HIV testing in Ontario, 2018

About OHESI

The Ontario HIV Epidemiology and Surveillance Initiative (OHESI) is a collaboration involving the AIDS and HepC Programs, Ministry of health of the Ontario Ministry of Health (MOH), Public Health Ontario (PHO), the Public Health Agency of Canada (PHAC), and the Ontario HIV Treatment Network (OHTN) Applied Epidemiology Unit (AEU). 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 program initiatives in the provincial "HIV/AIDS Strategy to 2026: Focusing Our Efforts - Changing the Course of the HIV Prevention, Engagement and Care Cascade in Ontario."

The success of the partnership would not be possible without the strategic, technical and resource contributions of all the partners. OHESI also receives ongoing advice from a community advisory committee: people working in the community-based HIV service sector and HIV clinics whose input helps ensure that OHESI reports and other products support collective efforts and impact in neighborhoods, communities and organizations across the province.

Background

In 2013-2014, the OHTN set up the OHTN Applied Epidemiology Unit (AEU), under a funding agreement with the MOH, to support ongoing production of epidemiological information to support Ontario's response to HIV.

In 2014-2015, the OHTN AEU initiated the Ontario HIV Epidemiology and Surveillance Initiative (OHESI) and continues to provide administrative and technical support for the partnership.

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Summary

This report presents trends in HIV tests in Ontario from 2009 to 2018 with a focus on HIV tests in 2018. While the number of HIV tests was relatively stable from 2009 to 2013, it increased 44% from 441,683 in 2013 to 637,780 in 2018 (does not include HIV tests part of the HIV Prenatal Testing Program)[1]. Over that same period – 2013 to 2018 – the HIV testing rate increased 36% from 32.7 to 44.5 per 1,000 people. Over the past 10 years, as the number of tests (test volume) increased, the HIV test positivity rate (proportion of tests that were HIV-positive) decreased from 0.19% to 0.12%.

Excluding pre-natal tests, more males than females were tested over the past 10 years. In 2018, the HIV testing rate per 1,000 males was 43.7 compared to 42.6 per 1000 females.

Between 2014 and 2018, the HIV testing rate per 1,000 people increased across all age groups and was consistently highest among 25 to 29 year olds. In 2018, the HIV testing rate was higher among younger females and older males while the HIV test positivity rate was highest in the 55-59 age category for both males and females.

Over the last decade, the vast majority of HIV tests were nominal tests, and the proportion of HIV tests that were nominal has increased since 2013. The number of coded and anonymous tests have decreased since their peaks in 2011 and 2014, respectively. While the HIV test positivity rate has decreased over time for all test types, it was consistently at least four times higher among anonymous testers compared to those who tested nominally. Between 2014 and 2018, the number of point-of-care (POC) tests decreased while the HIV test positivity rate from POC testing increased. This trend coincides with a change in policy where POC testing sites were asked to focus on testing priority populations.

Between 2014 to 2018, the vast majority of HIV tests performed each year were among people reporting heterosexual sex with partners who had no identified HIV risk factors. However, the proportion of HIV tests among this group has decreased over time. Between 2014 and 2018, a growing proportion of males who were testing were men who have sex with men (MSM). In 2018, among males, the HIV test positivity rate was highest in men who have sex with men and who also inject drugs (MSM-PWID). Among females, it was highest in women from countries where HIV is endemic.

In 2018, Toronto had both the highest HIV testing rate per 1,000 people and the highest HIV test positivity rate among the seven defined health regions. Ottawa had the second highest HIV testing rate, while the Southwest region had the second highest HIV test positivity rate.

In 2018, 137,564 pregnant people received a prenatal HIV test in Ontario. We are unable to report the estimated proportion of pregnant people who received a prenatal test in 2018 due to an unstable reported number of pregnant people in 2018. However, we can report that in 2017, an estimated 96.2% of pregnant people received a prenatal HIV test.

For more information on HIV surveillance in Ontario, including HIV diagnoses and the HIV care cascade, please visit www.OHESI.ca.

[1] Does not include HIV tests with previous evidence of HIV; that is, it excludes people who already knew their HIV status at the time of their first positive nominal diagnostic test in Ontario. Please refer to section 4 of the appendix for further explanations of HIV tests with previous evidence of HIV.

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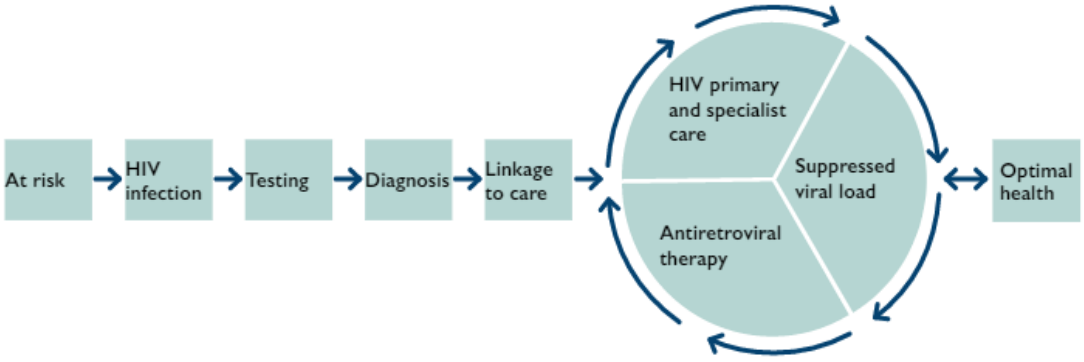
Introduction

Why look at patterns in HIV testing?

- HIV testing is an early step in the HIV prevention, engagement and care cascade (Figure i) and critical for people living with HIV to know their status and be linked to care. HIV testing is also an important gateway to services for people who are HIV-negative.
- Testing is closely tied to the first UNAIDS 90-90-90 target of 90% of all people living with HIV knowing their HIV status (see box below). As stated by UNAIDS, whereas previous AIDS targets sought to achieve incremental progress in the response, the aim in the post-2015 era is nothing less than the end of the AIDS epidemic by 2030.
- Trends in HIV testing can be useful for measuring the success of HIV testing initiatives and for interpreting trends in new HIV diagnoses.
- HIV test positivity rates can provide insight into which sub-populations have a higher level of HIV risk.
- This report includes information on the number of HIV tests in Ontario. It does NOT include information on the number of unique individuals tested. This means trends may reflect changes in both the number of times an individual is tested in a year as well as the total number of unique people who are tested.

Figure i. The HIV prevention, engagement, and care cascade



UNAIDS 90-90-90 Targets

- 90% of all people living with HIV will know their HIV status.
- 90% of all people diagnosed with HIV will receive ART.
- 90% of all people receiving ART will be virally suppressed.

If all three 90-90-90 targets are met, 81% of **all** people living with HIV would be on ART and 73% of **all** people living with HIV would be virally suppressed.

What's new in this report?

- For the first time, counts of HIV tests and calculations of test positivity rates exclude positive HIV tests from individuals with Previous evidence of HIV (PEH). We report on HIV tests from

individuals without previous evidence of HIV to better understand local transmission in Ontario and, therefore, what populations might be at most risk and benefit most from prevention activities.

Key Findings

1. Overall

- In 2018, 637,780 HIV tests were conducted in Ontario – equivalent to an HIV testing rate of 44.5 tests per 1,000 people. Of note, negative prenatal HIV tests were analyzed separately in this report.
- The HIV test positivity rate in 2018 was 0.12%: for every 10,000 tests, approximately 12 were positive for HIV.
- While the number of tests conducted remained relatively stable between 2009 and 2013, it increased 44.4% between 2013 and 2018. The HIV testing rate per 1,000 people also increased 36.2% during this time.
- As HIV test volume increased over time, the HIV test positivity rate decreased. Between 2009 and 2018, the HIV test positivity rate decreased from 0.19% to 0.12%.

2. By sex

- From 2013 to 2018, the number of HIV tests among males and females was very similar (309,163 vs. 308,844, respectively). However, only in 2017 was the number of HIV tests among males greater than the number of HIV tests among females.
- In 2018, equal proportions (50.0%) of HIV tests were in males and females, while the HIV testing rate per 1,000 people was 43.7 for males and 42.6 for females.[2]
- Over the past 10 years, there was a greater increase in HIV testing among males than females. Historically the female HIV testing rate has exceeded the male rate, but the past five years were the first where the HIV testing rate was higher for males.
- While the HIV test positivity rate decreased over time for both sexes, it was consistently three to four times higher among males than females. In 2018, the HIV test positivity rate was 0.19% for males and 0.05% for females.

3. By age

- In 2018, the number of HIV tests and HIV testing rate was highest in the 25-29 age category in both males and females.
- Between 2014 and 2018, the HIV testing rate per 1,000 people increased for all age groups by an average of 37% and was consistently highest in the 25 to 29 age category. The largest relative increase in the HIV testing rate per 1,000 between 2014 to 2018 was in the 70+ age category for both males (43%) and females (47%).
- The HIV test positivity rate in 2018 was highest in the 55-59 age category for both males (0.24%) and females (0.15%).

[2] The overall population in Ontario is not split equally by sex - there are a higher number of females compared to males.

4. By test type

- In 2018, the vast majority of HIV tests (96.6%) were nominal and the remainder were coded (1.3%) or anonymous (2.2%).
- The number of nominal HIV tests remained relatively stable between 2009 and 2013 and then began to increase. The number of coded tests was relatively stable between 2009 and 2013, and then began to decrease, while the number of anonymous tests increased between 2009 and 2015, and then began to decrease.
- Among both males and females, nominal HIV testing remained relatively stable between 2009 and 2013 and then began to increase. Among females, the number of anonymous tests and coded tests was stable between 2009 and 2013, then decreased between 2013 and 2018. Among males, the number of coded tests increased between 2009 and 2013, then decreased sharply between 2013 and 2018, and the number of anonymous tests peaked in 2015, then decreased modestly between 2015 and 2018.
- Since 2013, nominal HIV testing has increased 53.3% while coded and anonymous testing decreased by 64.5% and 20.1%, respectively (among both sexes).
- While the HIV test positivity rate has decreased over time for all test types, it was consistently at least four times higher among people who tested anonymously compared to those who tested nominally. In 2018, the HIV test positivity rate was 0.10% for nominal testing, 0.12% for coded testing and 0.71% for anonymous testing.

5. By exposure category

- Between 2014 and 2018, among both males and females, the majority of HIV tests were consistently among people who reported heterosexual sex with no identified risk factors (Heterosexual-NIR). However, this proportion decreased over time among males and remained stable among females.
- Between 2014 and 2018, the percent of HIV tests in males attributed to men who have sex with men (MSM) increased from 26.0% to 32.3%.
- In 2018, the highest HIV positivity rate in males was among MSM who used injection drugs (1.7%), whereas in females it was among individuals from countries identified as HIV-endemic (0.5%).

6. By health region

- In 2018, the HIV testing rate per 1,000 people was highest in Toronto (75.3) followed by Ottawa (53.0). In the other five health regions, the HIV testing rate ranged from 28.6 (Eastern) to 38.1 (Central East). The number of HIV tests and the HIV testing rate per 1,000 people increased between 2017 and 2018 in all health regions.
- In 2018, the HIV test positivity rate was highest in Toronto (0.18%) followed by the South West (0.12%), Northern (0.09%), Ottawa (0.08%), and Eastern, Central East, Central West regions (all 0.07%).

7. Point-of-Care (POC) HIV testing

- Between 2014 and 2018, the proportion of total HIV tests that were POC tests decreased from 6.6% to 2.8%.
- Between 2014 and 2018, the number of point-of-care (POC) tests decreased from 30,117 to 18,142 tests, while the HIV test positivity rate from POC testing increased from 0.42% to 0.69%.

- Between 2014 and 2018, the percent of POC HIV tests attributed to the MSM exposure category increased from 39.1% to 59.2%. Conversely, the percent of POC HIV tests among people who reported heterosexual sex with no identified risk factors (Heterosexual-NIR) decreased from 54.5% to 31.8%.

8. Prenatal HIV testing

- Between 2012 and 2018, the number of pregnant people who received a prenatal HIV test increased from 133,630 to 137,564.
- Between 2012 and 2017, the estimated percent of all pregnant people who received a prenatal HIV test increased from 94.2% to 96.2% (estimate for 2018 not available).

About the Data

Where do these data come from?

