HIV diagnoses in Ontario, 2023

About OHESI

The Ontario HIV Epidemiology and Surveillance Initiative (OHESI) is a collaborative partnership involving the HIV and Hepatitis C Programs (HHP), Provincial Programs Branch and the Office of the Chief Medical Officer of Health (OCMOH), Public Health Ontario (PHO), the Public Health Agency of Canada (PHAC), and the Ontario HIV Treatment Network (OHTN) Applied Epidemiology Unit.

The objectives of OHESI are to analyze, monitor and disseminate knowledge products on the epidemiology of HIV in Ontario. OHESI is a vital partnership that supports Ontario's ongoing ability to assess the impact of policy directions and HIV related program initiatives. The success of the partnership would not be possible without the strategic, technical and resource contributions of all partners.

OHESI receives advice from our Champions Committee, which represents people living with HIV from across Ontario and/or working in the community-based HIV service sector and HIV clinics. Input from these committees shapes our understanding and interpretation of data, helping ensure that the information we produce can be put into action. Together we aim to use our collective efforts to provide meaningful impact in neighborhoods, communities and organizations across the province.

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Key Trends and Findings

HIV surveillance in Ontario is based on information submitted by an ordering provider on HIV laboratory forms to Public Health Ontario's laboratory (PHOL), which may be incomplete for some key characteristics (e.g. information on previous HIV test history). In addition to the routine analyses done by OHESI, PHO led an HIV Look Back project that partnered with a number of public health units in Ontario to supplement missing laboratory data for key characteristics of first-time diagnoses in 2023. This project was initiated to help better understand an increase in first-time diagnoses in 2023 (compared to 2022) and improve missingness in data for key characteristics. For more details on the HIV Look Back Project background and methodology, refer to the Technical Notes.

Key findings in 2023 are:

- There were 938 first-time HIV diagnoses based on laboratory data. After the HIV Look Back project, with additional information on previous test history, the number of first-time HIV diagnoses in Ontario in 2023 decreased to 723 (a 23% decrease). There were 551 diagnoses with previous evidence of HIV in 2023 based on laboratory data. After the HIV Look Back project, with additional information on previous test history, the number of diagnoses with previous evidence of HIV in 2023 increased to 766 (a 39% increase). The associated rate of first-time HIV diagnoses was 6.0 per 100,000 before the Look Back project and 4.6 per 100,000 after the Look Back project.
    - While the number of first-time HIV diagnoses decreased as a result of the HIV Look Back project, the distribution of key characteristics (i.e., by age group, health region, exposure category and race/ethnicity category) did not change (with the exception of sex which changed by 5%). These findings suggest that missingness in the PHO HIV Datamart for these key characteristics in 2023 is random (except for sex).
    - The proportions of first-time HIV diagnoses in 2023 by submitter type did change with additional data (decreasing 38.8% for immigration physicians/clinics and increasing to 61.7% for non-immigration physicians/clinics).
- Males continue to represent the highest proportion of first-time HIV diagnoses (70.4% before the HIV Look Back Project, 75.3% after Look Back Project) compared to females (29.6% before the Look Back Project, 24.7% after Look Back Project).
- The 30-39 age-group continues to comprise the greatest proportion of first-time HIV diagnoses (31.9%), followed by 40-49 (25.7%) and 20-29 (23.4%). This is the first year where the proportion of first-time diagnoses in the 40-49 age group surpassed the 20-29 age group.
- Toronto continues to represent the highest proportion of first-time diagnoses by health region (44.3%) followed by Central East (22.6%) and Central West (15.0%).
- The majority of males indicated male-to-male sexual contact as their exposure category (72.7%), while most women indicated heterosexual contact with identified risk (60.0%).
- People that reported race/ethnicity as Black accounted for the largest proportion (37.8%) of first-time HIV diagnoses for the first time in Ontario.
- Nearly half (47.7%) of first-time HIV diagnoses were submitted by immigration physicians/clinics in 2023, an increase from previous years.

Abbreviations

- iPHIS: Integrated Public Health Information System
- LEP: Laboratory Enhancement Program
- MOH: Ministry of Health
- OHESI: Ontario HIV Epidemiology and Surveillance Initiative
- OHTN: Ontario HIV Treatment Network
- PHAC: Public Health Agency of Canada
- PHO: Public Health Ontario
- PHOL: Public Health Ontario's laboratory
- PHU: Public Health Unit

Background on HIV surveillance in Ontario

Throughout the HIV epidemic, Ontario has analyzed surveillance data to assist with focused delivery of services and deployment of resources. These data inform our progress on global indicators for HIV and help us understand which populations are experiencing a disproportionate burden of HIV risk and infection. In response to feedback on the length and scope of previous reports, this version focuses on first-time diagnoses.

Ontario is different from other provinces and territories in Canada as it relies on public health laboratory testing data (i.e., HIV diagnostic tests and HIV viral load tests) – and not HIV case reports (i.e., from public health unit case follow-up data) – to monitor HIV diagnoses. Public Health Ontario (PHO)'s laboratory conducts almost all HIV diagnostic testing requested by health care providers in Ontario. Data are collected from the HIV test requisition (form filled out by a health care provider when ordering a diagnostic HIV test) and the Laboratory Enhancement Program (LEP) form (form filled out by a health care provider when their patient receives a positive HIV test in Ontario).

PHO collects HIV data from the HIV test requisition and the LEP form consistent with its public health mandate to carry out disease surveillance as provided for in the *Ontario Agency for Health Protection and Promotion Act, 2007* [1]. HIV data at PHO are collected, stored, and analyzed according to the *Personal Health Information Protection Act*, 2004, S.O. 2004, c. 3, Sched[2].

First-time HIV diagnoses and people with previous evidence of HIV

When a person receives a positive HIV test in Ontario they are classified either as **(1) person with a first-time HIV diagnosis** or **(2) person with previous evidence of HIV** based on the information submitted by the ordering health care provider on the HIV test requisition and/or LEP form (e.g., previous test history) as well as that person's history of viral load testing in Ontario.

- **First-time HIV diagnoses** – People with a first-time positive HIV test in Ontario and that do not report having had a previous positive HIV test outside of Ontario. This includes individuals who acquired HIV in Ontario, and individuals who acquired HIV outside of Ontario but who learned their status for the first time in Ontario. If information on an individual's previous HIV test history (including previous positive HIV tests) is not reported by the health care provider who ordered the test, then the positive HIV test in Ontario is assumed to be a first-time positive HIV test and categorized as a first-time HIV diagnoses.
    - Looking separately at first-time HIV diagnoses allows us to monitor and understand who is having first-time HIV diagnoses in the Ontario. It is important to understand trends in first-time HIV diagnoses to help prevention and testing programs focus on populations in the province who would benefit most from prevention activities, as well as linkage to care.
    - A first-time HIV diagnosis is not the same as a new HIV infection. Many people living with HIV are not diagnosed in the same year they acquired HIV.

[1] Ontario. *Ontario Agency for Health Protection and Promotion Act, 2007, S.O. 2007, c. 10* [Internet]. Toronto (ON): Government of Ontario; [cited 2025 Mar 28]. Available from: https://www.ontario.ca/laws/statute/07o10.
[2] Ontario. *Personal Health Information Protection Act, 2004, S.O. 2004, c. 3* [Internet]. Toronto (ON): Government of Ontario; [cited 2025 Mar 28]. Available from: https://www.ontario.ca/laws/statute/04p03.

- **People with previous evidence of HIV** – People who already knew their positive HIV status at the time of their first positive nominal (as opposed to anonymous testing) diagnostic HIV test in Ontario. This previous evidence of HIV includes:
    - People new to care in Ontario but who were previously diagnosed elsewhere (i.e. another province/territory or country) and were retested in Ontario. These individuals would have told the health care provider ordering the test that they were known to be living with HIV (e.g., can provide a medical record with a previous HIV test) so that this previous test history information can be captured on the test requisition and/or LEP form.
    - People who have been in HIV care in Ontario[1] (i.e., have a history of HIV viral load tests) but with no previous linkable HIV diagnostic test. These individuals may have originally been tested anonymously and then retested (sometimes many years later) – perhaps when they changed health care providers. People who have evidence of a history of viral load testing before their first reported HIV positive test are counted in the first year where there is evidence of an HIV diagnosis (i.e. the year of their first viral load test).

Current HIV data in Ontario cannot tell where someone became infected with HIV. Therefore, people with a first-time HIV diagnosis in Ontario include those who acquired HIV in Ontario and people who acquired HIV outside of Ontario, but are having their first-ever positive HIV test in Ontario.

Factors that influence year-to-year changes in HIV diagnoses

There are multiple factors that influence year-to-year changes in HIV diagnoses including population-level, health system, patient/client, physician/clinician factors, and surveillance methods.

Factors	Examples
Population-level	• Changes in migration from other provinces/territories or countries. • Changes to HIV transmission patterns within Ontario.
Health system	• Access to HIV testing (decreased during the COVID-19 pandemic)[2] • Lack of culturally safe care • Focused key population testing campaign[3]
Patient/client	• Access to HIV Pre-Exposure Prophylaxis (PrEP) and Post-Exposure Prophylaxis (PEP) for at-risk populations

[2] DiNenno EA, Delaney KP, Pitasi MA, MacGowan R, Miles G, Dailey A, Courtenay-Quirk C, Byrd K, Thomas D, Brooks JT, Daskalakis D, Collins N. HIV Testing Before and During the COVID-19 Pandemic - United States, 2019-2020. MMWR Morb Mortal Wkly Rep. 2022 Jun 24;71(25):820-824. doi: 10.15585/mmwr.mm7125a2. PMID: 35737573.

[3] Adam BD, Gardner S, Major C, Campbell D, Light L, Globerman J. Promoting HIV Testing for Gay and Bisexual Men: An Evaluation of the 2011-2012 Campaign in Toronto and Ottawa. Health Promot Pract. 2016 Jan;17(1):40-7. doi: 10.1177/1524839915605060. Epub 2015 Sep 18. PMID: 26384927.

	• Changes in drug use and sexual behaviours (e.g., decreased sexual activity during the COVID-19 pandemic[1], mpox outbreak[2,3])
Physician/ clinician	• Changes in HIV testing practices (e.g., awareness of 2023 HIV testing guidelines)[4]
Surveillance methods	• Changes to data collection and integration (e.g., HIV Look Back Project)

Impact of missing data on previous test history

Not all first-time HIV diagnoses have complete information submitted by the ordering provider, whether through the HIV test requisition or the LEP form. Where HIV test history is not reported on the HIV testing form or there is no prior history of HIV viral load testing in Ontario, people with a first-time positive HIV test in Ontario are categorized as first-time HIV diagnoses. It is likely that a proportion of people with a first-time positive HIV test and missing HIV testing information actually have had a previous positive HIV test that is not reported. The result of this categorization is that in any given year, categorizing people with a first-time positive HIV test and with missing HIV test history information as a first-time HIV diagnoses likely ***overestimates*** the overall number of first-time HIV diagnoses in Ontario and ***underestimates*** the overall number of people living with previous evidence of HIV. Between 2020 and 2022, previous OHESI analysis found that 9.7% - 11.3% of first-time HIV diagnoses were estimated to have an uncaptured previous HIV diagnosis).

2024 HIV Look Back Project and how it is used in this report

In previous years, only PHO's laboratory requisition and LEP form were used for analyses of HIV diagnoses. To help better understand an increase in first-time diagnoses in 2023 (compared to 2022) and improve missingness in data for key characteristics, PHO led an HIV Look Back Project. Public Health Units (PHUs) supplemented missing data for 2023 through retrospective review of first-time HIV diagnoses including the integrated Public Health Information System (iPHIS), previous chart notes, and/or clinical data in available electronic systems. PHUs were invited to participate in the HIV Look Back Project if they had 10 or more first-time HIV diagnoses in 2023 and had an increase in first-time diagnoses between 2022 and 2023 (13 total).

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[1] Levy I, Michael S, Olmer L, Gofen R, Davidson O, Zucker R, Wagner-Kolasko G. The impact of COVID-19 lockdown on men having sex with men (MSM). AIDS Care. 2022 Nov;34(11):1400-1404. doi: 10.1080/09540121.2022.2049197. Epub 2022 Apr 15. PMID: 35427195.

