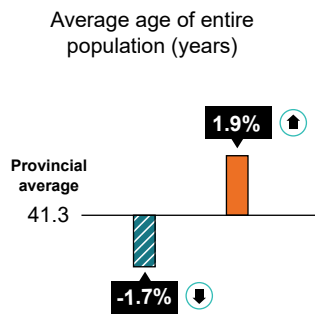- **Is the population in my region more clinically complex than those in peer regions?**
- **Does the population in my region tend to use more health services or cost more than average?**
- **How is the health of my region changing over time compared with the health of peer regions?**

Population health profiles

Average age of entire population (years)

1.9% ⬆
Provincial average
41.3
-1.7% ⬇

Sex distribution (% female)

0.2% ⬆
Provincial average
50.5%
-0.9% ⬇

Average number of HCs

10.5% ⬆
Provincial average
3.4
-4.4% ⬇

Percentage of population with 1+ CHCs

4.0% ⬆
Provincial average
45.0%
-5.0% ⬇

Percentage of population with 2+ CHCs

4.0% ⬆
Provincial average
22.0%
-3.0% ⬇

Average number of CHCs among those with 1+ CHCs

8.8% ⬆
Provincial average
2.0
-1.5% ⬇

Cost weights in the next year

8.7% ⬆
2.2% ⬆
Provincial average
1.8

Average predicted number of GP visits in the next year

5.0% ⬆
1.7% ⬆
Provincial average
5.3

Average predicted number of ED visits in the next year

10.5% ⬆
1.8% ⬆
Provincial average
0.6

Legend: ▨ Region 1   ▮ Region 2

Notes
GP: General practitioner.
ED: Emergency department.

The big picture

The POP Grouper can be used to explore many additional applications, including integrating other data sources into it and examining long-term care indicators. It can also be used to understand the health of the population or of sub-populations at both a granular (e.g., specific diseases) and a broad (e.g., categories like mental health) level. The information generated by the POP Grouper can support decision-making related to health policy, planning and resource allocation, leading to improvements in the health of Canadians.

Appendix

Text alternative for figures

Text alternative for figure in the section Profiling populations by basic demographics

These are examples of analytical questions that the POP Grouper can help answer:

- What is the overall health profile for my population?
- How does the prevalence of certain health conditions (e.g., chronic diseases) vary by population cohorts?
- Are certain health conditions more prevalent among certain population groups (e.g., females, young adults)?

This figure demonstrates how the POP Grouper can be used to profile the overall health of the population of interest by comparing the percentage of the population with 1 or more health conditions, 1 or more chronic health conditions and 2 or more chronic health conditions by sex (female, male) and age (youth, young adults, older adults, seniors).

Text alternative for figure in the section Understanding health care resource needs

These are examples of analytical questions that the POP Grouper can help answer:

- What is the cost to health systems for preventable diseases compared with other diseases?
- How does the use of emergency department services vary by population cohorts with different disease profiles?
- What is the impact to health system resources as individuals age or acquire more chronic health conditions?

This figure demonstrates how the POP Grouper can be used to explore variations in health care utilization and cost by comparing the predicted average number of general practitioner and emergency department visits, as well as comparing the predicted cost weights for the population with 1 or more health conditions with the predicted cost weights for the population with 1 or more chronic health conditions.

Text alternative for first figure in the section Exploring trends over time

These are examples of the analytical questions that the POP Grouper can help answer:

- How is the clinical complexity of the population changing over time?
- Is the population with chronic conditions becoming younger (or older) over time?

This figure demonstrates how the POP Grouper can be used to explore trends over time by examining the average age of the population with 1, 2, 3 and 4 or more chronic health conditions over 3 time periods.

Text alternative for second figure in the section Exploring trends over time

This figure demonstrates that the POP Grouper can be used to identify the top 5 chronic health conditions (e.g., hypertension, diabetes mellitus, other disease/disorder of the bladder and urethra, cataract/lens disorder, osteoarthritis) among individuals with multiple chronic health conditions for the 3 time periods analyzed in the previous figure.

Text alternative for figure in the section Comparing populations across regions

These are examples of the analytical questions that the POP Grouper can help answer:

- Is the population in my region more clinically complex than those in peer regions?
- Does the population in my region tend to use more health services or cost more than average?
- How is the health of my region changing over time compared with the health of peer regions?

This figure demonstrates how the POP Grouper can be used to compare regional populations with the provincial average on a number of statistics, including average age of population, sex distribution, average number of health conditions, percentage of population with 1 and multiple chronic health conditions, average number of chronic health conditions among those with chronic health conditions, predicted cost weights, average predicted number of general practitioner visits, and average predicted number of emergency department visits.

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