- Data in this report come from the Public Health Ontario (PHO) Laboratory, which conducts centralized HIV diagnostic testing for the province.
- When someone is tested for HIV in Ontario, the health care provider conducting the test (e.g. a physician, nurse or HIV counselor) fills out an HIV test requisition form that is sent to PHO. The requisition collects information on the individual being tested for HIV, including their age, sex, geographic location and HIV risk factors.
- When a test is HIV-positive, a Laboratory Enhancement Program (LEP) form is sent to the health care provider who conducted the test to collect more information on the individual tested. LEP data in this report is only used to determine which positive HIV tests were from individuals with previous evidence of HIV so that they could be excluded. Since 2009, the LEP form has collected information on race/ethnicity, country of birth, and test history (data not historically collected on the HIV test requisition, but collected starting in 2018).
- In February 2018, PHO implemented a revised HIV test requisition that now collects additional information on race/ethnicity, country of birth and transgender identity.
- With rapid/point-of-care (POC) tests, an HIV test requisition form is completed and submitted to PHO with a sticker attached indicating the result of the POC test. POC tests are included in the total numbers of tests in this report, and reactive POC tests with confirmatory laboratory tests are included as positive HIV tests in the HIV test positivity rates if they do not have previous evidence of HIV.
- Prenatal HIV tests are part of an ongoing HIV testing program offered to all pregnant individuals as part of their prenatal care. Prenatal HIV testing results are included separately in this report (Section 8). They are not included in the number of HIV tests or population testing rates in this report. However, to calculate HIV test positivity rates, HIV-positive prenatal tests are included in the numerator while HIV-negative prenatal tests are not included in the denominator. From 2012 to 2018, the annual number of HIV-positive prenatal tests ranged from 2 to 10 (where no previous evidence of HIV infection was known).

What are some of the strengths of these data and our approach to presenting it?

- All HIV diagnostic testing conducted by health care providers in Ontario is done by PHO and therefore included in this report.
- Age, sex and geography data on the test requisition are very complete and available for more than 96% of HIV tests since 2009.
- Trends in HIV tests are presented as numbers and, where possible, as an HIV testing rate (i.e. the number of tests per 1,000 people). While the number of tests is influenced by the size of the underlying population (i.e. greater population = greater number of tests), rates take population size into account and remove it as a possible explanatory factor for any observed differences over time or between populations.
- Counts of HIV tests in this report exclude positive HIV tests from individuals with previous evidence of HIV. This is true for the calculation of HIV test positivity rates as well. We report on HIV tests from individuals without Previous evidence of HIV (PEH) to better understand local transmission in Ontario and, therefore, which populations might be at most risk and benefit most from prevention activities. More information on Exclusion of HIV tests with previous evidence of HIV can be found in the appendices.

What are some of the limitations of this report?

- Information on race/ethnicity was not available on HIV test requisition forms up to and including part of 2018, therefore we are unable to report on HIV testing among different races/ethnicities in this report.
- In this report, HIV tests are broken down by **exposure categories**, which are meant to represent an individual's most likely risk of HIV infection based on risk factors documented on the HIV test requisition. The HIV response in Ontario focuses on priority populations or populations most affected by HIV, which are a combination of risk factors (e.g. men having sex with men, injection drug use), country of birth and race/ethnicity (e.g. White, Black, etc). As information on race/ethnicity and country of birth was not available on test requisition forms up to and including part of 2018, we are unable to report on priority populations here. Exposure categories do not capture the burden of HIV in communities. In particular, the classification of endemic exposures is inadequate to address HIV in African, Caribbean and Black communities. More information on **exposure categories** can be found in the appendices.
- Risk factor information is missing or indicated as "none" on over half of test requisition forms. Because an exposure category could not be assigned for these tests, they were excluded from the exposure category section (section 5) of this report. Due to the extent of missing information, exposure category data are presented as the proportion of HIV tests where exposure category was known. The total number of tests by exposure category is not presented as they are underestimates.
- If information is more likely to be missing for one specific exposure category than others (e.g. injection drug use), that exposure category may be underrepresented in the data and could introduce bias into the findings.
- Tests are reported as a rate per 1,000 people. It is possible that an individual may test more than once per year and, therefore, the number of unique individuals tested may be lower than the total number of tests. Also, males may be more likely than females to test more than once in a given year.
- While counts of HIV tests in this report exclude positive HIV tests from individuals with previous evidence of HIV as determined by the 'HIV testing history' and 'previous test information' sections

on the test requisition and LEP forms, it's likely these are undercounts as these sections have missing data and/or may not be filled out correctly. This may influence the positivity rates reported. More information on Exclusion of HIV tests with previous evidence of HIV can be found in the appendices.

- We are unable to report the estimated proportion of pregnant people who received a prenatal test in 2018 due to an unstable reported number of pregnant people in 2018.

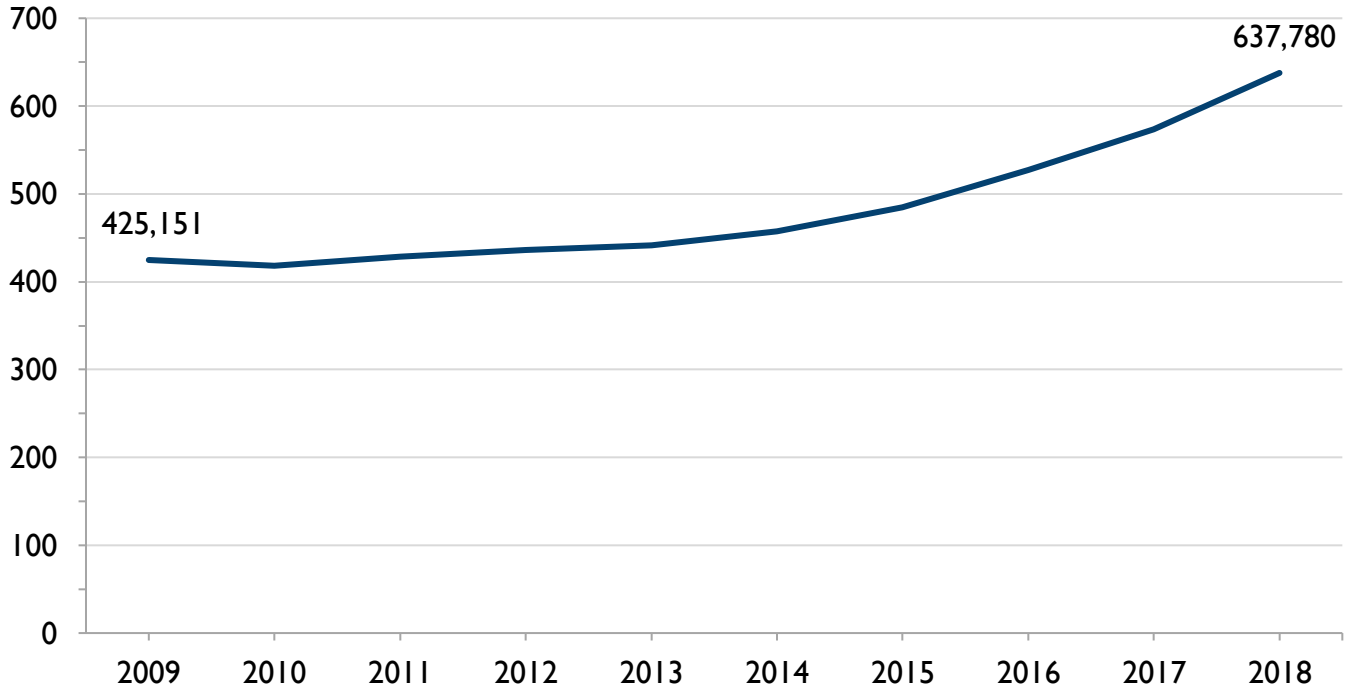
Data and Figures

The figures in this section describe trends in HIV testing overall and by sex, age, test type, exposure category, and health region. Point-of-care (POC) and prenatal HIV testing are also described. In general, each page contains one to two figures and each figure is accompanied by a brief description of findings and/or trends.

See Appendices for more information on the data source and how these numbers were calculated, and Data Tables section for all the numbers underlying the figures.

1. Overall

Figure 1.1 Number of HIV tests (thousands), Ontario, 2009 to 2018



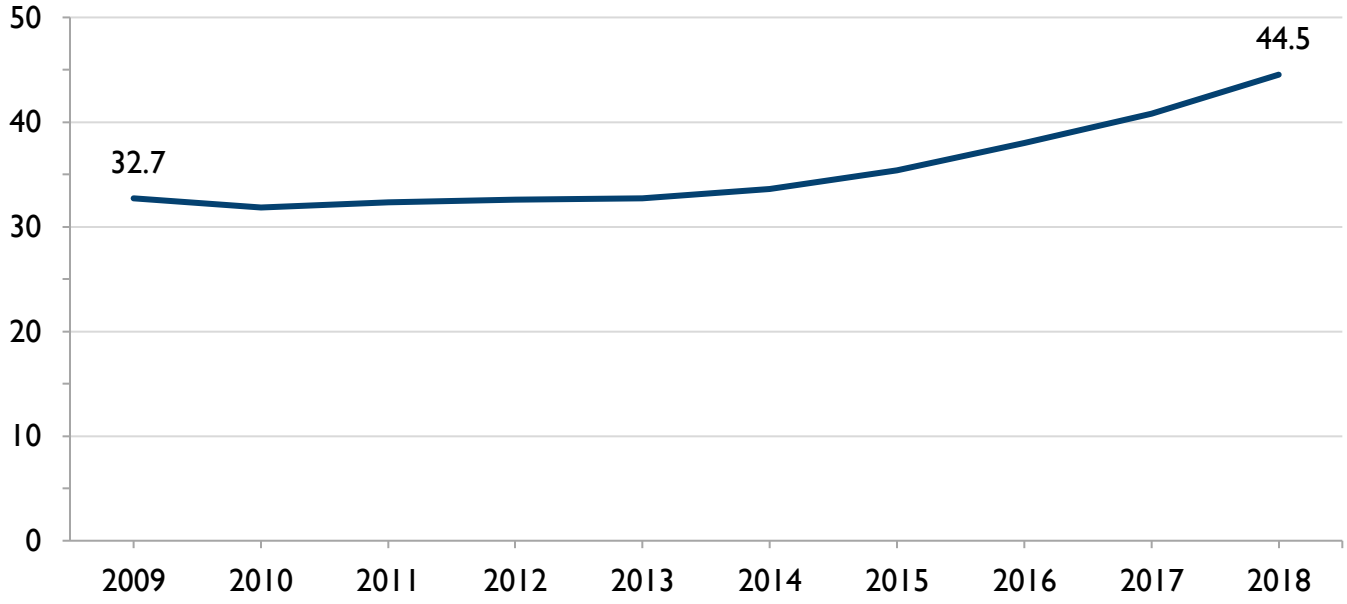
Snapshot

The number of HIV tests was relatively stable at approximately 420,000 to 440,000 between 2009 and 2013, and then increased to 637,780 by 2018.

An additional 1,267 tests were performed in 2018 for individuals who had Previous evidence of HIV (PEH).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. See Appendices for more information. See **Table 1.1** for underlying data.

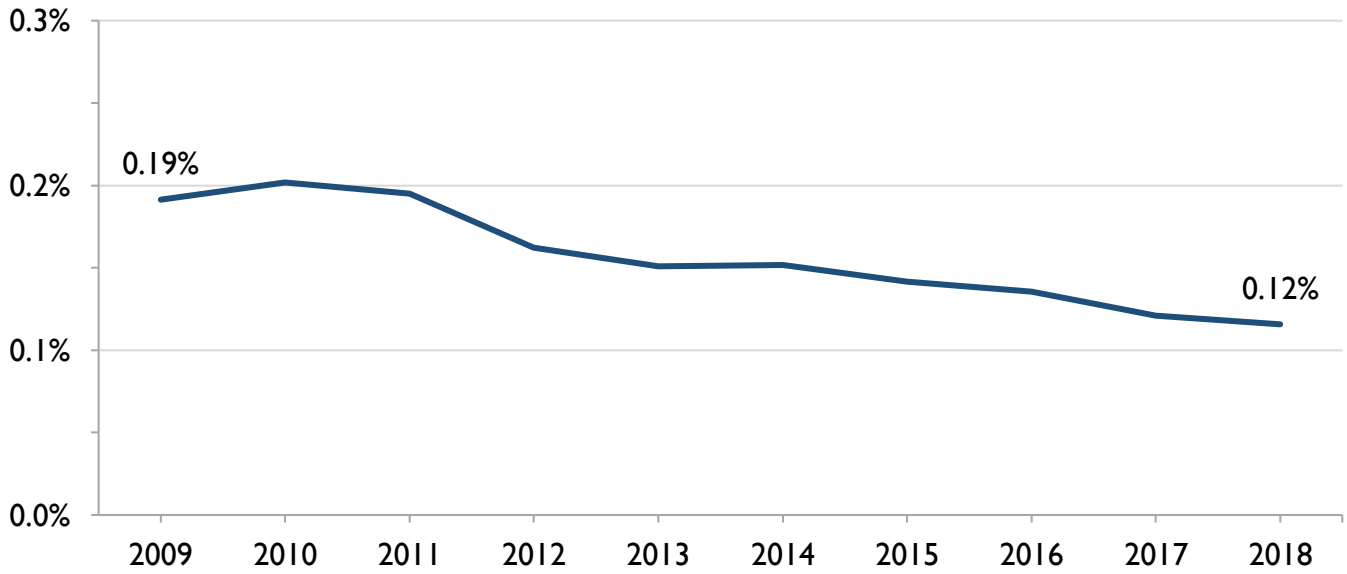
Figure 1.2 HIV testing rate per 1,000 people, Ontario, 2009 to 2018



Snapshot

The HIV testing rate was relatively stable at 33 per 1,000 people between 2009 and 2013, and then steadily increased to a high of 44.5 per 1,000 people by 2018.