[2] Xiu F, Flores Anato JL, Cox J, Grace D, Hart TA, Skakoon-Sparling S, Dvorakova M, Knight J, Wang L, Gatalo O, Campbell E, Zhang T, Sbihi H, Irvine MA, Mishra S, Maheu-Giroux M. Characteristics of the Sexual Networks of Men Who Have Sex With Men in Montréal, Toronto, and Vancouver: Insights from Canada's 2022 Mpox Outbreak. J Infect Dis. 2024 Mar 26;229(Supplement_2):S293-S304. doi: 10.1093/infdis/jiae033. PMID: 38323703; PMCID: PMC10965213.

[3] Fanyu Xiu, Carla M. Doyle, Jorge Luis Flores Anato, Jesse Knight, Linwei Wang, Joseph Cox, Daniel Grace, Trevor A. Hart, Terri Zhang, Shayna Skakoon-Sparling, Milada Dvorakova, Rita Shahin, Herveen Sachdeva, Nathan Lachowsky, Hind Sbihi, Darrell H.S. Tan, Michael A. Irvine, Sharmistha Mishra, Mathieu Maheu-Giroux.Impact of interventions on mpox transmission during the 2022 outbreak in Canada: a mathematical modeling study of three different cities,International Journal of Infectious Diseases,Volume 153,2025,107792,ISSN 1201-9712,https://doi.org/10.1016/j.ijid.2025.107792.

[4] Ontario HIV Treatment Network. *Ontario HIV Testing Guidelines for Providers* [Internet]. Toronto (ON): Ontario HIV Treatment Network; 2023 Mar [cited 2025 Mar 28]. Available from: https://hivtestingontario.ca/wp-content/uploads/2023/03/Ontario-HIV-Testing-Guidelines-for-Providers.pdf.

After the HIV Look Back Project was completed, 215 (23%) of the 938 first-time HIV diagnoses in 2023 had an uncaptured previous HIV diagnosis (i.e., additional information on previous test history was obtained), which is higher than estimated for previous years (this led to a decrease in first-time HIV diagnoses in Ontario in 2023 to 723 (938 – 215) and an increase in people with previous evidence of HIV to 766 (551 + 215)). One of the key findings of the HIV Look Back Project was that although absolute numbers for key characteristics of first-time HIV diagnoses in 2023 changed with improvement in missingness of data, there was no impact on the distribution of key characteristics (i.e., by age group, health region, exposure category and race/ethnicity category) for first-time HIV diagnoses in 2023, except for sex, which changed slightly (by 5%). This suggests that missingness in the PHO HIV Datamart for these key characteristics in 2023 is random (except for sex).

The data supplemented from the HIV Look Back project is only used in this report to show the change in the number of first-time HIV diagnoses, previous evidence of HIV diagnoses, and data stratified by sex in 2023. For all other analyses in this report, data from the original 938 first-time diagnoses are used (i.e., does not include data collected through the HIV Look Back project) to permit comparisons of trends in proportions over time.

The HIV Look Back Project findings provide reassurance in the interpretation of data presented in this report for first-time HIV diagnoses in 2023 when using proportions. For additional information on the HIV Look Back project methodology, see the Technical Notes.

Data and figures

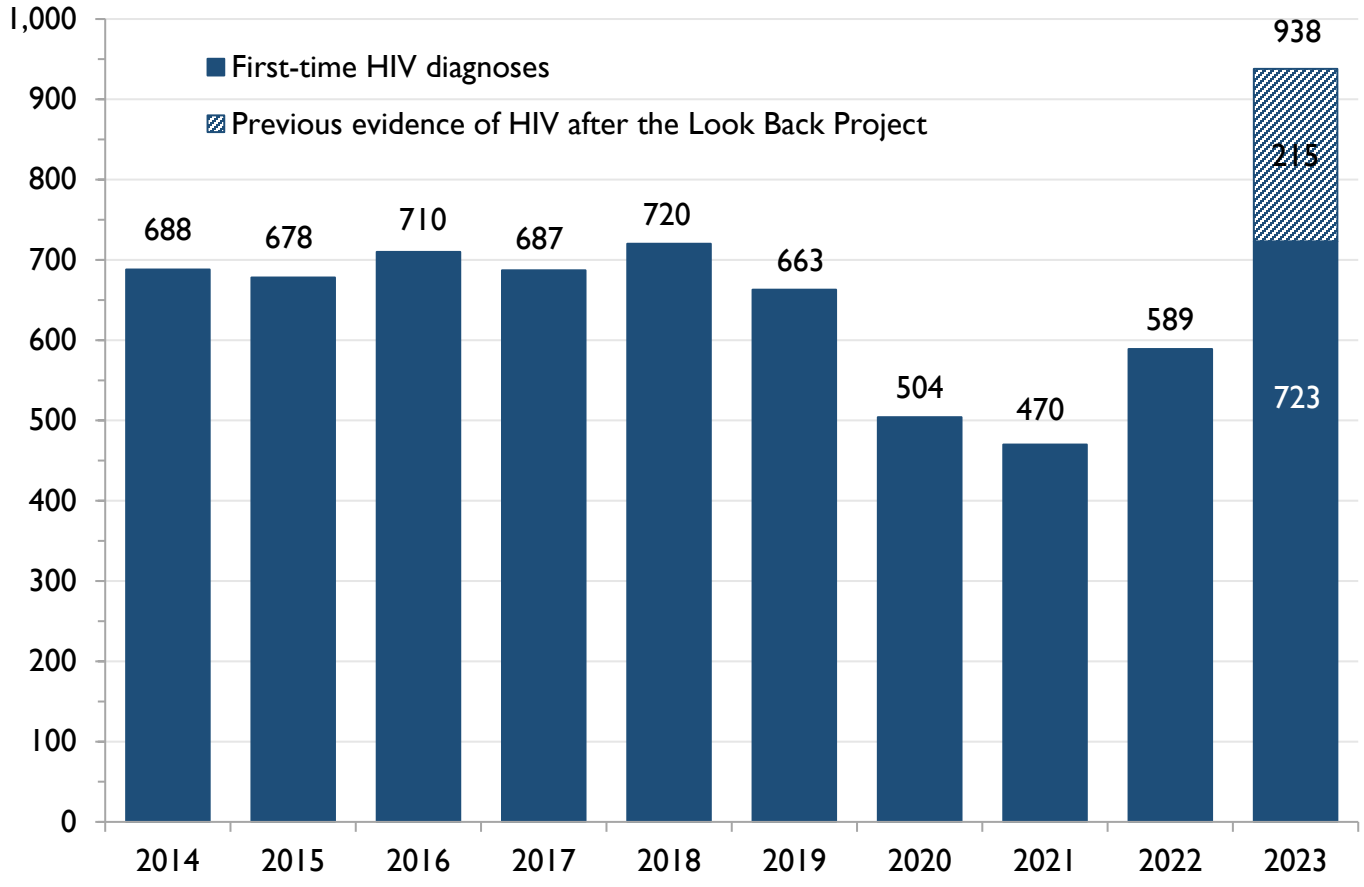
The figures in this report show trends in first-time HIV diagnoses over the past ten years (2014 to 2023), with a focus on select findings in 2023. The data supplemented from the HIV Look Back project is only used to show the change in the number of first-time HIV diagnoses in 2023 from 938 to 723 (Figure 1.1). For all other analyses in this report, data from the original 938 first-time diagnoses are used (i.e., calculation of proportions) to permit comparisons of trends over time.

Note that the key finding of the HIV Look Back project was that the proportions of key characteristics (i.e., by age group, health region, exposure category and race/ethnicity category) did not change in 2023 with additional data (except for a 5% change in sex).

See the Technical Notes for more information on data sources, methods, and definitions.

1. Overview

Figure 1.1 Number of first-time HIV diagnoses, Ontario, 2014 to 2023

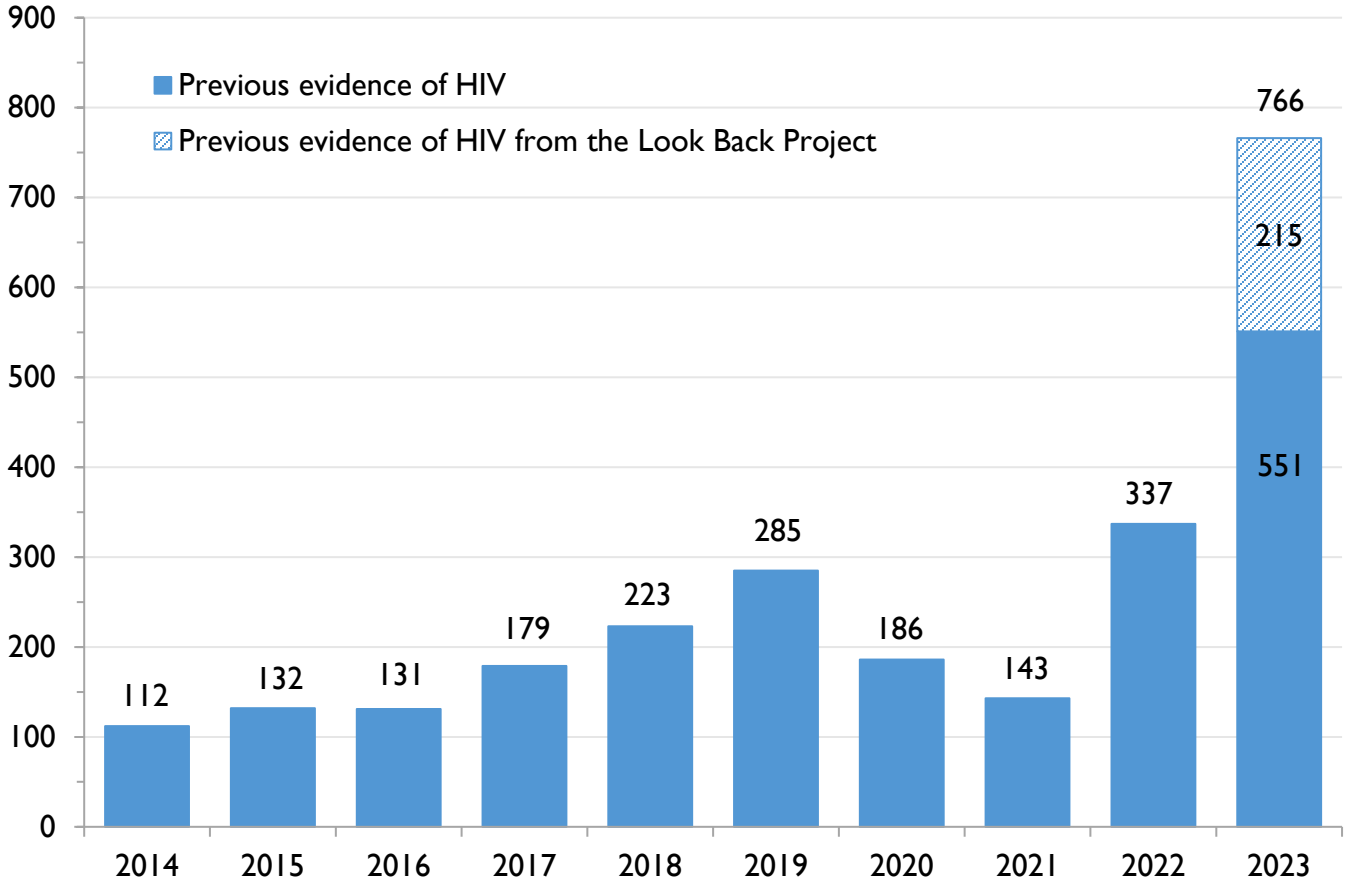


Snapshot

The number of first-time diagnoses was relatively stable from 2014 to 2019, then decreased during the COVID-19 pandemic in 2020 and 2021. Since 2021, the number of first-time diagnoses has increased to a 10-year high in 2023. The number of first-time HIV diagnoses in 2023 was 938 before the HIV Look Back project and 723 after the HIV Look Back project.

Notes: Data provided by Public Health Ontario Laboratory.

