

2019 Epidemiology Capacity Assessment: Highlights

In 2019, the Association of Public Health Epidemiologists in Ontario (APHEO) undertook an assessment of epidemiology and analytic capacity in the province, in order to:

- 1) Enumerate the current applied epidemiology workforce in the public health sector in Ontario;
- 2) Better understand how the applied epidemiology workforce is structured within various organizations; and
- 3) Learn about the extent to which current capacity meets public health mandates.

This was conducted through a survey distributed to Public Health Ontario, 35 local public health units (PHUs), and two First Nations Health Authorities. Thirty-five of the 38 (92%) invited organizations responded to the enumeration survey: 34 PHUs and one First Nations Health Authority. It is important to note that the results of this study reflect the state of public health in Ontario prior to the COVID-19 pandemic.

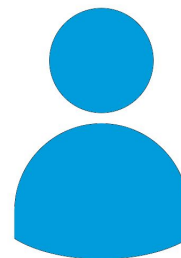


Enumeration of the epidemiology and analytic workforce

The Epidemiology Capacity Assessment used a broad inclusion criteria to enumerate the applied epidemiology and analytic workforce, as described in the [‘Who to Count’](#) document.

Number of epidemiology and analytic FTEs

In total, there were 166.8 epidemiology and analytic staff full-time equivalents (FTEs) in 34 responding local public health organizations across Ontario (mean: 4.9, median: 3.8, range: 0.5-25.0 FTE per organization). There were 33 unique job titles reported, with the most common being Epidemiologist (97% of organizations), Health or Data Analyst (41%), and Manager or Supervisor (41%). Organizations in areas that are mainly urban with moderate or high population density tended to have more Epidemiologist FTEs compared to those that are mainly rural or a sparsely populated, urban-rural mix.

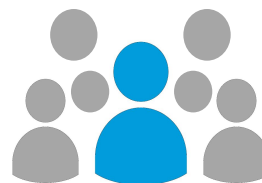


166.8

Epidemiology & analytic FTEs at the 34 responding local public health organizations

FTEs per 100,000 population

Overall, there were 0.6 Epidemiologist FTEs per 100,000 population served in Ontario and 0.3 Health and Data Analyst FTEs per 100,000 population. Including all enumerated epidemiology and analytic staff, there were 1.3 FTEs per 100,000 population.



1.3

Epidemiology & analytic FTEs per 100,000 population served in Ontario

Structure of the epidemiology and analytic workforce

89%

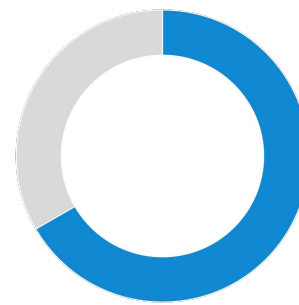


of local public health organizations have epidemiology and analytic staff situated centrally within the organization

The majority of Ontario's local public health organizations (31 of 35, 89%) have a **centralized** epidemiology structure. Of those, two-thirds have epidemiology and analytical staff that support all program areas, while the remainder have staff with specific portfolios or support specific program areas. One other organization had a **decentralized** structure, with epidemiology and analytic staff in program areas. Two of the remaining three organizations had a **hybrid centralized/decentralized structure**, while the other noted that their structure includes formal service agreements for epidemiology consultancy services with neighbouring health units.

Extent to which epidemiology and analytic capacity meets mandates

Insufficient capacity appears to be a challenge across organizations serving populations of different sizes and characteristics. However, organizations who indicated they had sufficient capacity tended to have a higher number of epidemiologists than those with insufficient capacity (median: 2.0 FTE vs. 1.0 FTE per organization). Organizations in the 'mainly urban' peer group were also more likely than those from other peer groups to indicate they had sufficient capacity (57%, versus 21%-36%).



66%

of organizations surveyed do not have sufficient epidemiology capacity to meet their needs.