Figure 1.3 HIV test positivity rate, Ontario, 2009 to 2018



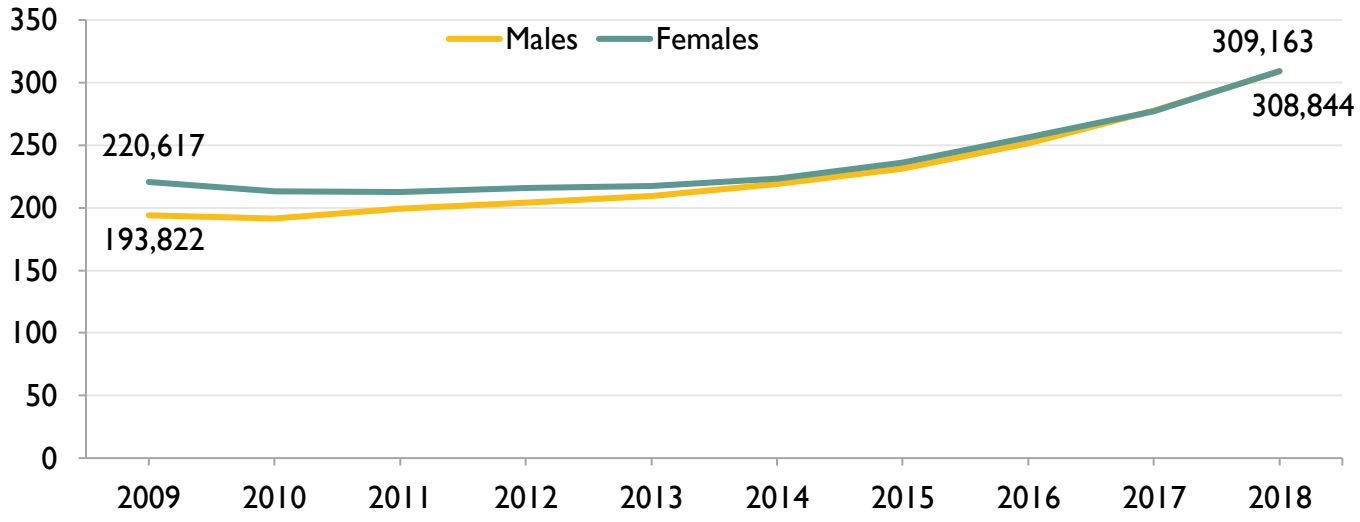
Snapshot

The proportion of HIV tests that were HIV-positive was relatively stable between 2009 and 2011, then decreased between 2011 and 2018.

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. See Appendices for more information. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See **Table 1.1** and **Table 1.2** for underlying data.

2. By sex

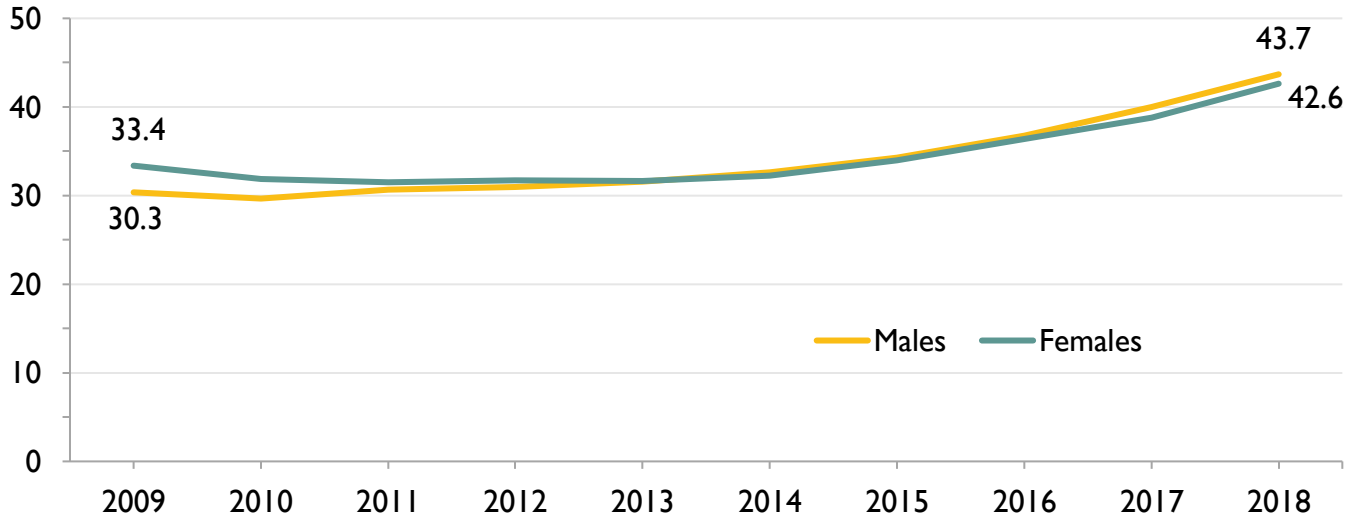
Figure 2.1 Number of HIV tests (thousands) by sex, Ontario, 2009 to 2018



Snapshot

Between 2009 and 2018, the number of HIV tests increased over time for both sexes, with a greater increase among males. In 2009, there were more than 25,000 more tests among females compared to males. The difference in the number of HIV tests by sex decreased over time, with the number of tests among males surpassing the number of tests among females for the first time in 2017, and very similar numbers between sexes in 2018 (309,163 among females, 308,844 among males).

Figure 2.2 HIV testing rate per 1,000 people by sex, Ontario, 2009 to 2018

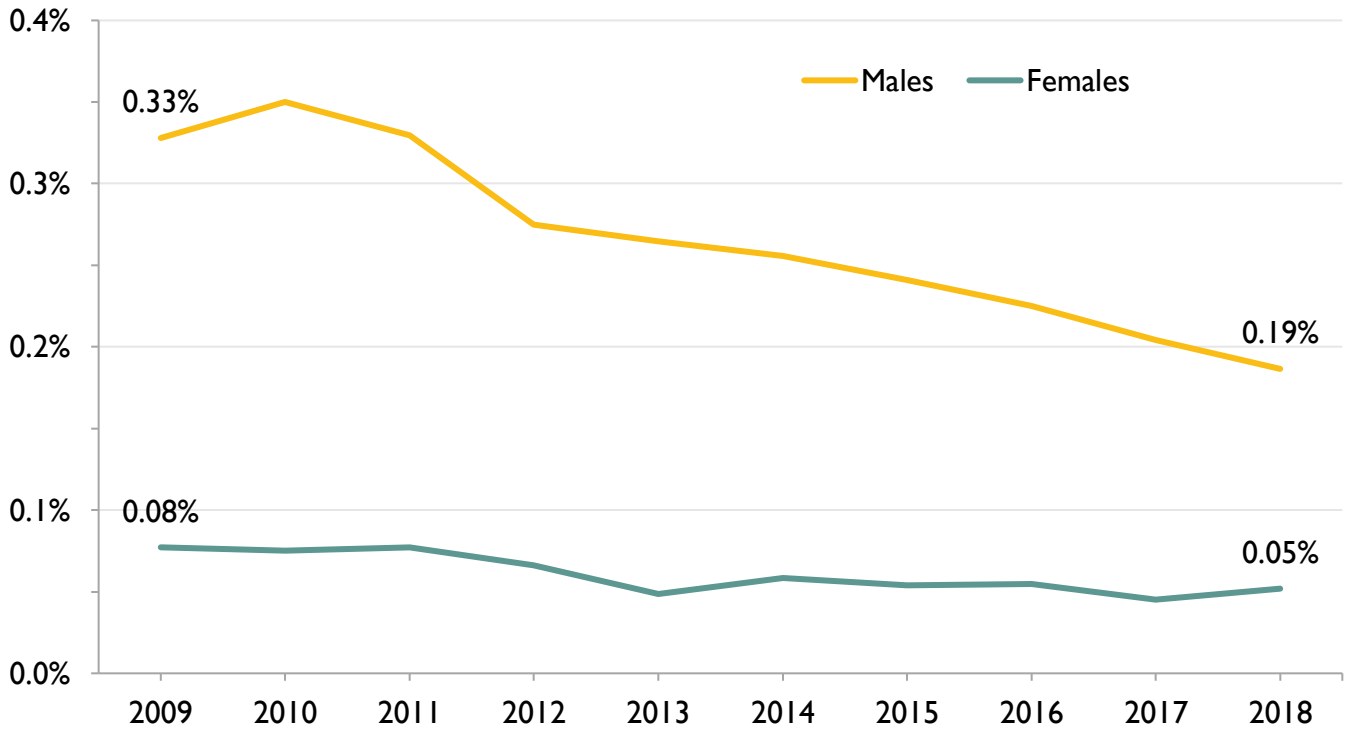


Snapshot

Between 2009 and 2018, the HIV testing rate per 1,000 people increased among both sexes. In 2009, the rate among males was lower than that among females; however, it gradually met and then – in 2017 and 2018 – surpassed the rate among females.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Tests with unknown sex not included (approximately 3% each year). See Appendices for more information. See **Table 2.2** for underlying data.

Figure 2.3 HIV test positivity rate by sex, Ontario, 2009 to 2018



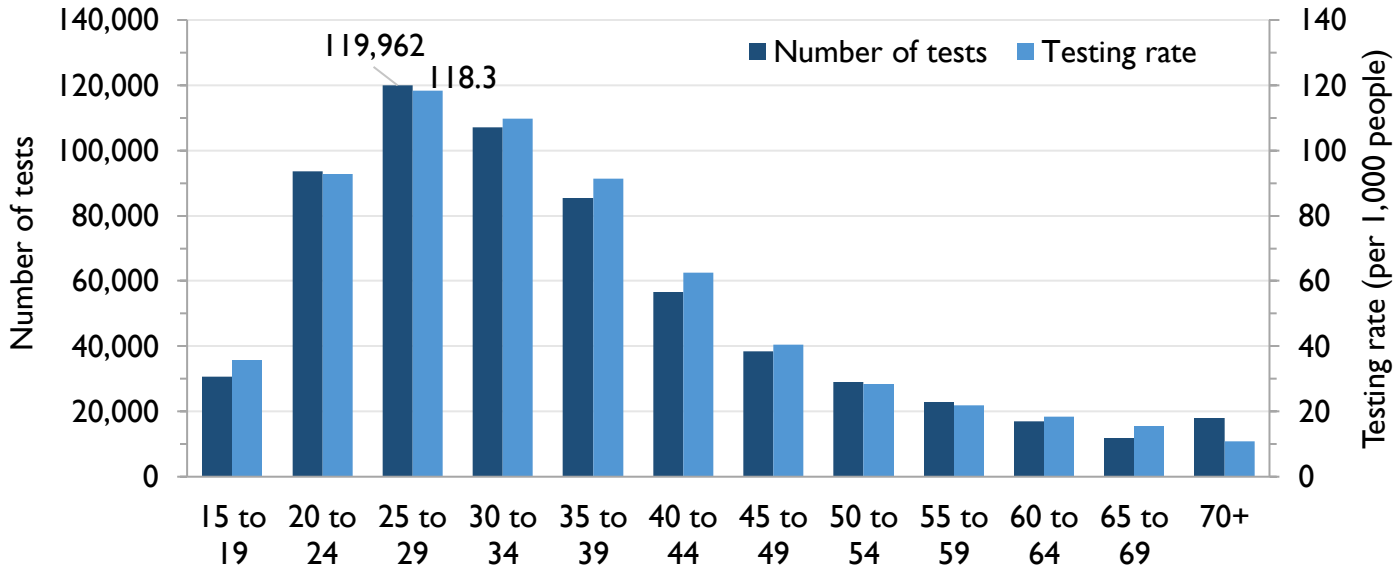
Snapshot

Between 2009 and 2018, the HIV test positivity rate decreased among both sexes, with a greater decrease among males. The HIV test positivity rate was between 3.6 and 5.4 times higher for males than females.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. Tests with unknown sex not included (approximately 3% each year). See Appendices for more information. See **Table 2.1** for underlying data.