Figure 1.2 Number of diagnoses with previous evidence of HIV, Ontario, 2014 to 2023



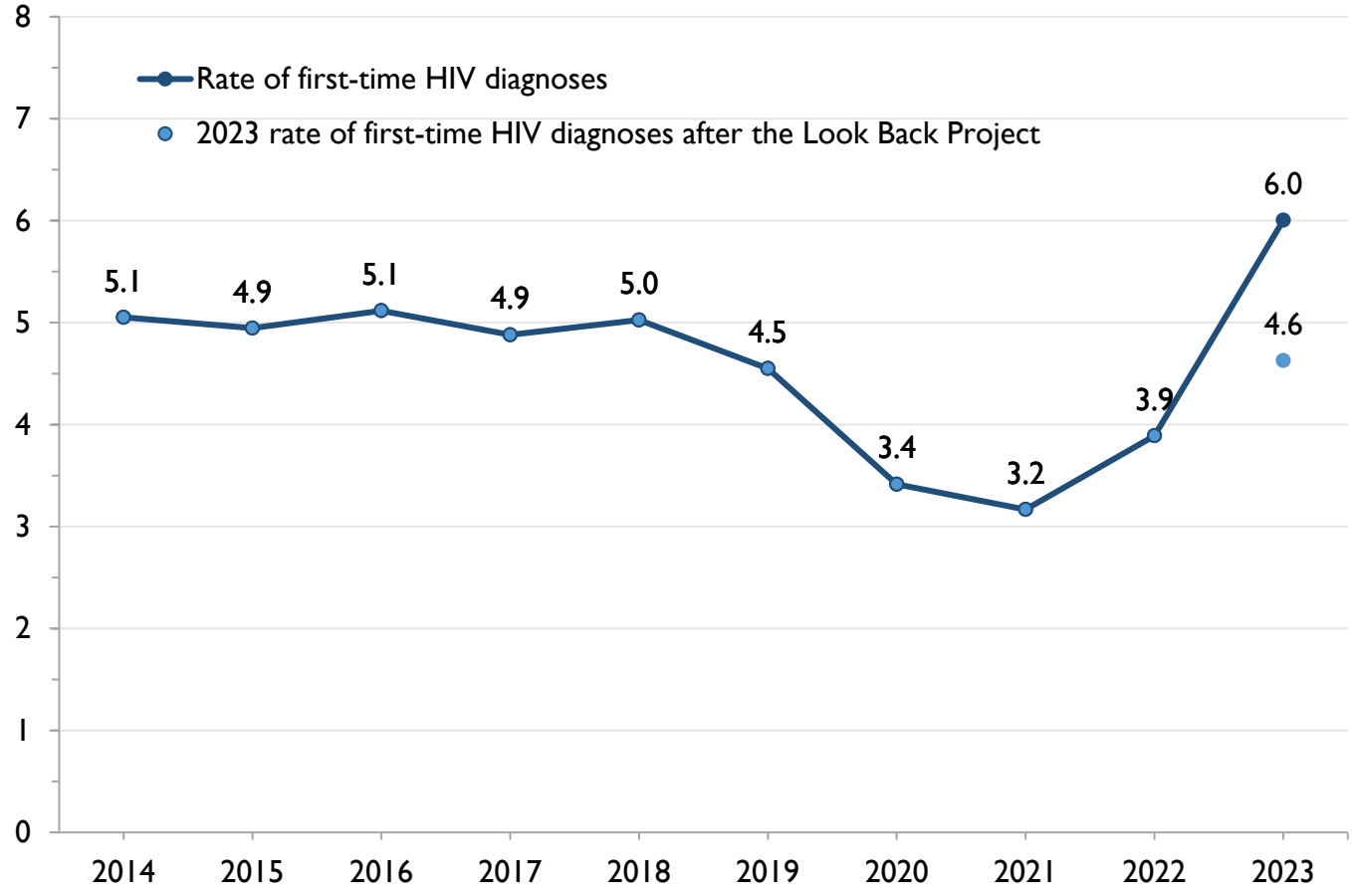
Snapshot

Before the COVID-19 pandemic, the number of diagnoses with previous evidence of HIV had been increasing, followed by a decrease in 2020 and 2021, before increasing in 2022 and reaching its 10-year high in 2023. There were 551 diagnoses with previous evidence of HIV in 2023 based on laboratory data. After the HIV Look Back project, with additional information on previous test history, the number of diagnoses with previous evidence of HIV in 2023 increased to 766.

Data limitation: *Due to missing data on test history, in any given year, first-time HIV diagnoses likely include some people with an uncaptured previous HIV diagnosis.* See 'Impact of missing data on previous test history' for more information.

Notes: Data provided by Public Health Ontario Laboratory.

Figure 1.3 Rate of first-time HIV diagnoses per 100,000 people, Ontario, 2014 to 2023



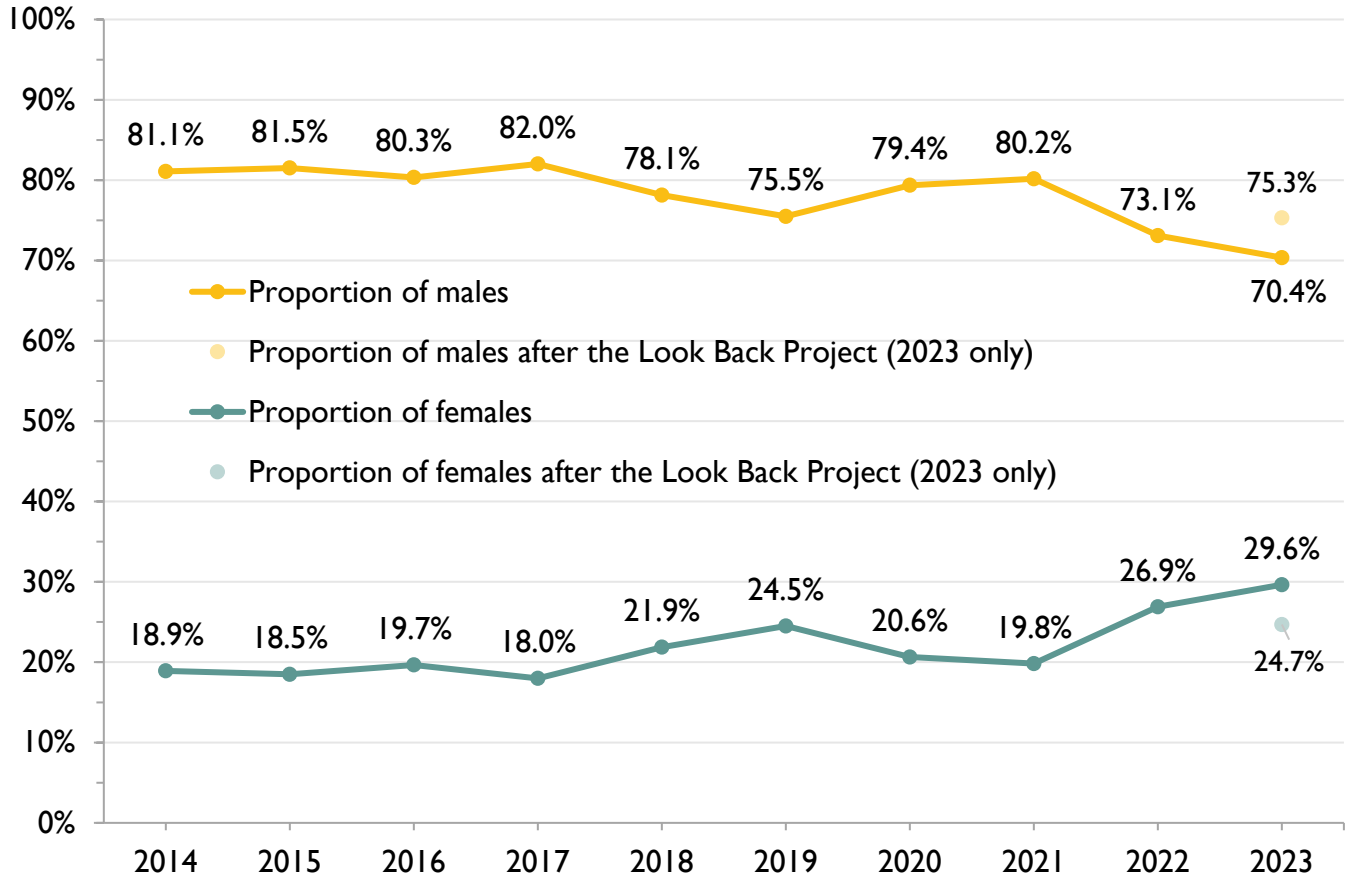
Snapshot

The rate of first-time HIV diagnoses was relatively stable from 2014 to 2018, with a decrease observed from 2019 to 2021, followed by an increase in recent years. In 2023, the rate of first-time HIV diagnoses was 6.0 per 100,000 before the HIV Look Back project and 4.6 per 100,000 after the HIV Look Back project.

Notes: Data provided by Public Health Ontario Laboratory.

2. By sex

Figure 2.1 Proportion of first-time HIV diagnoses by sex, Ontario, 2014 to 2023



Snapshot

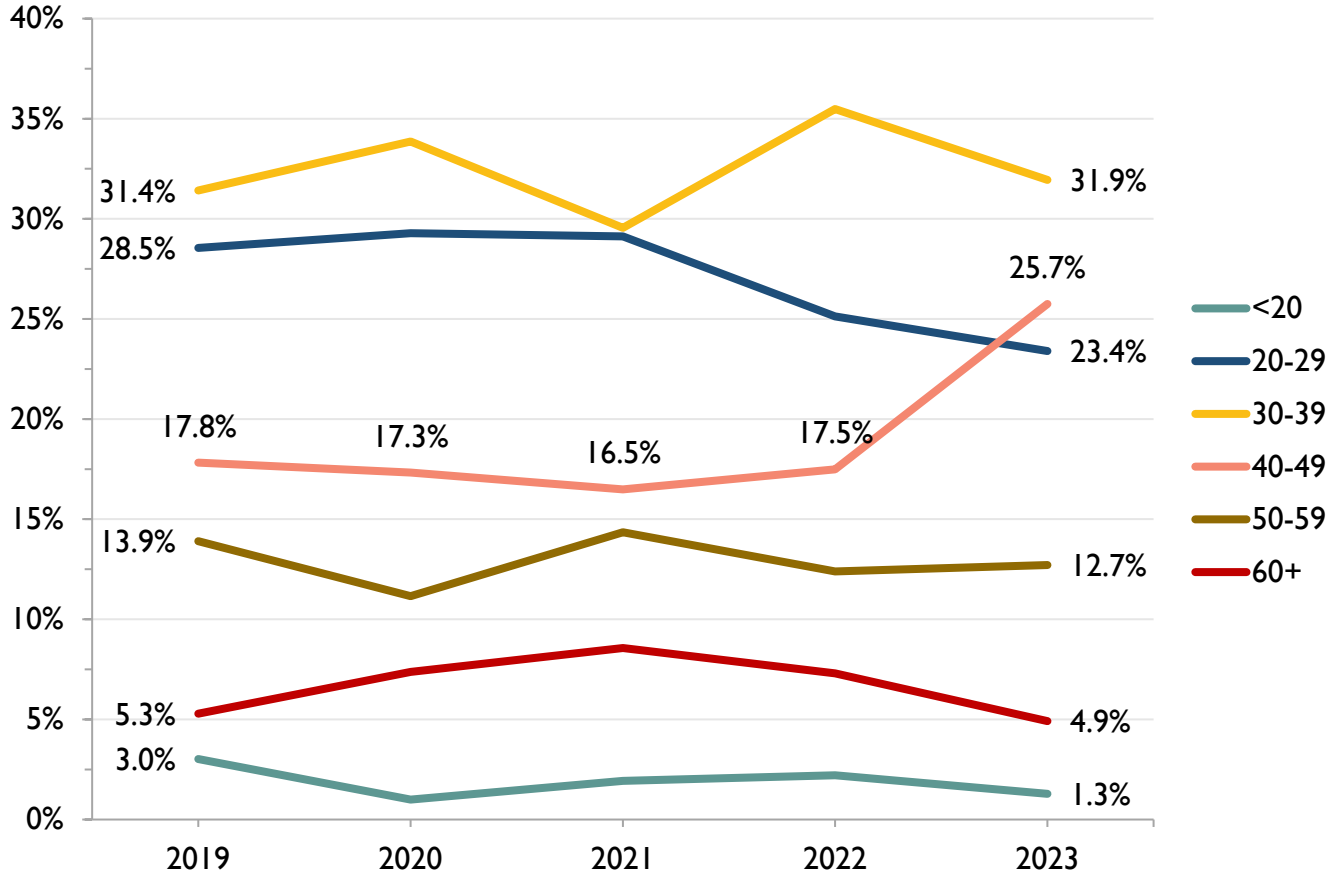
Between 2014 and 2023, males account for a greater proportion of first-time HIV diagnoses compared to females, however, the proportion in females has been increasing over time. A key finding of the HIV Look Back project was that the proportion of first-time HIV diagnoses in 2023 changed slightly with additional data (increasing from 70.4% to 75.3% amongst males and decreasing from 29.6% to 24.7% amongst females).

In 2023, before the HIV Look Back project the number of first-time HIV diagnoses by sex were 658 for males and 276 for females; after the HIV Look Back project the numbers by sex were 543 and 178, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Diagnoses with unreported sex excluded (less than 1% of diagnoses).