Reasons for insufficient capacity include:

- A large and increasing volume of internal and external requests for local epidemiological support
- Insufficient epidemiology staff, with some PHUs having a sole epidemiologist or no dedicated population health assessment staff due to funding constraints
- Insufficient staff in other positions supporting the Foundational Standards (e.g., evaluation and continuous quality improvement). This often results in epidemiology staff taking on other functions outside of the traditional scope of epidemiology
- For some PHUs, challenges in filling epidemiology vacancies

Due to insufficient capacity, organizations noted the following potential challenges:

- Difficulty meeting OPHS requirements
- Routine analyses gets delayed or deprioritized due to outbreaks, emerging issues or ad-hoc requests, and this impacts program planning
- Inadequate time for data analysis for program planning when urgent needs such as outbreaks, emerging issues and ad-hoc requests take priority
- Struggles to remain current and conduct surveillance on complex emerging issues (e.g., opioids, vaping)
- Limited time for knowledge translation and dissemination, despite this being a critical step in the population health assessment cycle
- Limited time for professional development that enable staff to continue to strengthen skills and knowledge

Organizations also identified opportunities to improve epidemiological capacity, including:



Additional funding and FTEs



Training for and support from staff in complementary roles (e.g. data science, program evaluation, continuous quality improvement)



Technological solutions (e.g. access to modern data analytic and visualization tools)



Development of organizational population health assessment and surveillance strategies



Province-wide improvements in data and infrastructure



Centralization of certain population health assessment and surveillance activities

The future of public health epidemiology and analytics in Ontario

The 2019 Epidemiology Capacity Assessment survey also asked organizations about anticipated changes for the future scope of epidemiological work both locally and regionally in Ontario, as well as any anticipated training needs required to meet those changes.

Future scope of epidemiological work

Organizations identified that they:

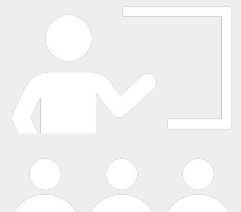
- Feel that the scope and mandate of public health is continuously evolving
- Anticipate an increased emphasis on collaboration between public health organizations and community partners
- Recognize the importance and value of retaining epidemiological capacity
- Have a need for enhanced provincial support that could help improve future epidemiology capacity
- Anticipate challenges and opportunities of new and evolving technologies like machine learning and artificial intelligence.



Future training needs

Organizations noted the following training needs to help epidemiology and analytical staff adapt to the evolving needs of their organizations:

- Knowledge translation and data visualization
- Spatial analysis
- Data science and artificial intelligence
- Advanced epidemiological methods
- Effective public health practice
- 'Soft skills' (e.g. communication, change management, facilitation),
- Health economics
- Data governance
- Project management.



Recommendations

Based on the 2019 Epidemiology Capacity Assessment findings, APHEO recommends:

1. Efforts should be made to ensure that local public health organizations have sufficient epidemiology and analytic staff and resources, to ensure that organizations can meet the requirements for population health assessment and surveillance in their public health mandate.
2. Public Health Ontario (PHO) and the Ministry of Health should continue to strengthen efforts to engage local public health epidemiology and analytic staff in various population health assessment and surveillance initiatives.
3. Local public health organizations should adopt a formalized framework or business process to plan and prioritize population health assessment and surveillance activities.
4. Public health organizations need to ensure they have capacity in foundational areas that complement epidemiological work, including roles that may be new in the public health field (e.g. program evaluation, continuous quality improvement (CQI), knowledge translation, health informatics, data science).
5. APHEO and PHO should organize training opportunities in emerging and growing areas such as data visualization, spatial analysis, data science and artificial intelligence.
6. Organizations should ensure all staff have a foundational set of public health core competencies.
7. Epidemiology and analytic staff should have access to and training on modern analytic tools (e.g. GIS, data visualization and business intelligence software)
8. The province should proactively invest in efficient and effective provincial data infrastructure for the public health system.
9. PHO should create new and build upon existing opportunities for epidemiology and analytic staff to collaborate and share resources across the province.
10. PHO should continue and enhance efforts in centralized population health assessment and surveillance activities, including providing tools and resources to local public health organizations to build upon this work in a more efficient way (e.g. providing syntax for Snapshots).
11. PHO could enhance their support for projects requiring specialized technical expertise that is often outside of the capacity of local public health organizations (e.g. health economics, spatial analysis).

Next steps

The APHEO Epidemiology Capacity Assessment Workgroup recommends reassessing epidemiology capacity following any potential restructuring of the public health system in Ontario, and upon sufficient resolution of the public health emergency response to the COVID-19 pandemic.

2019 Epidemiology Capacity Assessment Report

View the full length [2019 Epidemiology Capacity Assessment Report](#) for more information on methodology, results, data collection tools and a complete list of recommendations.