3. By age

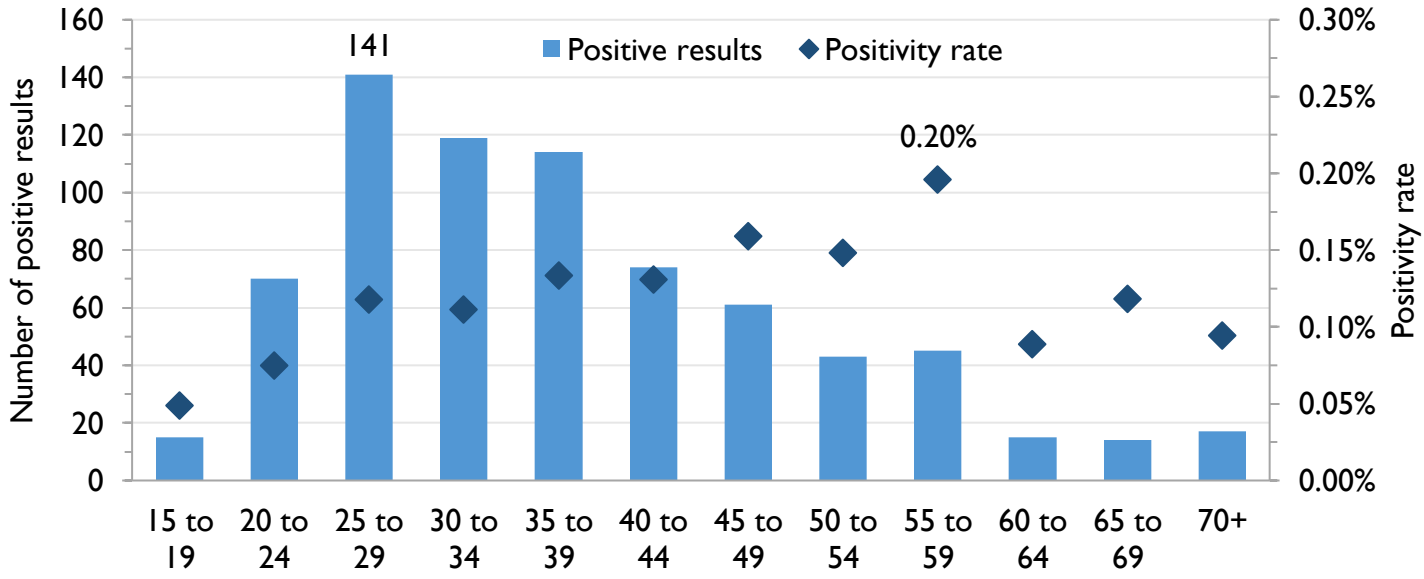
Figure 3.1 Number of HIV tests and HIV testing rate per 1,000 people by age, Ontario, 2018



Snapshot

In 2018, the number of HIV tests and the HIV testing rate were highest in the 25 to 29 age category (119,962 and 118.3 per 1,000 people, respectively).

Figure 3.2 Number of positive HIV test results and HIV test positivity rate by age, Ontario, 2018

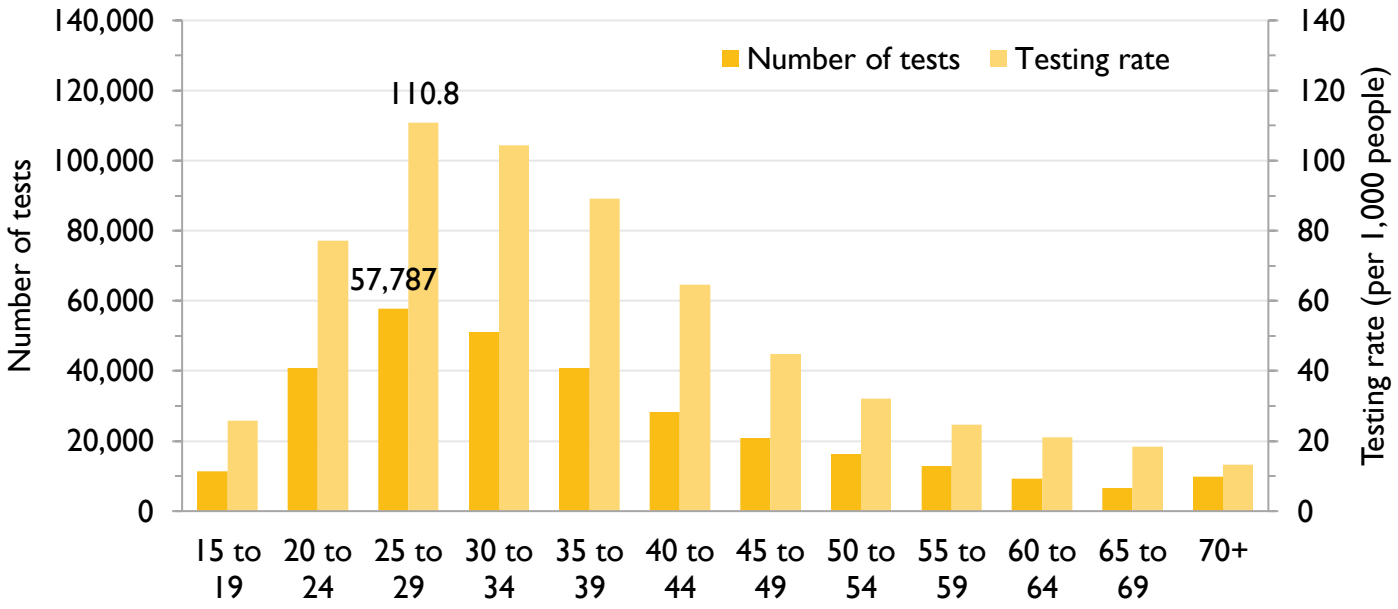


Snapshot

In 2018, the number of positive HIV test results was highest in the 25 to 29 age category (141). The HIV test positivity rate generally increased with age, peaking among those aged 55 to 59 (0.20%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included.Tests with unknown age were not included (less than 1%). See Appendices for more information. See **Table 3.1** and **Table 3.2** for underlying data.

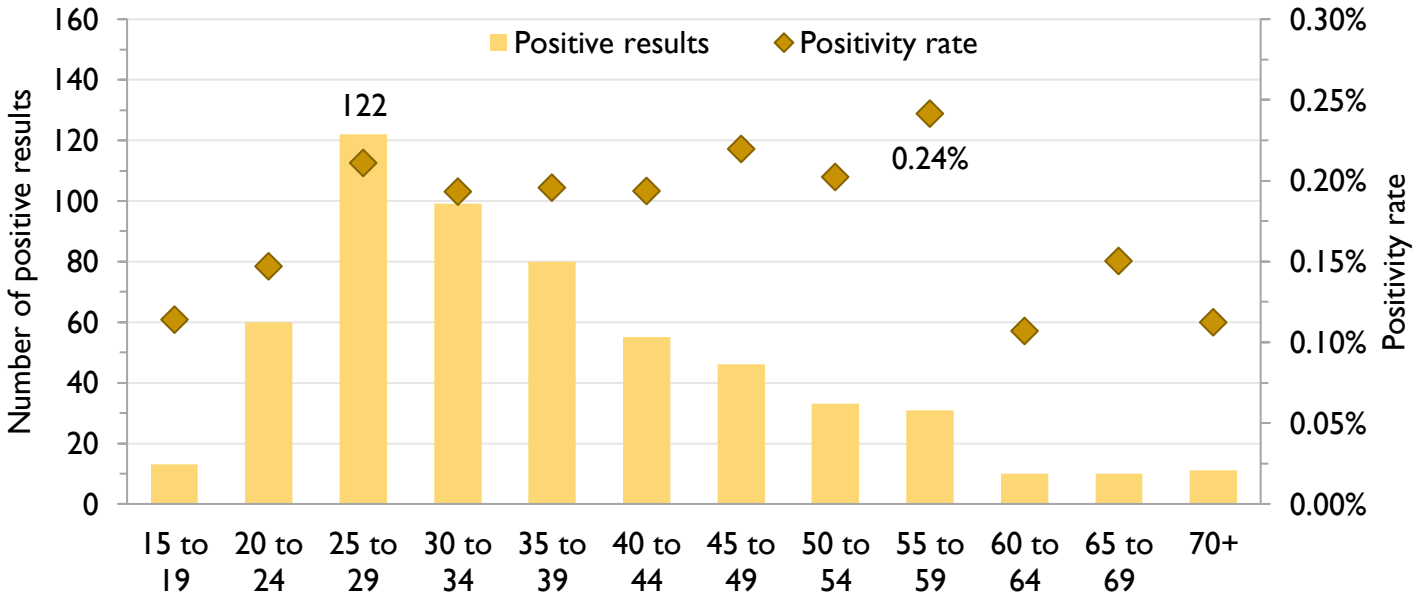
Figure 3.3 Number of HIV tests and HIV testing rate per 1,000 people by age, males, Ontario, 2018



Snapshot

In 2018, the number of HIV tests and the HIV testing rate were highest in the 25 to 29 age category (57,787 and 110.8 per 1,000 people, respectively).

Figure 3.4 Number of positive HIV test results and HIV test positivity rate by age, males, Ontario, 2018

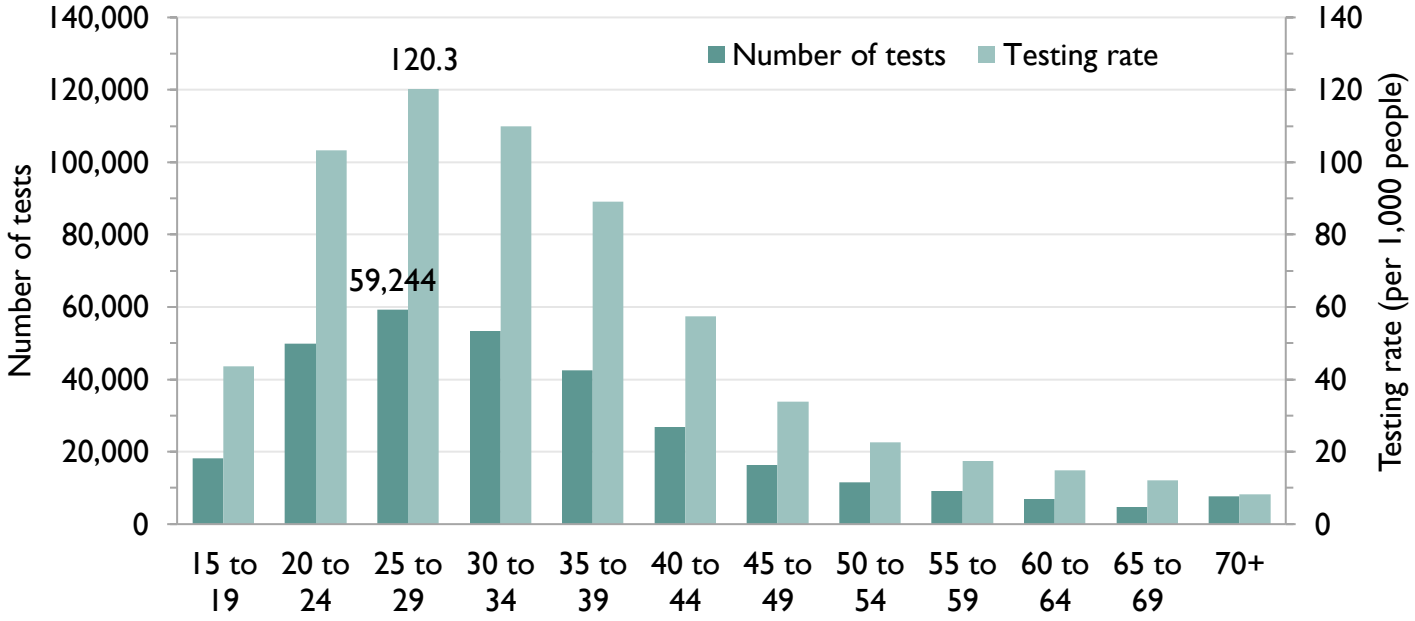


Snapshot

In 2018, the number of positive HIV test results was highest in the 25 to 29 age category (122). The HIV test positivity rate generally increased with age, peaking among those aged 55 to 59 (0.24%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown age were not included (less than 1%). See Appendices for more information. See **Table 3.1** and **Table 3.2** for underlying data.