3. By age

Figure 3.1 Proportion of first-time HIV diagnoses by age group, overall, Ontario, 2019 to 2023



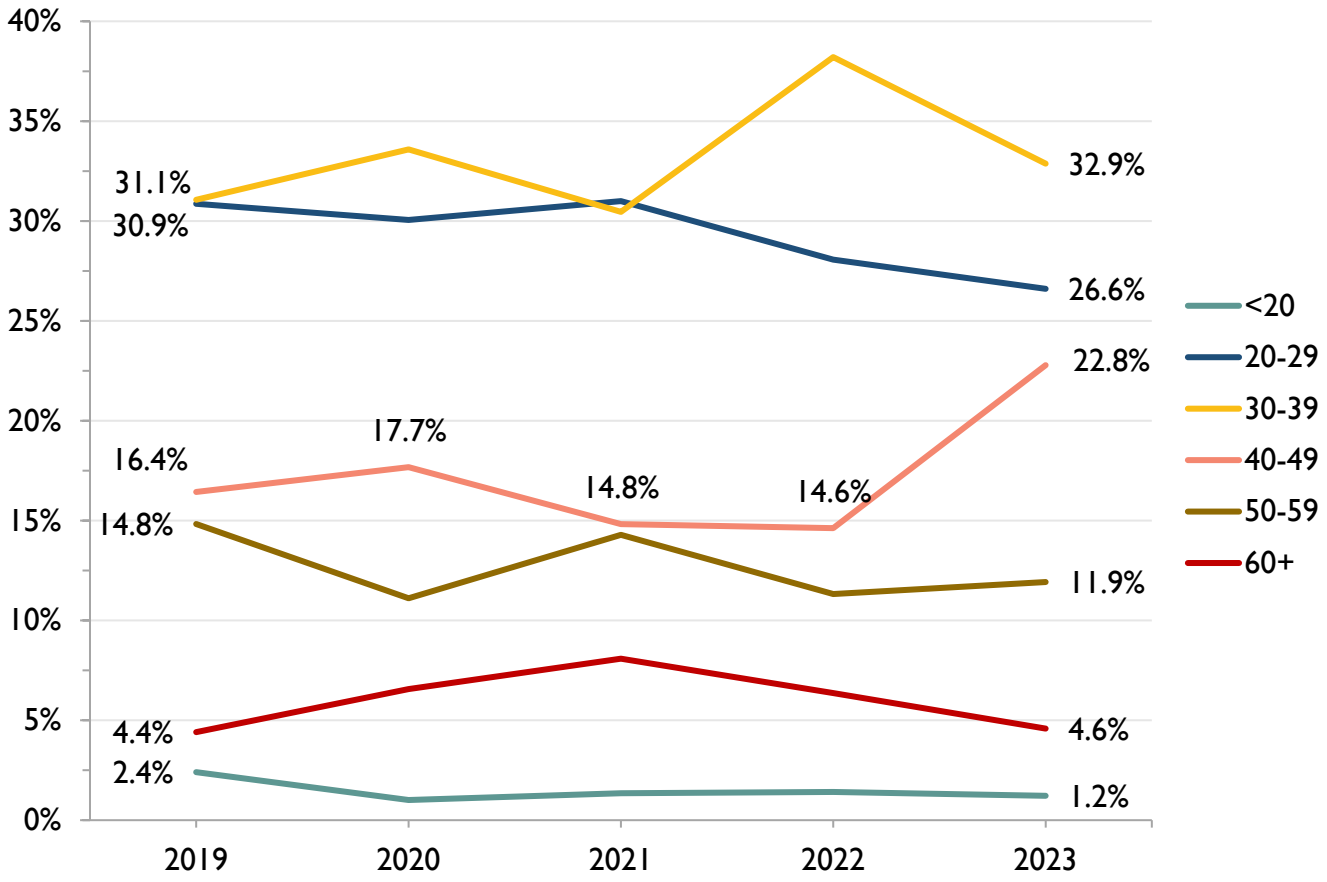
Snapshot

Between 2019 and 2022 the proportion of first-time HIV diagnoses was highest among those aged 30-39 followed by those aged 20-29 and 40-49. In 2023 the proportion of first-time HIV diagnoses remained highest among those aged 30-39; however, those aged 40-49 increased and surpassed those aged 20-29 in 2023. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by age group did not change with additional data.

In 2023, the number of first-time HIV diagnoses by age group were 12 for age under 20, 219 for age 20-29, 300 for age 30-39, 241 for age 40-49, 119 for age 50-59, and 46 for age 60+. Following the HIV Look Back project, the numbers for each age group were 11, 178, 224, 180, 93, and 36, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Diagnoses with age not reported were excluded (less than 1%).

Figure 1.2 Proportion of first-time HIV diagnoses by age group, males, Ontario, 2019 to 2023



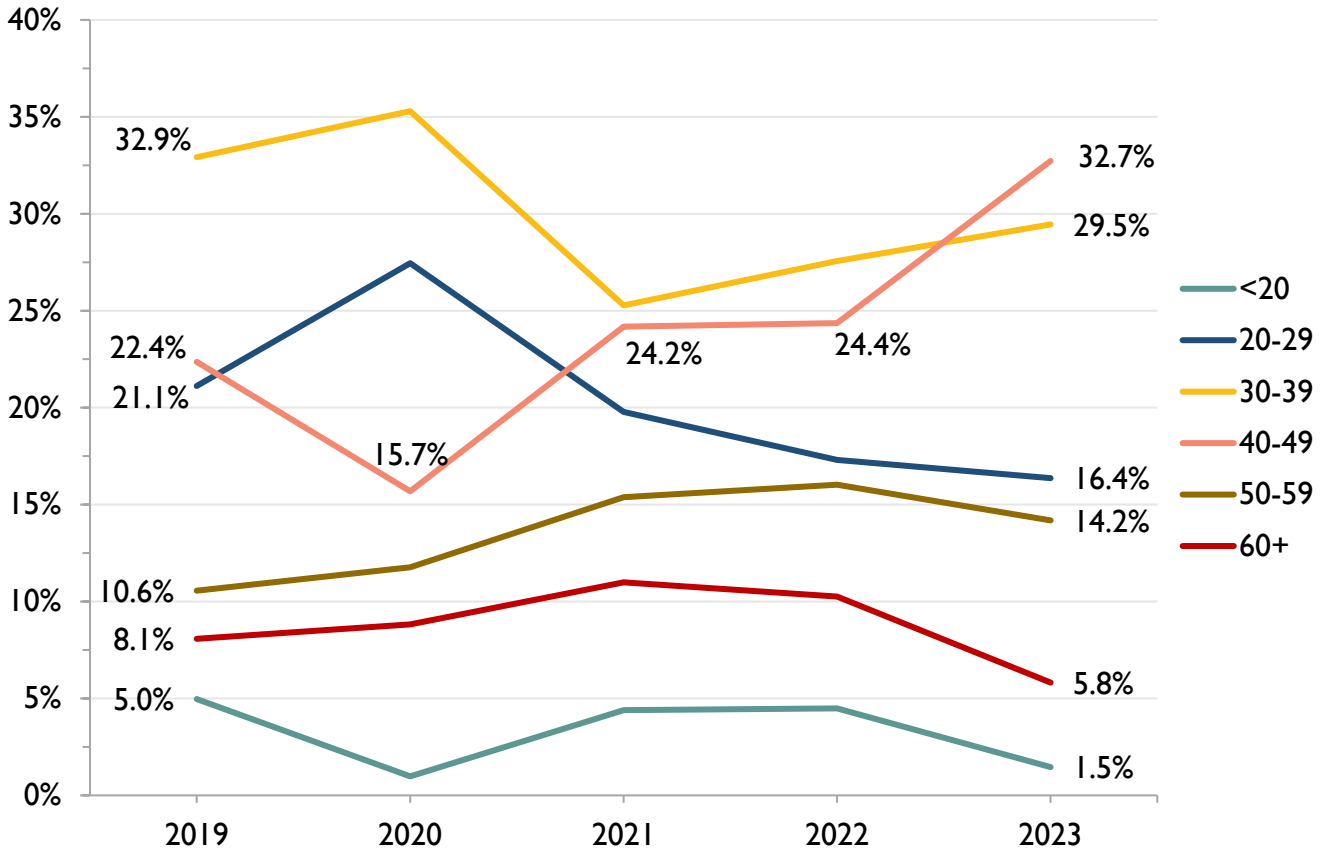
Snapshot

Between 2019 and 2023, the proportion of first-time HIV diagnoses in males was highest among those aged 30-39 followed by those aged 20-29 and 40-49. In 2023, the proportion of first-time HIV diagnoses in males 40-49 increased to 22.8% while decreasing for 30-39, 20-29, and 60 and older age groups. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by age group among males did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by age group for males was 8 for age under 20, 174 for age 20-29, 216 for age 30-39, 150 for age 40-49, 79 for age 50-59, and 30 for age 60+. Following the HIV Look Back project, the numbers for each age group were 8, 144, 171, 123, 70 and 26, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Diagnoses with sex and age not reported were excluded (less than 1%).

Figure 3.3 Proportion of first-time HIV diagnoses by age group, females, Ontario, 2019 and 2023



Snapshot

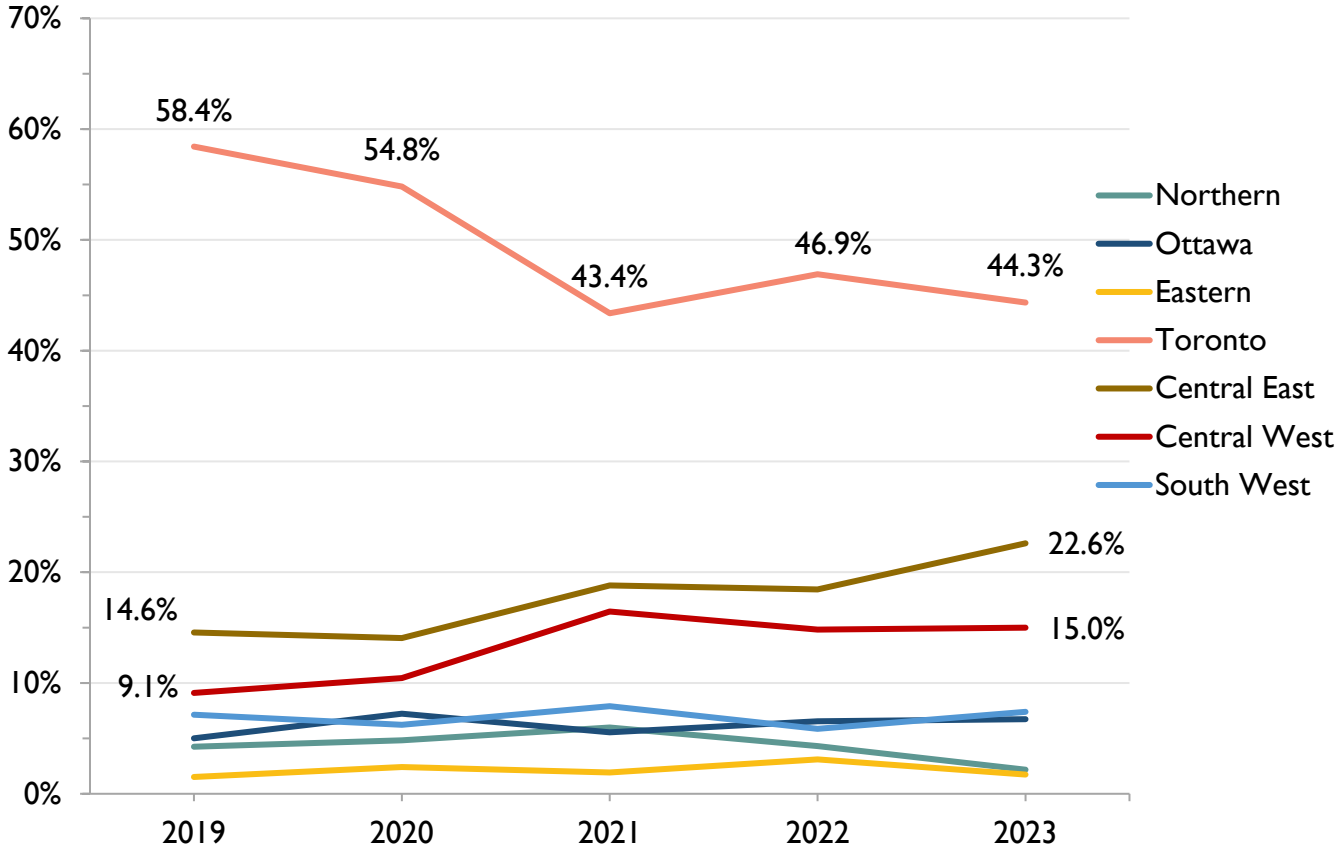
Between 2019 and 2023, the proportion of first-time HIV diagnoses in females was highest in the 20-29, 30-39, and 40-49 age groups. First-time HIV diagnoses in females in the 40-49 age group have been steadily increasing since 2020, surpassing the 20-29 age group in 2021 and the 30-39 age group in 2023. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by age group among females did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by age group for females was 4 for aged under 20, 45 for age 20-29, 82 for age 30-39, 90 for age 40-49, 39 for age 50-59, and 16 for age 60+. Following the HIV Look Back project, the numbers for each age group were 3, 34, 52, 56, 23, and 10, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Diagnoses with age not reported were excluded (less than 1%).