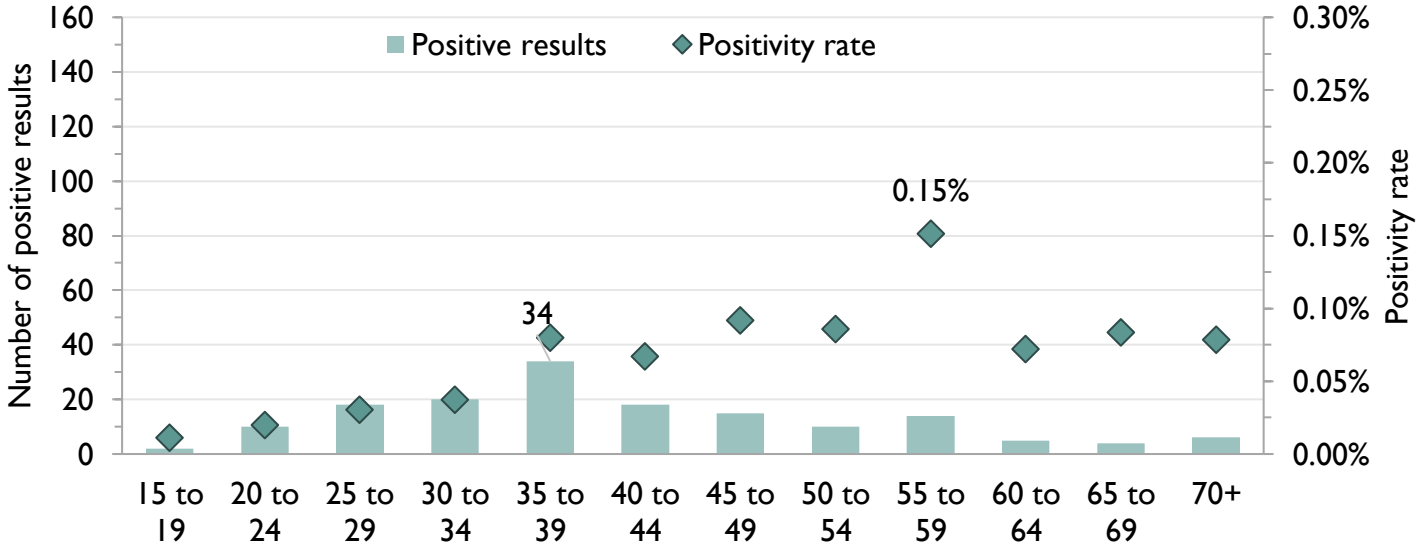
Figure 3.5 Number of HIV tests and HIV testing rate per 1,000 people by age, females, Ontario, 2018



Snapshot

In 2018, the number of HIV tests and the HIV testing rate were highest in the 25 to 29 age category (59,244 and 120.3 per 1,000 people, respectively).

Figure 3.6 Number of positive HIV test results and HIV test positivity rate by age, females, Ontario, 2018

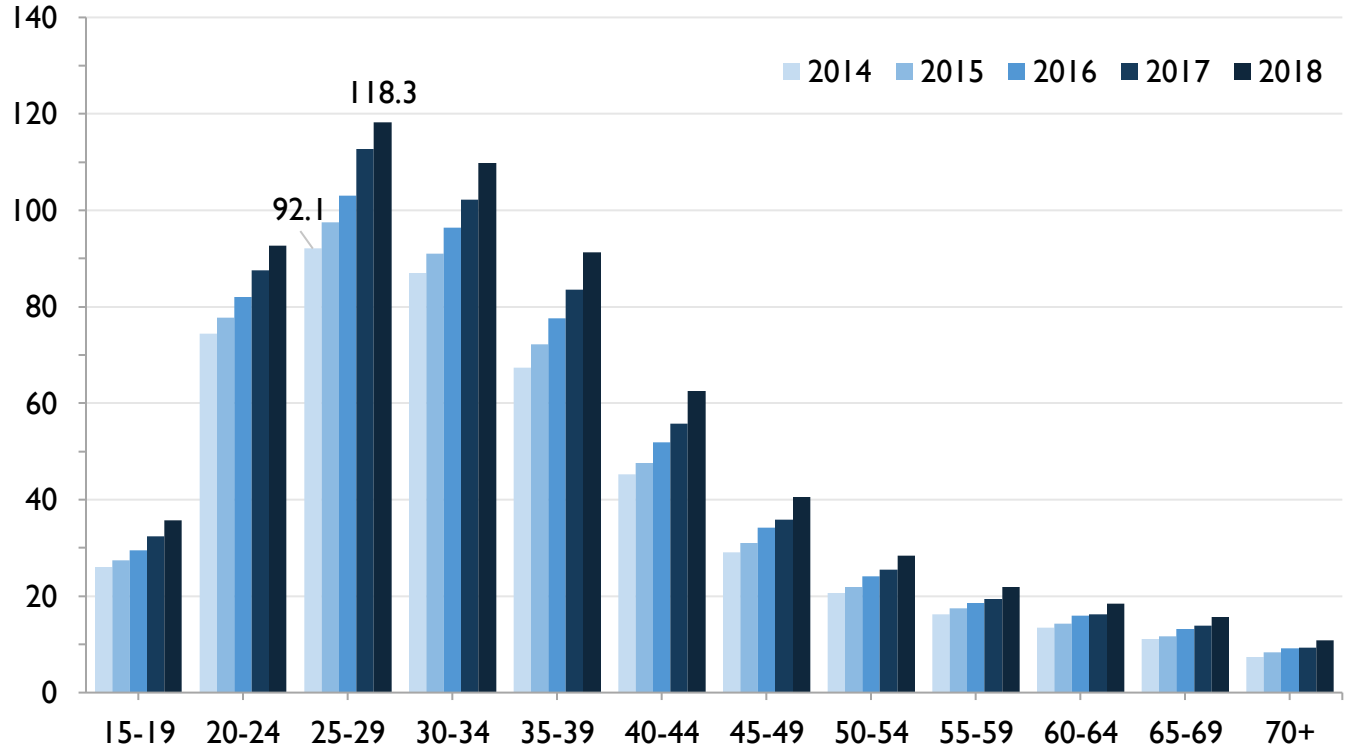


Snapshot

In 2018, the number of positive HIV test results was highest in the 25 to 29 age category (34). The HIV test positivity rate generally increased with age, peaking among those aged 55 to 59 (0.15%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included.Tests with unknown age were not included (less than 1%). See Appendices for more information. See **Table 3.1** and **Table 3.2** for underlying data.

Figure 3.7 HIV testing rate per 1,000 people by age, Ontario, 2014 to 2018

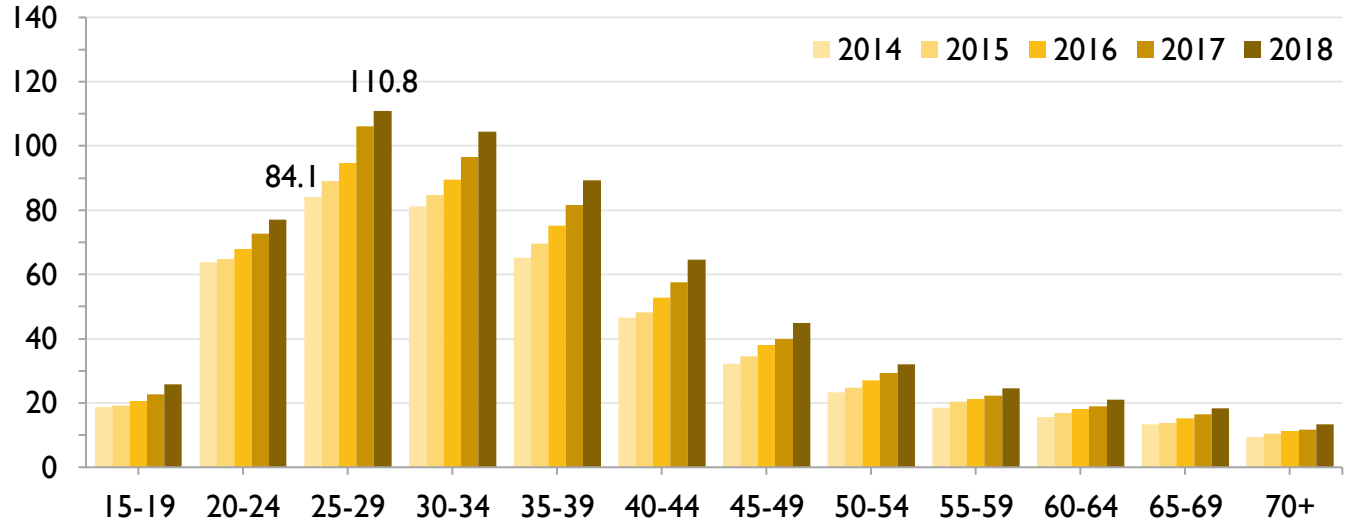


Snapshot

Between 2014 and 2018, the HIV testing rate increased for all age groups. The largest relative increase was in the 70+ age category (46%). This was followed by the 65-69 age category (41%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. Tests with unknown age were not included (less than 1%). See Appendices for more information. See **Table 3.2** and **Table 3.3** for underlying data.

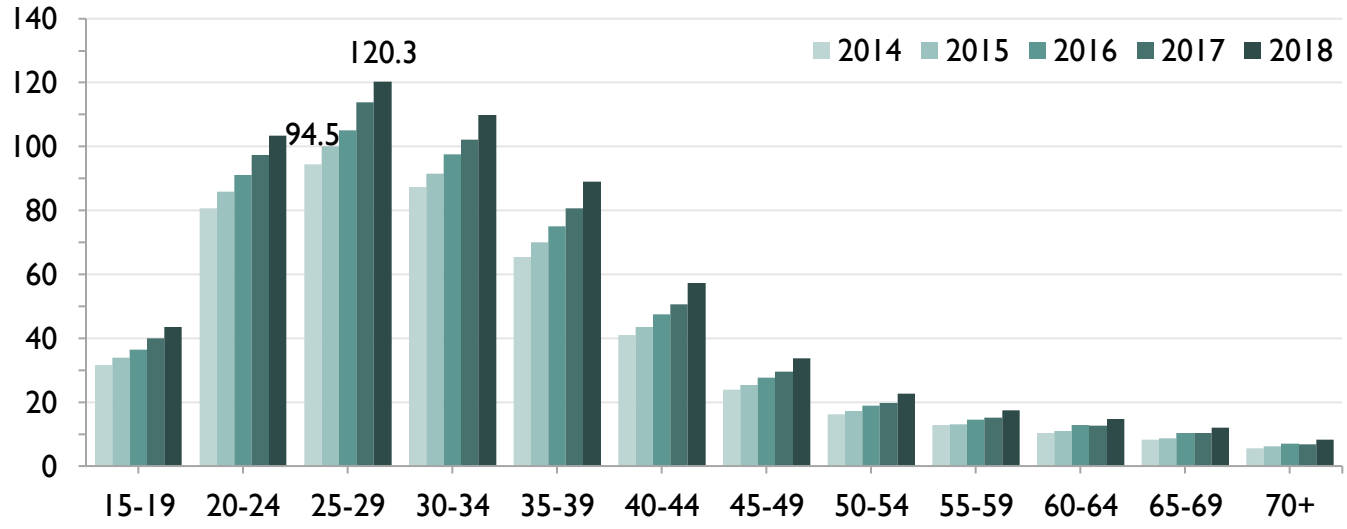
Figure 3.8 HIV testing rate per 1,000 people by age, males, Ontario, 2014 to 2018



Snapshot

Between 2014 and 2018, the HIV testing rate increased for all age groups. The largest relative increase was in the 70+ age category (43%) and the 15 to 19, 35 to 39, 40 to 44, 45 to 49, 50 to 54, and 65 to 69 age categories had relative increases ranging from 37% to 39%. The 30 to 34 age category had a relative increase of 29% and the 20 to 24 age category increased 21%.

Figure 3.9 HIV testing rate per 1,000 people by age, females, Ontario, 2014 to 2018



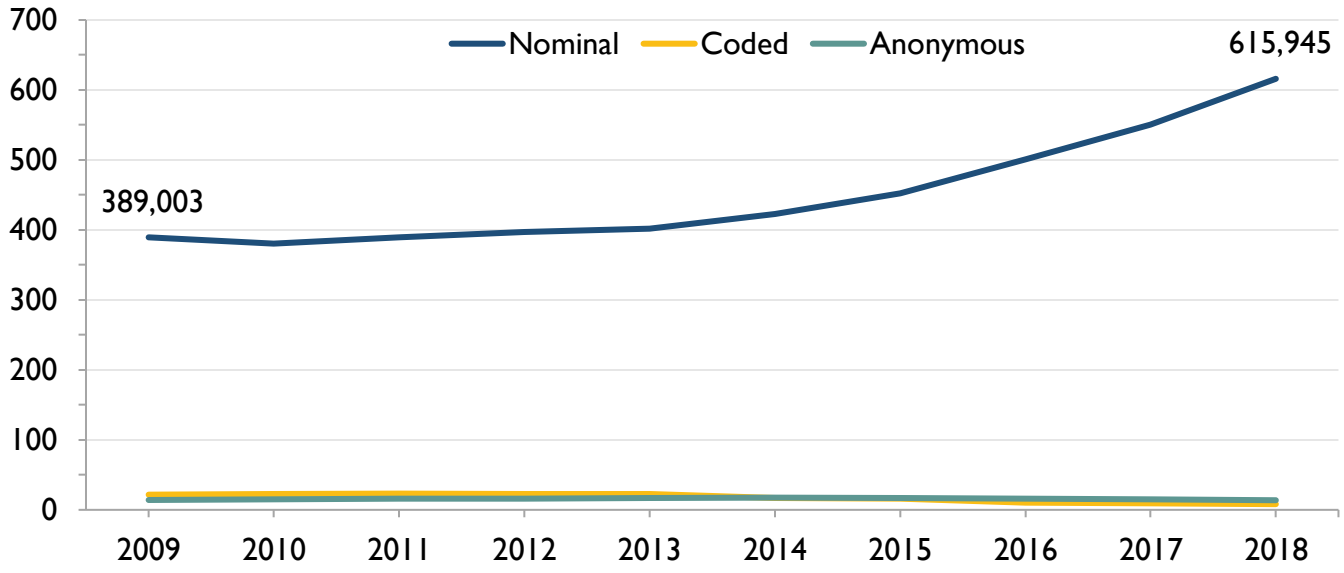
Snapshot

Between 2014 and 2018, the HIV testing rate increased for all age groups. The largest relative increase was in the 65 to 69 and 70+ age categories (both had relative increases of 47%) followed by the 60 to 64 age category (43%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. Tests with unknown age were not included (less than 1%). See Appendices for more information. See **Table 3.4** and **Table 3.5** for underlying data.

4. By test type

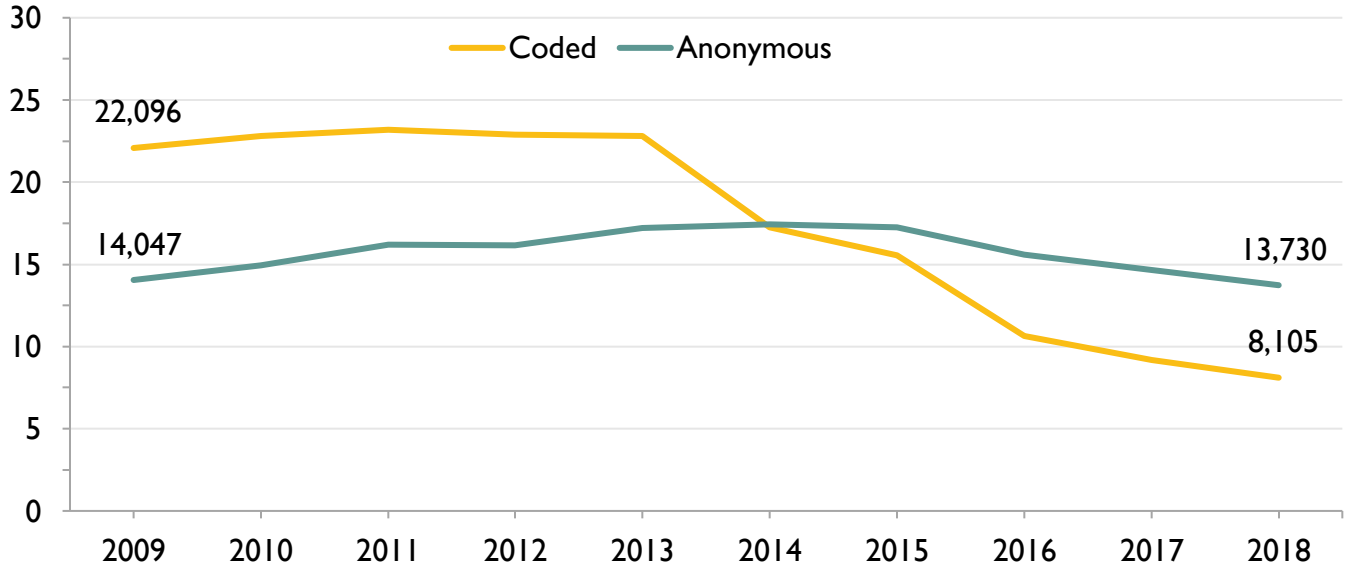
Figure 4.1 Number of nominal HIV tests (thousands), Ontario, 2009 to 2018



Snapshot

The number of nominal tests was relatively stable between 2009 and 2013 and then increased between 2013 and 2018. See Figure 4.2 below for trends in coded and anonymous tests.

Figure 4.2 Number of HIV tests (thousands) by test type (nominal excluded), Ontario, 2009 to 2018

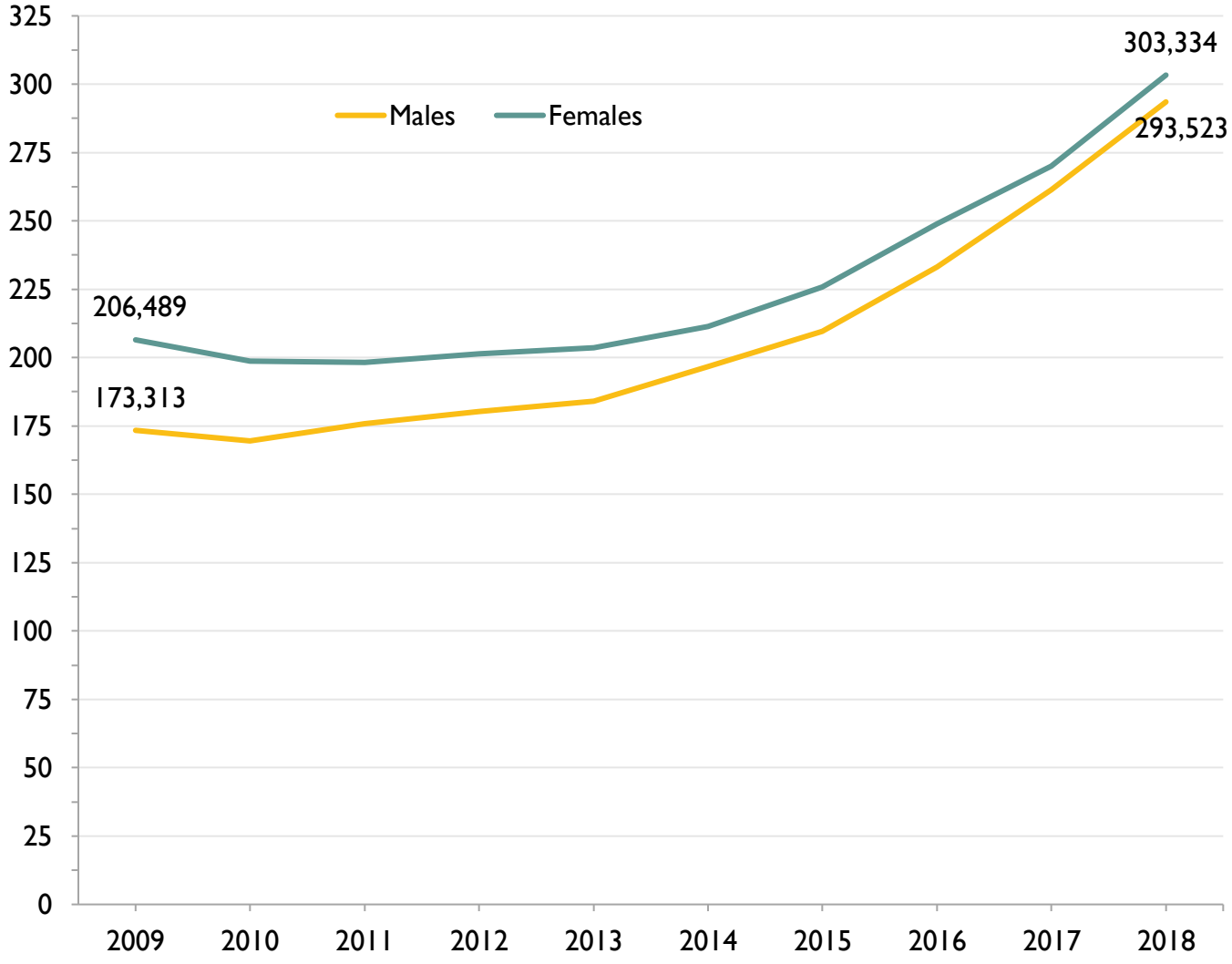


Snapshot

The number of coded tests was relatively stable between 2009 and 2013, and decreased between 2013 and 2018. The number of anonymous tests increased between 2009 and 2015, and decreased between 2015 and 2018.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Tests with unknown sex not included (approximately 3% each year). See Appendices for more information. See **Table 4.1** for underlying data.

Figure 4.3 Number of nominal HIV tests (thousands) by sex, Ontario, 2009 to 2018

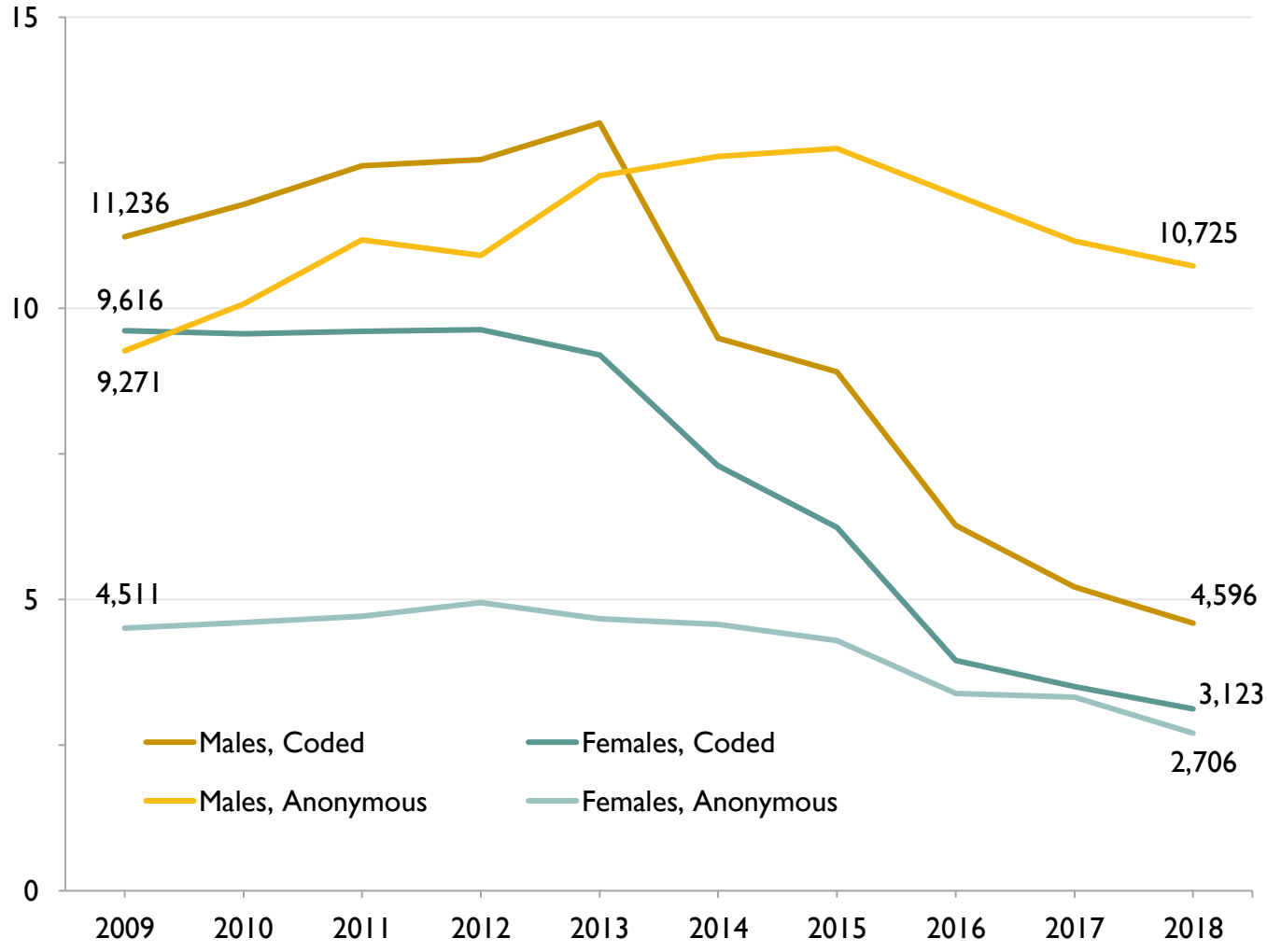


Snapshot

The number of nominal tests was relatively stable between 2009 and 2013 for both males and females and then increased to highs of approximately 300,000 tests by 2018. The number of nominal tests among females was consistently higher than among males. See Figure 4.2 below for trends in coded and anonymous tests.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Tests with unknown sex not included (approximately 3% each year). See Appendices for more information. See **Table 4.2** for underlying data.