4. By region

Figure 4.1 Proportion of first-time HIV diagnoses by region, Ontario, 2019 to 2023



Snapshot

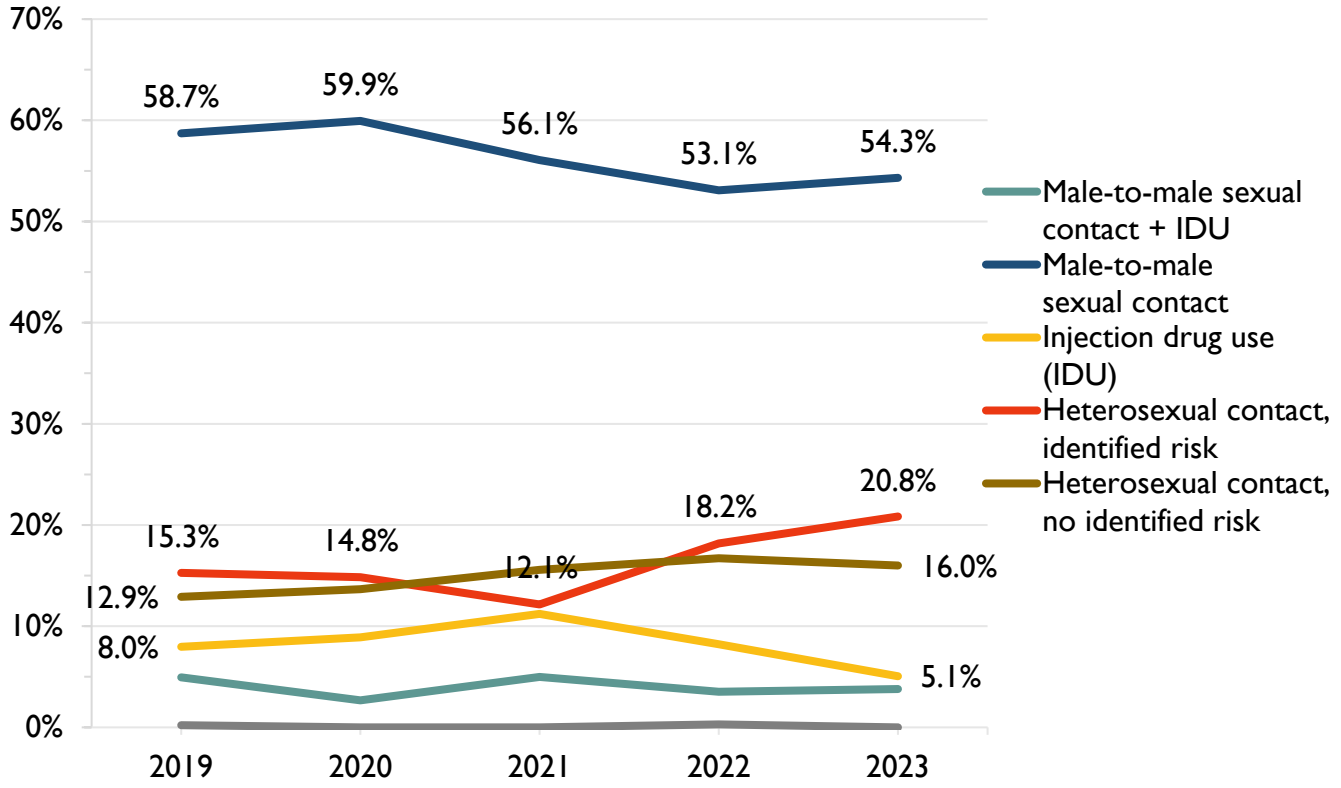
Between 2019 and 2023, Toronto accounted for the highest proportion of first-time HIV diagnoses in the province, followed by Central East and Central West regions. The proportion of first-time diagnoses has generally decreased since 2019 for Toronto, while it has increased for Central East and Central West. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by region did not change with additional data.

In 2023, before the HIV Look Back project, the numbers of first-time HIV diagnoses by region were 20 in Northern, 62 in Ottawa, 16 in Eastern, 408 in Toronto, 208 in Central East, 138 in Central West, and 68 in South West region. Following the HIV Look Back project, the numbers for each region were 20, 41, 16, 317, 152, 104, and 55, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Health regions are groupings of Public Health Units. Diagnoses were assigned to a health region based on their address of residence or, if unreported, the address of the ordering provider.

5. By HIV exposure category

Figure 5.1 Proportion of first-time HIV diagnoses by HIV exposure category (where reported), overall, Ontario, 2019 to 2023



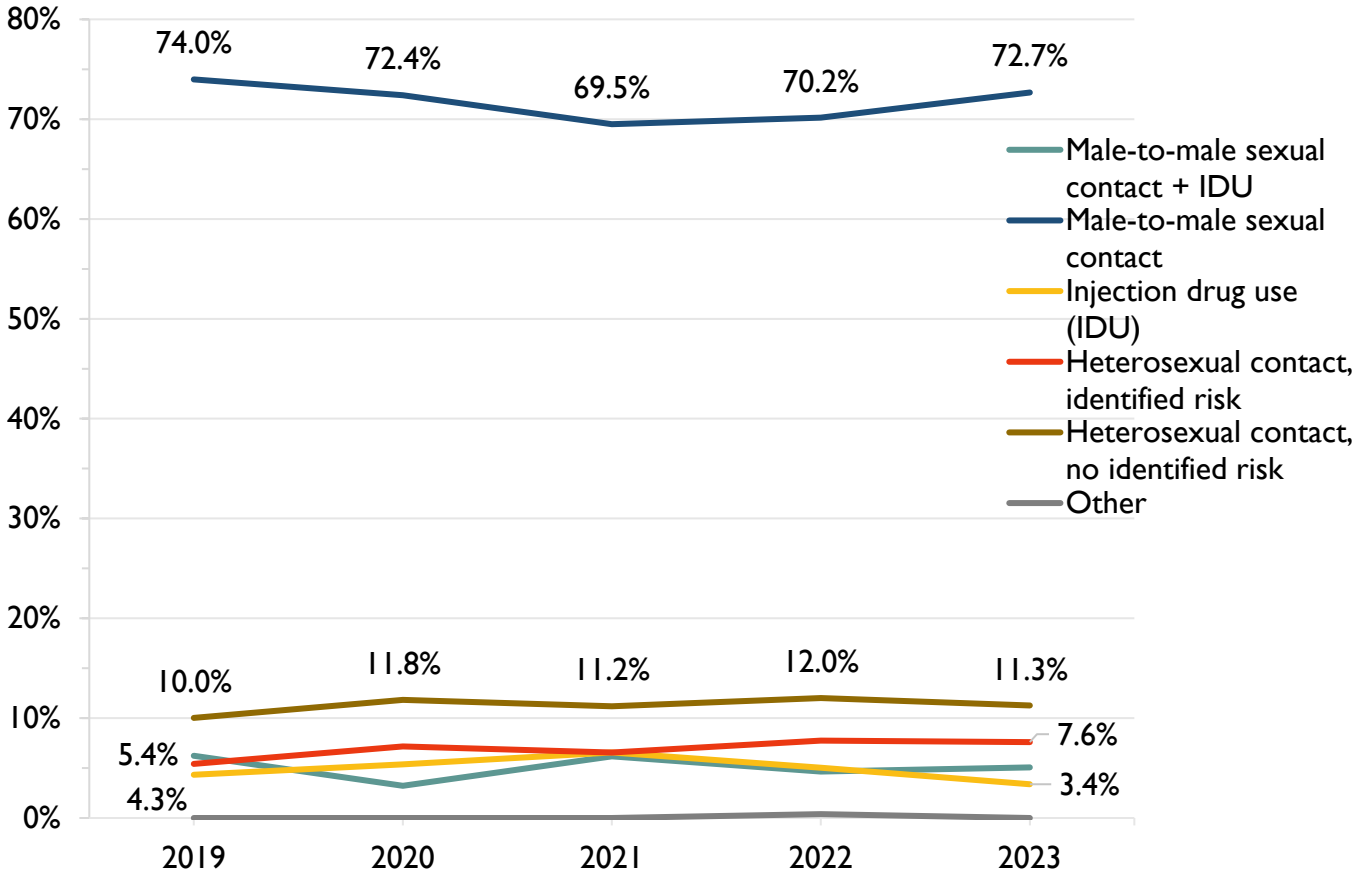
Snapshot

Between 2019 and 2023, the largest proportion of first-time HIV diagnoses were among those reporting 'male-to-male sexual contact'; however, this proportion has decreased over time. The proportion of first-time HIV diagnoses among those reporting 'heterosexual contact, identified risk' increased since 2021, surpassing 'heterosexual contact, no identified risk'. The proportion of first-time HIV diagnoses among those reporting 'injection drug use (IDU)' has steadily declined from a high of 11.2% in 2021 to a low of 5.1% in 2023. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by exposure category (where reported) did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by exposure category (where reported) were 18 for 'Male-to-male sexual contact + IDU', 258 for 'male-to-male sexual contact', 24 for 'injection drug use (IDU)', 99 for 'heterosexual contact, identified risk', 76 for 'heterosexual contact, no identified risk', and 463 for 'no risk reported/unknown'. Following the HIV Look Back project, the numbers for each exposure category were 20, 317, 31 131, 99, and 125, respectively.

Notes: Data provided by Public Health Ontario Laboratory. First-time diagnosis where HIV exposure category was not reported were excluded (average of 38.7% of diagnoese per year between 2019 and 2023). In 2023, 463 (49.4%) of the 938 people with first-time HIV diagnoses did not report an HIV exposure category (i.e. no risk reported / unknown) and 475 reported an HIV exposure category. After the HIV Look Back project, with additional information on HIV risk factors, 125 (17.3%) of the 723 people with first-time HIV diagnoses did not report an HIV exposure category and 598 reported an HIV exposure category. The "heterosexual contact, identified risk" category includes diagnoses where sex with a person of the opposite sex/gender is reported and either the person's country of birth is reported as an HIV-endemic country, or the person's sex partner is reported to be at least one of: HIV-positive; user of injection drugs; born in an HIV-endemic country; a bisexual male. For more details on how HIV exposure category is determined, please refer to the Technical Notes.