Figure 4.4 Number of HIV tests (thousands) by test type (nominal excluded) and sex, Ontario, 2009 to 2018

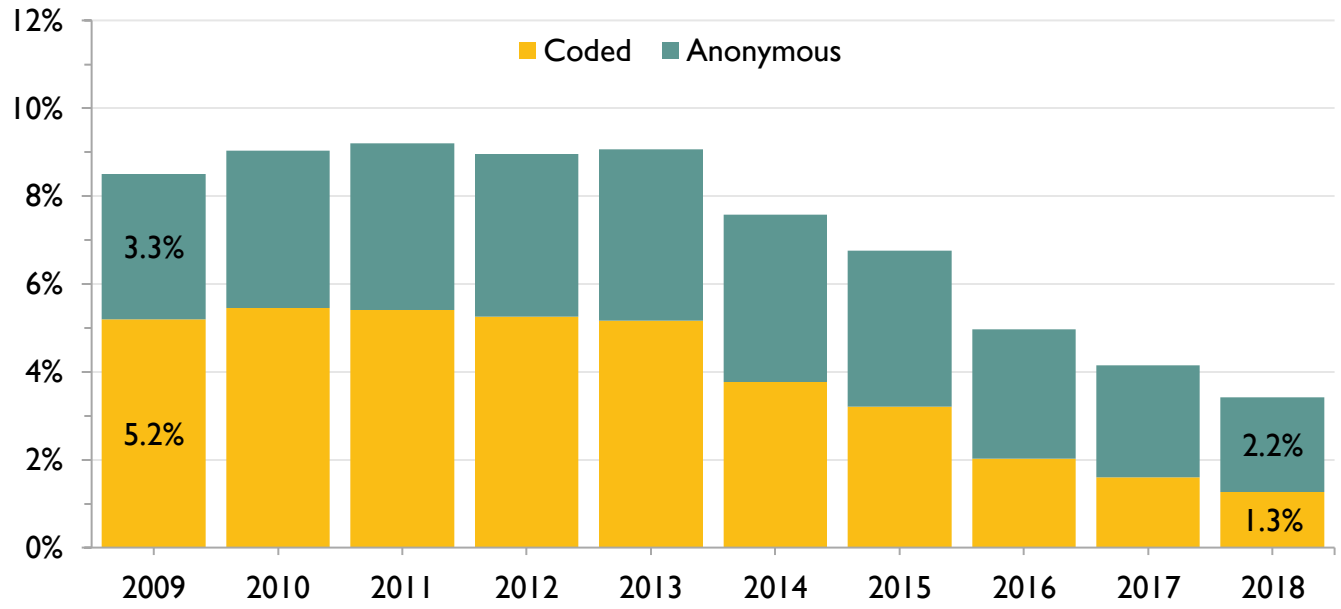


Snapshot

Among females, the number of anonymous tests and coded tests was stable between 2009 and 2013, then decreased between 2013 and 2018. Among males, the number of coded tests increased between 2009 and 2013, then decreased between 2013 and 2018. The number of anonymous tests among males increased to a peak in 2015, then decreased modestly between 2015 and 2018.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Tests with unknown sex not included (approximately 3% each year). See Appendices for more information. See **Table 4.2** for underlying data.

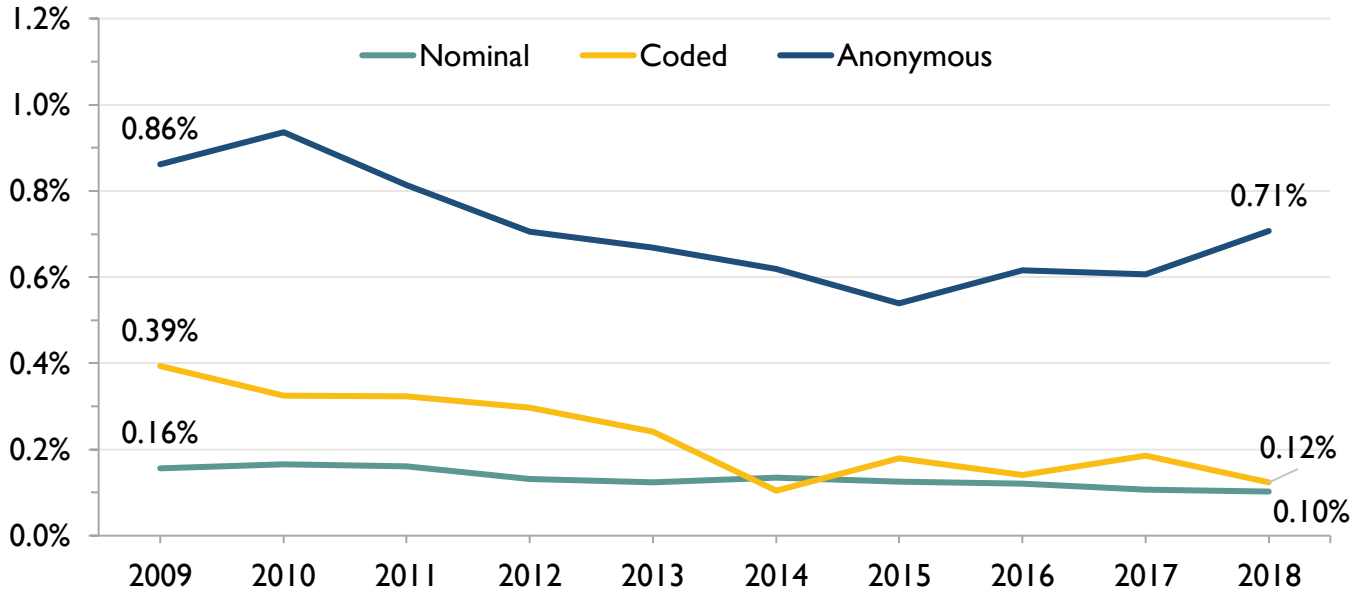
Figure 4.5 Percent of HIV tests by test type (nominal excluded), Ontario, 2009 to 2018



Snapshot

The proportion of HIV tests that were coded or anonymous was relatively stable between 2009 and 2013, and then decreased between 2013 and 2018.

Figure 4.6 HIV test positivity rate by test type, Ontario, 2009 to 2018



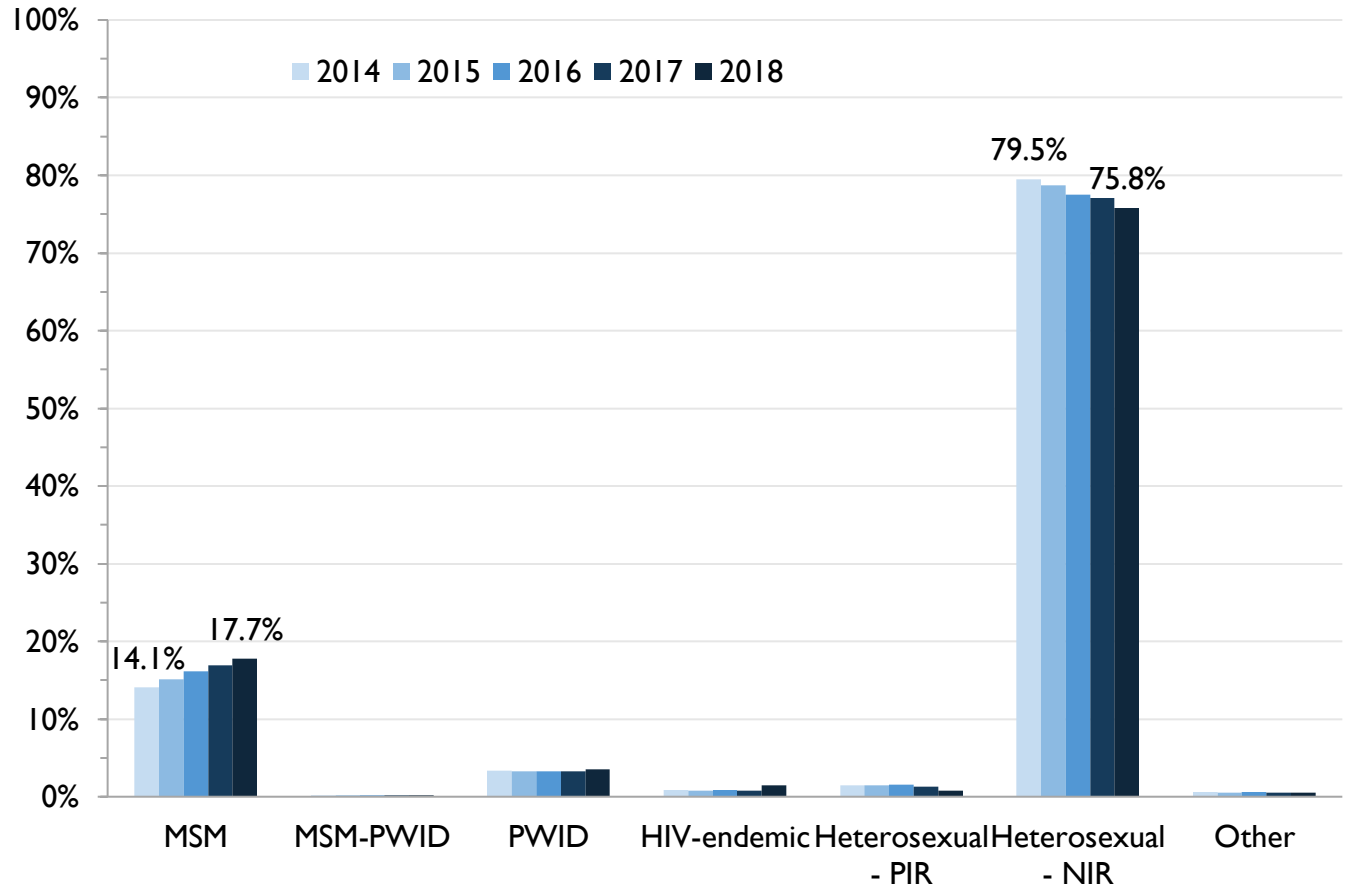
Snapshot

Between 2009 and 2018, the HIV test positivity rate decreased for nominal and coded tests. The HIV test positivity rate for anonymous tests peaked in 2010 (0.94%), decreased to a low in 2015 (0.54%), and increased to 0.71% in 2018.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. See Appendices for more information. See **Table 4.1** and **Table 4.3** for underlying data.