Figure 5.2 Proportion of first-time HIV diagnoses by HIV exposure category (where reported), males, Ontario, 2019 to 2023



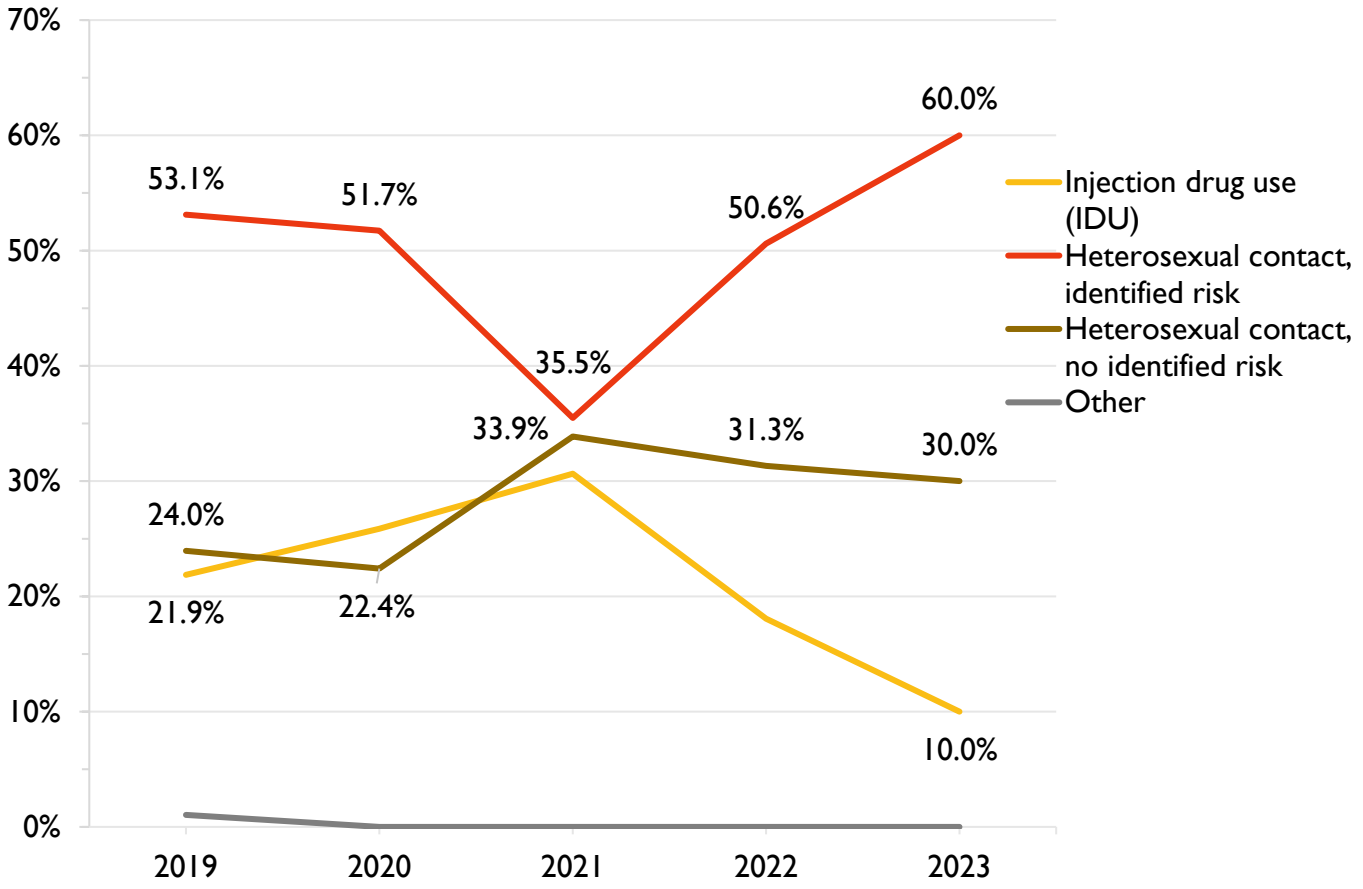
Snapshot

Between 2019 and 2023, among males with a reported HIV exposure category, the greatest proportion of first-time HIV diagnoses were among those reporting 'male-to-male sexual contact'. The proportions among all exposure categories have been fairly stable over this time period. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by exposure category (where reported) among males did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by exposure category (where reported) among males were 18 for 'Male-to-male sexual contact + IDU', 258 for 'male-to-male sexual contact', 12 for 'injection drug use (IDU)', 27 for 'heterosexual contact, identified risk', 40 for 'heterosexual contact, no identified risk', and 303 for 'no risk reported/unknown'. Following the HIV Look Back project, the numbers for each exposure category were 20, 317, 19, 47, 64, and 79, respectively.

Notes: Data provided by Public Health Ontario Laboratory. In 2023, 303 (46.0%) of the 658 males with first-time HIV diagnoses did not report HIV exposure category (i.e. no risk reported / unknown) and 355 reported an HIV exposure category. After the HIV Look Back project, with additional information on HIV risk factors, 79 (14.5%) of the 543 males with first-time HIV diagnoses did not report HIV exposure category and 464 reported an HIV exposure category.The "heterosexual contact, identified risk" category includes diagnoses where sex with a person of the opposite sex/gender is reported and either the person's country of birth is reported as an HIV-endemic country, or the person's sex partner is reported to be at least one of: HIV-positive; user of injection drugs; born in an HIV-endemic country; a bisexual male.

Figure 5.3 Proportion of first-time HIV diagnoses by HIV exposure category (where reported), females, Ontario, 2019 to 2023



Snapshot

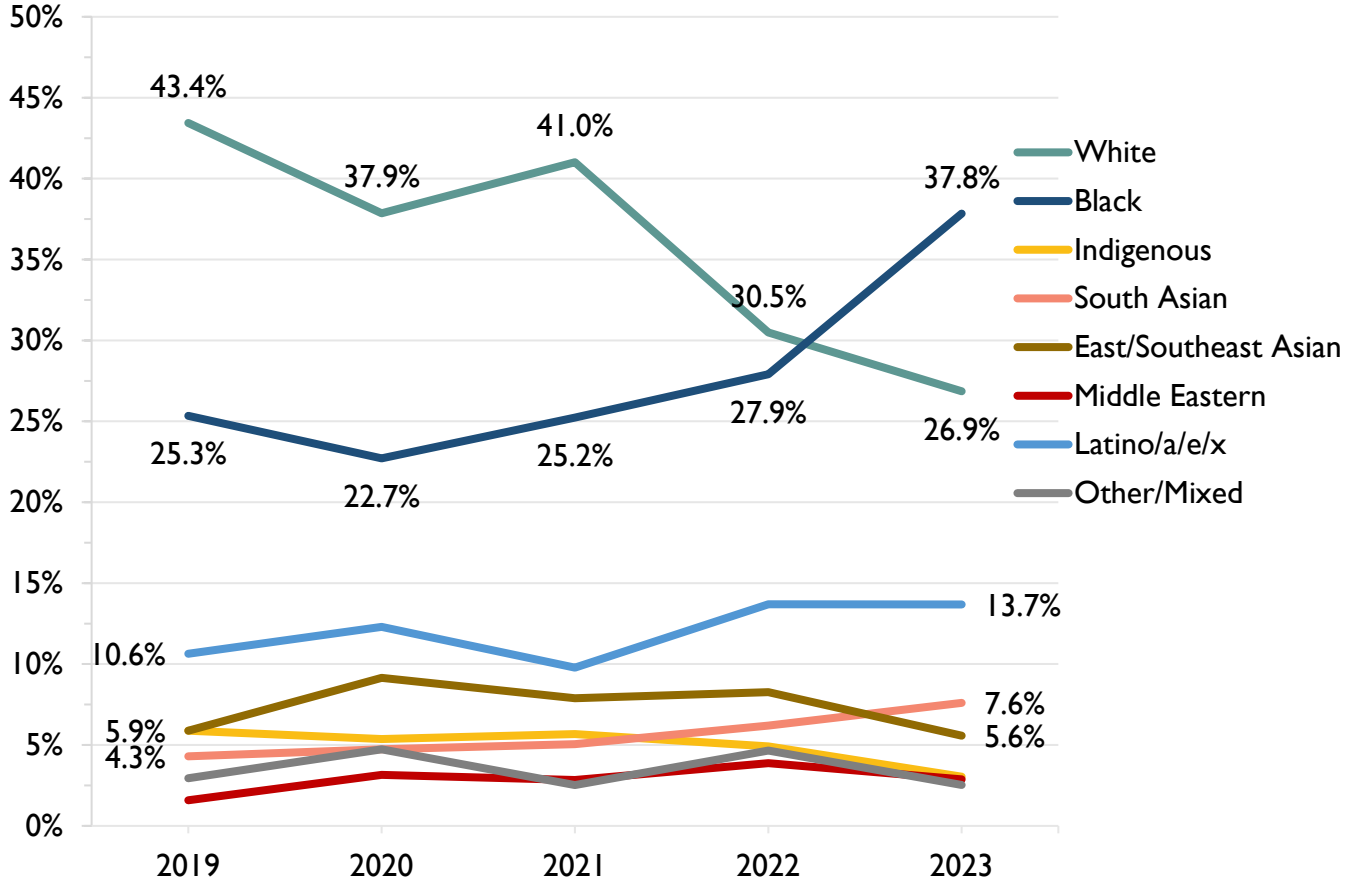
Between 2019 and 2023, among females with a reported HIV exposure category, the greatest proportion of first-time HIV diagnoses were among those reporting 'heterosexual contact, identified risk'. There has been an increase in the proportion of first-time HIV diagnoses reporting 'heterosexual contact with no identified risk' and a decrease among those reporting 'injection drug use' since 2021. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by exposure category (where reported) among females did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time diagnoses by exposure category (where reported) among females were 12 for 'injection drug use (IDU)', 72 for 'heterosexual contact, identified risk', 36 for 'heterosexual contact, no identified risk', and 156 for 'no risk reported/unknown'. Following the HIV Look Back project, the numbers for each exposure category were 12, 84, 38, and 44, respectively.

Notes: Data provided by Public Health Ontario Laboratory. In 2023, 156 (56.5%) of the 276 females with first-time HIV diagnoses did not report HIV exposure category (i.e. no risk reported / unknown) and 120 reported an HIV exposure category. After the HIV Look Back project, with additional information on HIV risk factors, 44 (14.5%) of the 178 females with first-time HIV diagnoses did not report an HIV exposure category. The "heterosexual contact, identified risk" category includes diagnoses where sex with a person of the opposite sex/gender is reported and either the person's country of birth is reported as an HIV-endemic country, or the person's sex partner is reported to be at least one of: HIV-positive; user of injection drugs; born in an HIV-endemic country; a bisexual male.

6. By race/ethnicity

Figure 6.1 Proportion of first-time HIV diagnoses by race/ethnicity (where reported), overall, Ontario, 2019 to 2023



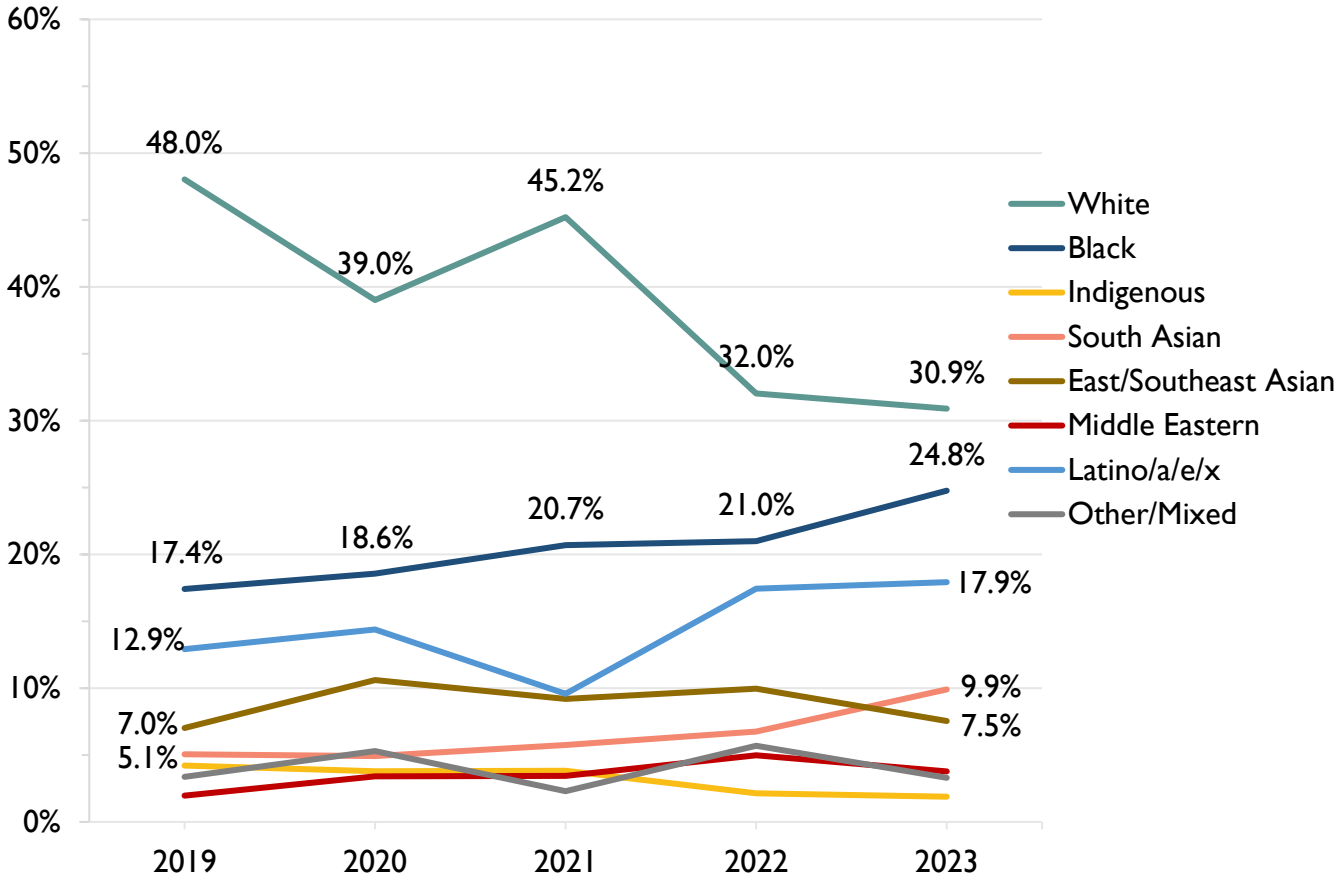
Snapshot

In 2023, people who reported their race/ethnicity category as Black accounted for the largest proportion (37.8%) of first-time HIV diagnoses for the first time in Ontario. Between 2019 and 2023 the proportion of first-time HIV diagnoses slightly increased in people who reported their race/ethnicity category Latino/a/e/x (10.6% to 13.7%) and South Asian (5.9% to 7.6%). A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by race/ethnicity category (where reported) did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by race/ethnicity category were 159 for White, 224 for Black, 18 for Indigenous, 45 for South Asian, 33 for East/Southeast Asian, 17 for Middle Eastern, 81 for Latino/a/e/x, 15 for Other/mixed, and 346 not reported/unknown. Following the HIV Look Back project, the numbers for each race/ethnicity category were 148, 197, 17, 38, 33, 16, 79, 14 and 181, respectively.

Notes: Data provided by Public Health Ontario Laboratory. Diagnoses where race/ethnicity was not reported were excluded (average of 35.1% of diagnoses per year between 2019 and 2023).

Figure 6.2 Proportion of first-time HIV diagnoses by race/ethnicity (where reported), males, Ontario, 2019 to 2023



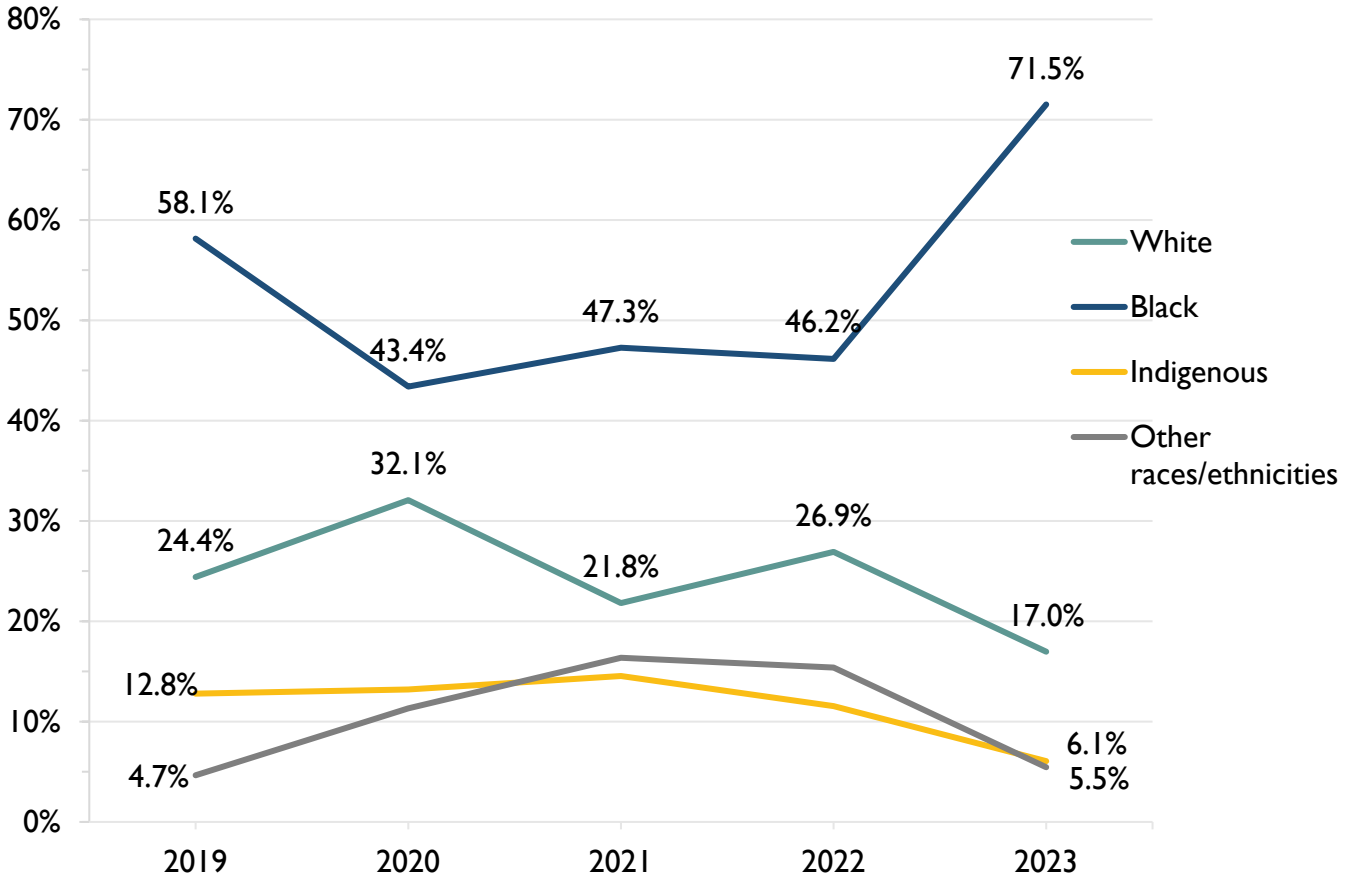
Snapshot

In 2023, males that reported their race/ethnicity as White accounted for the largest proportion of first-time HIV diagnoses, followed by those who report their race/ethnicity as Black, and Latino/e/x. Between 2019 and 2023, white males have accounted for the highest proportion of first-time diagnoses among males; however, a decrease in proportion has been seen since 2021. Black and Latino/e/x males had an increase in proportions of first-time HIV diagnoses over the same time period. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by race/ethnicity category (where reported) among males did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by race/ethnicity category (where reported) among males were 131 for White, 106 for Black, 8 for Indigenous, 42 for South Asian, 32 for East/Southeast Asian, 16 for Middle Eastern, 76 for Latino/a/e/x, 14 for Other/mixed, and 233 for not reported/unknown. Following the HIV Look Back project, the numbers for each race/ethnicity category were 125, 102, 8, 35, 32, 15, 74, 12, and 140, respectively.

Notes: Data provided by Public Health Ontario Laboratory.

Figure 6.3 Proportion of first-time HIV diagnoses by race/ethnicity (where reported), females, Ontario, 2019 to 2023



Snapshot

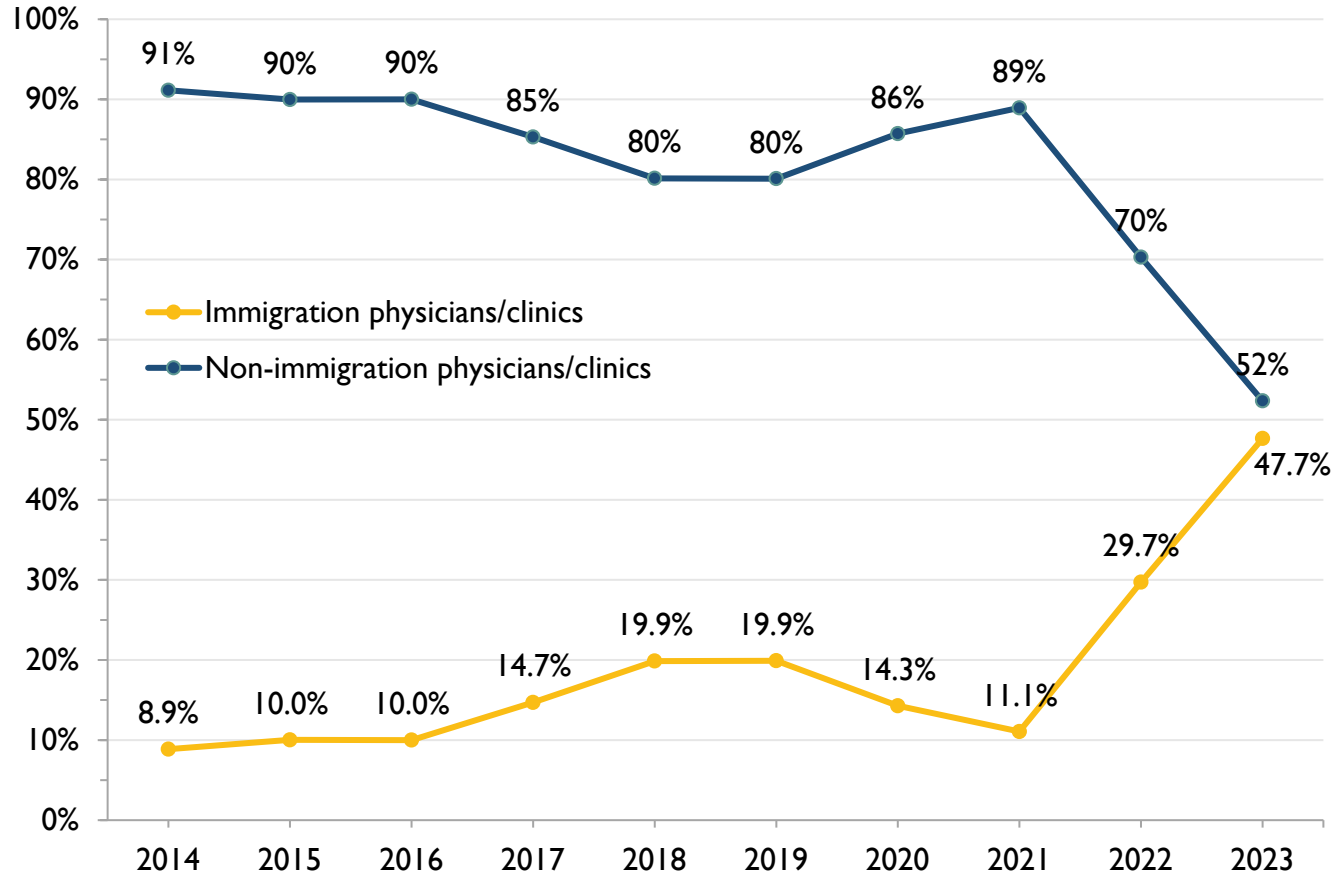
Between 2019 and 2023, females that reported race/ethnicity as Black accounted for the largest proportion of first-time HIV diagnoses. The proportion of females reporting race/ethnicity as Black increased substantially in 2023 while the proportion reporting all other race/ethnicities decreased. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by race/ethnicity category (where reported) among females did not change with additional data.

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by race/ethnicity category (where reported) among females was 28 for White, 118 for Black, 10 for Indigenous, 9 for Other races/ethnicities, and 111 for not reported/unknown. Following the HIV Look Back project, the numbers by race/ethnicity category (where reported) were 23, 95, 9, 10, and 41, respectively.

Notes: Data provided by Public Health Ontario Laboratory.

7. By immigration and non-immigration submitters

Figure 7.1 Proportion of first-time HIV diagnoses by immigration physicians/clinics and non-immigration physicians/clinics, Ontario, 2014 to 2023



Snapshot

Between 2014 and 2021, the majority (> 80%) of first-time HIV diagnoses were submitted by non-immigration physicians/clinicians. Since 2021, the proportion of first-time HIV diagnoses tested by immigration physicians/clinics has been increasing and was 47.7% in 2023. A key finding of the HIV Look Back project was that the proportions of first-time HIV diagnoses in 2023 by submitter type did change with additional data (38.8% for immigration physicians/clinics and 61.7% for non-immigration physicians/clinics).

In 2023, before the HIV Look Back project, the number of first-time HIV diagnoses by submitter type was 447 for immigration physicians/clinicians and 491 for non-immigration physicians/clinicians. Following the HIV Look Back project, the numbers by submitter type were 277 and 446, respectively.

Notes: Data provided by Public Health Ontario Laboratory. An immigration physician/clinic is defined as a panel physician per Immigration, Refugees and Citizenship Canada (IRCC), submitters whose name contains key words indicating panel or immigration clinics, and providers who cumulatively submitted at least 200 HIV tests with VISA/immigration as a reason for testing as of 2019 and onwards.

Technical notes

Data collection and methods

The data used for this report are collected from the following sources:

- **PHO's Laboratory Information Management System (LIMS).** PHO currently uses LabWare as their LIMS and previously used Labyrinth for HIV. Almost all HIV diagnostic testing and HIV viral load testing in Ontario is performed through PHO. The LIMS includes testing results and information that is collected through test requisition for all HIV diagnostic tests since 1985 and HIV viral load tests since 1996.
    - **HIV test requisition**. When someone orders an HIV test in Ontario, the ordering health care provider fills out an HIV test requisition form that is sent to PHO with a blood sample. The HIV test requisition collects information including the person's sex, age, HIV risk factors, and since 2018, the following characteristics: race/ethnicity, country of birth, HIV test history and transgender identity.
    - **Viral load test requisition**. People in HIV care in Ontario receive regular HIV viral load testing. The viral load test requisition collects demographic information, most recent CD4 count and whether the person is on treatment at the time of testing.
- **Laboratory Enhancement Program (LEP) database**. Since October 1999, if a person tests positive for HIV for the first time in Ontario, PHO sends the LEP form to the provider who ordered the positive test. The LEP collects information included on the original test requisition (e.g. risk factors), as well as additional information (e.g. previous HIV test history).

The PHO HIV Datamart is an integrated data platform that combines HIV diagnostic and viral load testing data from LIMS and data from the LEP database. The HIV Datamart is updated on an annual basis. Within the HIV Datamart, diagnostic and viral load test records are linked together for the same person by their first name, last name, date of birth and health card number using deterministic and probabilistic matching as well as manual review. It is not possible to link anonymous and coded HIV-positive diagnostic tests.

How first-time HIV diagnoses are identified

First-time HIV diagnoses are people who have no previous evidence of HIV. That is, they are learning of their HIV diagnosis for the first time. First-time HIV diagnoses exclude anyone with a previous positive diagnostic test in another province or country and who retested in Ontario, as indicated on the HIV test requisition or the LEP form. It also uses linked viral load testing history in Ontario as evidence of being in care for HIV and so excludes 1) anyone with a history of viral load testing in Ontario of more than 30 days before a first diagnostic positive test and 2) anyone with viral load testing in Ontario within 30 days (including same day) with a viral load <200 copies/ml. People who had a viral load testing before their first reported HIV positive test are counted as previous evidence of HIV in the year of their first viral load test.

Data limitations

- Information about demographics, previous HIV test history, and HIV exposure category information are only available when the HIV test requisition and LEP forms are filled out by the ordering health care provider. In 2023, approximately 35% of positive HIV tests did not have an LEP form returned. In 2023, after combining information from both the HIV test requisition and LEP form (before the HIV Look Back Project), HIV exposure category information is missing for approximately 49.4% of first-time HIV diagnoses, race/ethnicity information missing for 36.9% of diagnoses, and previous HIV test history is missing for 49.7%. As a result of missingness for HIV test history, the overall number of first-time HIV diagnoses in Ontario is overestimated.

- Data reported for 2020 to 2023 should be interpreted with caution. As HIV testing and health services were likely impacted by the COVID-19 pandemic response and subsequent recovery period.

- It is unknown whether some exposure categories or populations defined by their race/ethnicity may be more or less likely to be missing information, which could potentially bias the proportions. There may also be bias due to varied practices among providers for filling out the HIV test requisition and/or LEP forms and the lack of culturally safe care. For example, some providers may ask about ethnicity or risk factors while others may not. The time it takes for LEP forms to be returned to PHO can result in reporting delays. A key conclusion of the HIV Look Back project results was missingness in the PHO HIV Datamart for 2023 is random (with the exception of sex). These findings provide reassurance in interpretation of 2023 data presented earlier in this report for first-time HIV diagnoses in 2023 when using proportions. Findings from the HIV Look Back project cannot be extrapolated to missing data in other years.

- If a person has one (or more) anonymous or coded HIV tests prior to a nominal test and do not indicate a previous positive diagnosis on the LEP form, they may be counted as first-time HIV diagnosis more than once because we are unable to link the diagnoses.

- Data on transgender people has not been collected in a consistent manner over time. For this reason, transgender people are not included in any of the HIV diagnosis counts or rates when stratified by sex. As data collection becomes more consistent with capturing transgender identity, future reports will incorporate this information.

- In 2023, approximately 13% of first-time HIV diagnoses are missing information on address of residence and were assigned a PHU based on provider address.

- The continued refinement of surveillance data and patient linkage means that historical numbers will be updated in OHESI reports. Therefore, previous releases of surveillance numbers no longer represent the most accurate information, and the most recent report should always be cited.

Public Health Ontario HIV Look Back Project for first-time HIV diagnoses in 2023

Not all first-time HIV diagnoses in Ontario have complete information on key characteristics submitted by ordering providers on the HIV test requisition or LEP forms. This missing data may affect our understanding of HIV trends and identifying populations most affected by HIV in Ontario. The HIV Look Back Project was launched to improve data completeness for key variables in the PHO HIV Datamart, specifically for first-time HIV diagnoses in 2023. The HIV Look Back project was led by PHO, in collaboration with the Ontario HIV Treatment Network (OHTN), the Ministry of Health's HIV and Hepatitis C Programs (HHP) Unit and the Office of the Chief Medical Officer of Health (OCMOH), and thirteen local Public Health Units (PHUs) in Ontario.

The objective of the HIV Look Back project was to improve understanding of first-time HIV diagnoses in 2023 by decreasing missingness for select key characteristics of interest. Additionally, findings can inform recommendations for improvements to support data collection and completeness through PHO's HIV test requisition and/or LEP form in the future.

Key characteristics of interest were:

- Age
- Sex
- Previous HIV test history (test date, test result)
- Country of birth
- Year of arrival in Canada (for people born outside of Canada)
- Risk factor
- Exposure category
- Race/ethnicity

PHUs with 10 or more first-time HIV diagnoses between January 1 and December 31, 2023 and with an increase in first-time diagnoses between 2022 and 2023 were invited to participate in the HIV Look Back Project (thirteen total). The thirteen participating PHUs were Durham Region Health Department, Halton Region Health Department, Hamilton Public Health Services, Middlesex-London Health Unit, Niagara Region Public Health Department, Northwestern Health Unit, Ottawa Public Health, Peel Public Health, Simcoe Muskoka District Health Unit, Toronto Public Health, Region of Waterloo Public Health, Windsor-Essex County Health Unit, and York Region Public Health Services.

PHO provided each participating PHU with a line list of all first-time HIV diagnoses in their jurisdiction that had missing data for at least one of the key characteristics (a total of 656 records). PHUs supplemented missing data by conducting a retrospective review which may have included reviewing information in iPHIS, reviewing paper or electronic chart notes, and/or reviewing clinical data in available electronic systems.

PHUs conducted their retrospective review in 2024, from October 21 – November 29, and submitted their individual line lists using secure methods to PHO. PHO created a stand-alone dataset by supplementing the PHO HIV Datamart with the newly collected data from the thirteen PHU line lists.

The differences of characteristics of interest between before and after the HIV Look Back Project were examined using Pearson's chi-square tests. Values of $p < 0.05$ (two-tailed) were considered statistically significant.

Definitions

HIV test requisition

A form filled out by a health care provider for each HIV diagnostic test. The HIV diagnostic test requisition collects information on the age, sex and HIV risk factors of the person getting tested. As of 2018, the HIV test requisition also collects information on race/ethnicity, country of birth, transgender identity and PrEP status.

HIV-positive diagnostic test

A blood sample that has initially tested reactive on a screening test (either at the laboratory or on a point-of-care / rapid test), and has been confirmed as HIV-positive by a confirmatory test, HIV-positive diagnostic tests in the HIV Datamart include all people who test HIV-positive for the first time in Ontario (never tested HIV-positive out-of-province), as well as people who were diagnosed HIV-positive outside of Ontario and were re-tested when they moved to Ontario ('out-of-province' diagnoses).

Laboratory Enhancement Program (LEP)

When a person receives a positive HIV test in Ontario, a LEP form is sent to the health care provider who ordered the test to collect further information. This includes information collected on the HIV test requisition (e.g., demographics and risk factors), as well as additional information such as information on previous testing history and treatment history. Since 2009, the LEP form has collected information on race/ethnicity and country of birth.

HIV Datamart

The PHO HIV Datamart is an integrated data platform that combines HIV diagnostic and viral load testing data from LIMS and data from the LEP database. The HIV Datamart is updated on an annual basis. Within the HIV Datamart, diagnostic and viral load test records are linked together for the same person by their first name, last name, date of birth and health card number using deterministic and probabilistic matching as well as manual review. It is not possible to link anonymous and coded HIV-positive diagnostic tests.

HIV risk factor

HIV risk factor(s) can be reported for a person on the HIV test requisition and/or the LEP form and relates to their potential route(s) of HIV acquisition. HIV risk factors include: sexual contact with women; sexual contact with men; injection drug use; having been born in an HIV-endemic country (see HIV endemic countries below); being a child of HIV-positive mother; sex with a person who was known to be HIV-positive; sex with a person who was known to be using injection drugs; sex with a person who was known to be born in an HIV-endemic country (includes countries in sub-Saharan Africa and the Caribbean); and sex with a person who was known to be a bisexual male (for females).

HIV exposure category

HIV risk factors are used to assign a person a single HIV exposure category to represent their most likely means of HIV acquisition. An exposure category is assigned based on reported "HIV risk factors" (defined below). Exposure categories are mutually exclusive, which means a person can only be assigned to one category. When more than one risk factor is reported, a hierarchy is used to assign them to a single exposure category. This hierarchy is based on the level of HIV risk associated with different exposure categories. HIV exposure categories utilized in this report, ranked from highest risk to lowest risk are:

- **Male-to-male sexual contact + injection drug use (IDU):** Being male and indicating sex with men and injection drug use
- **Male-to-male sexual contact**: Being male and indicating sex with men
- **Injection drug use (IDU):** Indicating injection drug use
- **Heterosexual contact with identified risk**: Being male or female and indicating sex with a person of the opposite sex/gender who is either HIV-positive, uses injection drugs, born in an HIV-endemic country (as defined by PHAC in 2007), or is a bisexual male.
- **Heterosexual contact with no identified risk:** Being male or female and indicating sex with a person of the opposite sex/gender who has no identified risk.
- **No risk reported/unknown:** Not having any exposure category listed above.

Public Health Unit (PHU)

A health agency that provides health promotion and disease prevention programs to a defined geographical boundary. At the time of drafting this report in 2023 there were 34 PHUs in Ontario. People who receive an HIV diagnostic test are assigned to a public health unit (PHU) based on the residence listed on their HIV test requisition or, if not reported, the address of the ordering provider.

Health regions

OHESI groups PHUs in Ontario in seven health regions:

- **Toronto:** Toronto
- **Ottawa**: Ottawa
- **Northern:** Algoma, North Bay Parry Sound District, Northwestern, Porcupine, Sudbury & District, Thunder Bay District, Timiskaming
- **Eastern**: Eastern Ontario, Hastings and Prince Edward Counties, Kingston, Frontenac, Lennox & Addington, Leeds, Grenville and Lanark District, Renfrew County and District
- **Central East**: Durham, Haliburton, Kawartha, Pine Ridge District, Peel, Peterborough, Simcoe Muskoka District, York Region
- **Central West**: Brant County, Haldimand-Norfolk, Halton Region, Hamilton, Niagara Region, Region of Waterloo, Wellington-Dufferin-Guelph
- **South West**, Grey Bruce, Huron Perth, Chatham-Kent, Lambton Middlesex-London, Southwestern, Windsor-Essex County

Immigration physician/clinic

An immigration physician/clinic is defined as a panel physician per Immigration, Refugees and Citizenship Canada (IRCC), submitters whose name contains key words indicating panel or immigration clinics, and providers who cumulatively submitted at least 200 HIV tests with VISA/immigration as a reason for testing as of 2019 and onwards.

Integrated Public Health Information System (iPHIS)

The iPHIS is an electronic, web-based system used by public health units (PHUs) for case-management and reporting to the Ontario Ministry of Health on diseases of public health significance, including HIV. Information collected by PHUs during public health follow up of HIV cases are entered into iPHIS. The iPHIS is the main source of data used by PHUs and PHO to produce surveillance reports on other diseases of public health significance. iPHIS data are not routinely used in OHESI reporting, however,

during the HIV Look Back Project, PHUs may have reviewed data in iPHIS to complete missing data for the line lists.