5. By exposure category

Figure 5.1 Percent of HIV tests by exposure category (where known), Ontario, 2014 to 2018

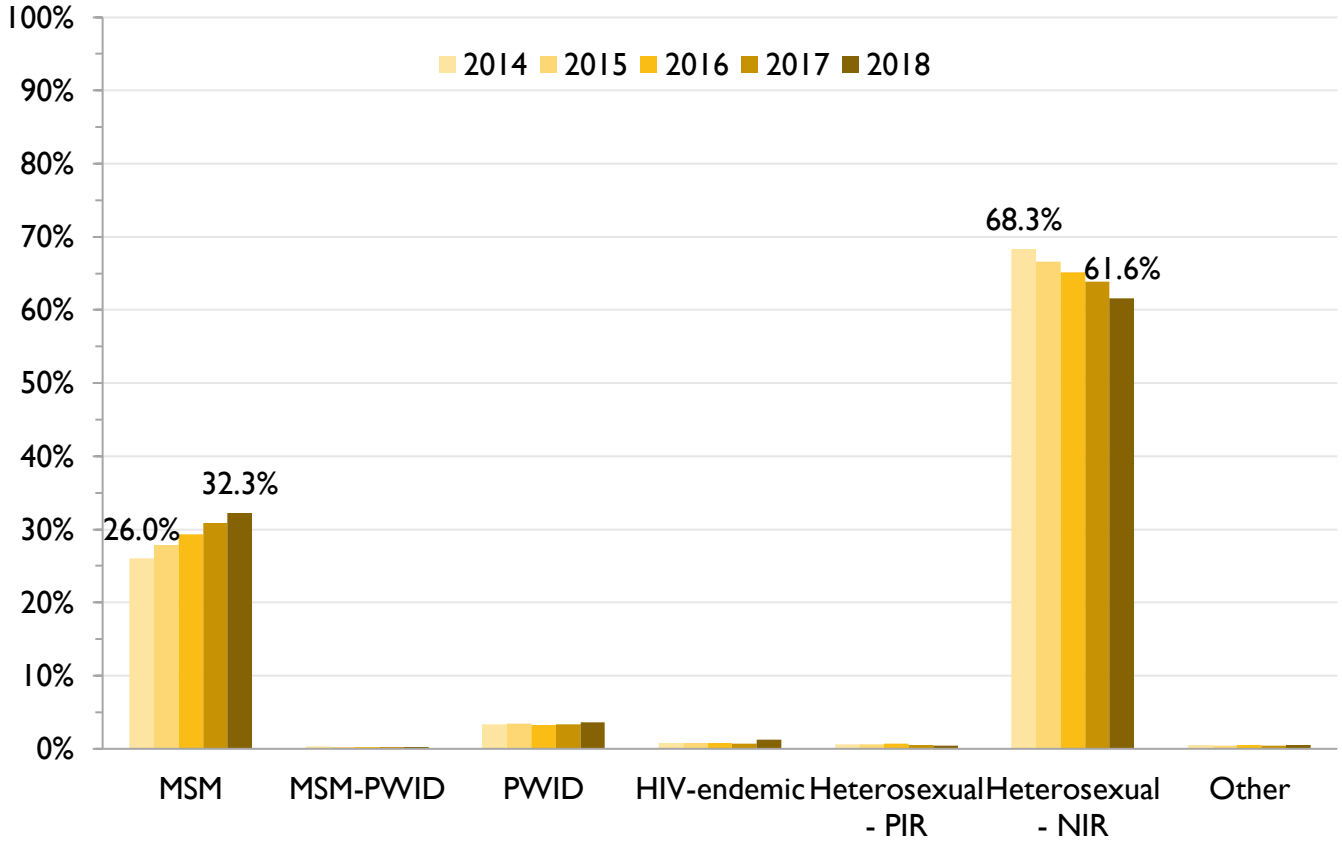


Snapshot

Between 2014 and 2018, the proportion of HIV tests attributed to the MSM exposure category increased from 14.1% to 17.7%. The majority of tests were consistently among heterosexual people reporting partners with no identified risk factors, however this percent decreased from 79.5% to 75.8%.

Notes: Data provided by Public Health Ontario Laboratory. MSM = men who have sex with men, PWID = people who use injection drugs, PIR = partner with identified risk, NIR = partner with no identified risk. HIV-negative prenatal tests not included. In 2018, a "country of birth" field was added to the HIV test requisition form which better informed attribution to the HIV-endemic exposure category and likely contributed to the larger proportion of HIV tests attributed to this category in this year. As exposure category attribution follows a hierarchy, increasing proportions in higher categories would decrease proportions attributed to subsequent categories and hence, the proportion attributed to the Heterosexual – PIR/NIR category has correspondingly decreased. See Exposure categories in the Appendices for further explanation. Tests with unknown exposure category not included (approximately 67%). See **Table 5.2** for underlying data.

Figure 5.2 Percent of HIV tests by exposure category (where known), males, Ontario, 2014 to 2018

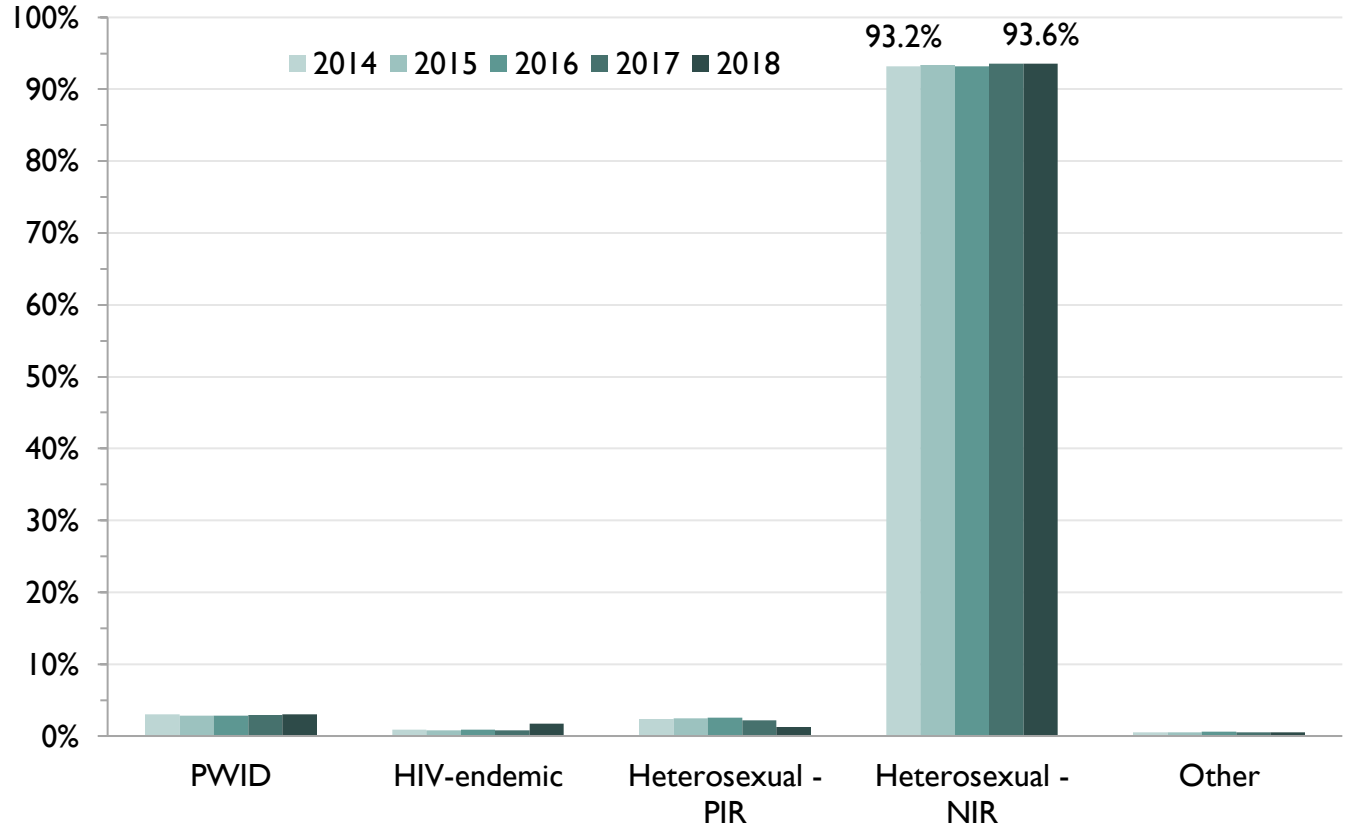


Snapshot

Between 2014 and 2018, the proportion of HIV tests among males attributed to the MSM exposure category increased from 26.0% to 32.3%. The majority of tests were consistently among heterosexual males reporting partners with no identified risk, however this proportion decreased from 68.3% to 61.6%.

Notes: Data provided by Public Health Ontario Laboratory. MSM = men who have sex with men, PWID = people who use injection drugs, PIR = partner with identified risk, NIR = partner with no identified risk. HIV-negative prenatal tests not included. In 2018, a "country of birth" field was added to the HIV test requisition form which better informed attribution to the HIV-endemic exposure category and likely contributed to the larger proportion of HIV tests attributed to this category in this year. As exposure category attribution follows a hierarchy, increasing proportions in higher categories would decrease proportions attributed to subsequent categories and hence, the proportion attributed to the Heterosexual – PIR/NIR category has correspondingly decreased. See Exposure categories in the Appendices for further explanation. Tests with unknown exposure category not included (approximately 63%). See *Appendices* for more information. See **Table 5.4** for underlying data.

Figure 5.3 Percent of HIV tests by exposure category (where known), females, Ontario, 2014 to 2018

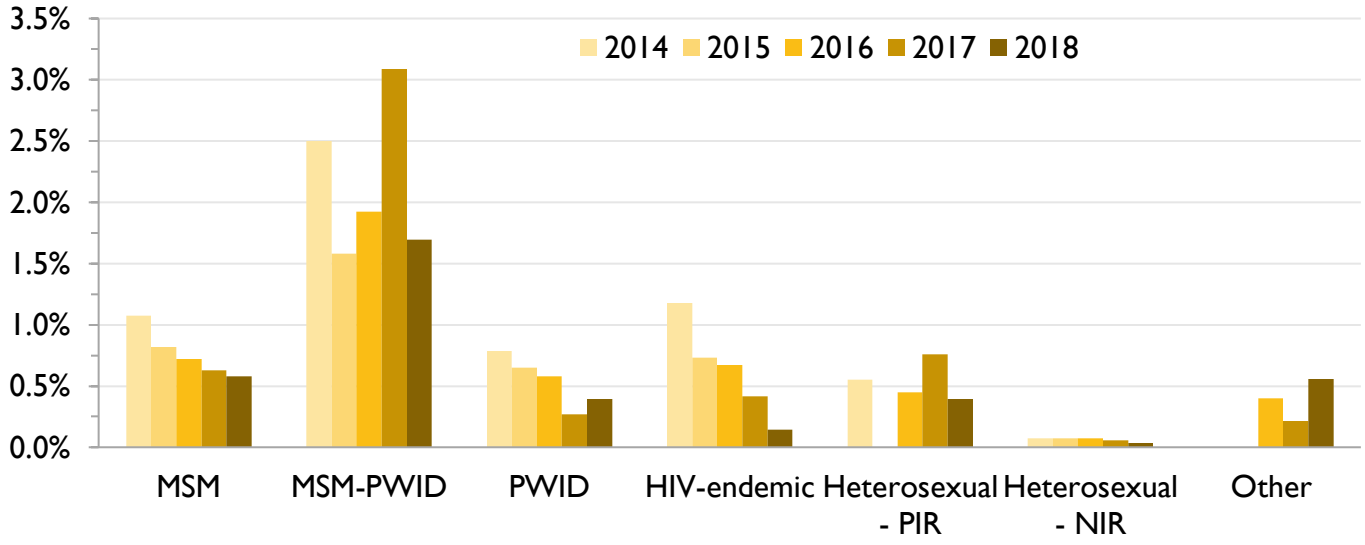


Snapshot

Between 2014 and 2018, the majority of HIV tests among females were consistently among heterosexual females reporting partners with no identified risk factors, with minimal change in this proportion.

Notes: Data provided by Public Health Ontario Laboratory. MSM = men who have sex with men, PWID = people who use injection drugs, PIR = partner with identified risk, NIR = partner with no identified risk. HIV-negative prenatal tests not included. In 2018, a "country of birth" field was added to the HIV test requisition form which better informed attribution to the HIV-endemic exposure category and likely contributed to the larger proportion of HIV tests attributed to this category in this year. As exposure category attribution follows a hierarchy, increasing proportions in higher categories would decrease proportions attributed to subsequent categories and hence, the proportion attributed to the Heterosexual – PIR/NIR category has correspondingly decreased. See Exposure categories in the Appendices for further explanation. Tests with unknown exposure category not included (approximately 69%). See *Appendices* for more information. See **Table 5.6** for underlying data.

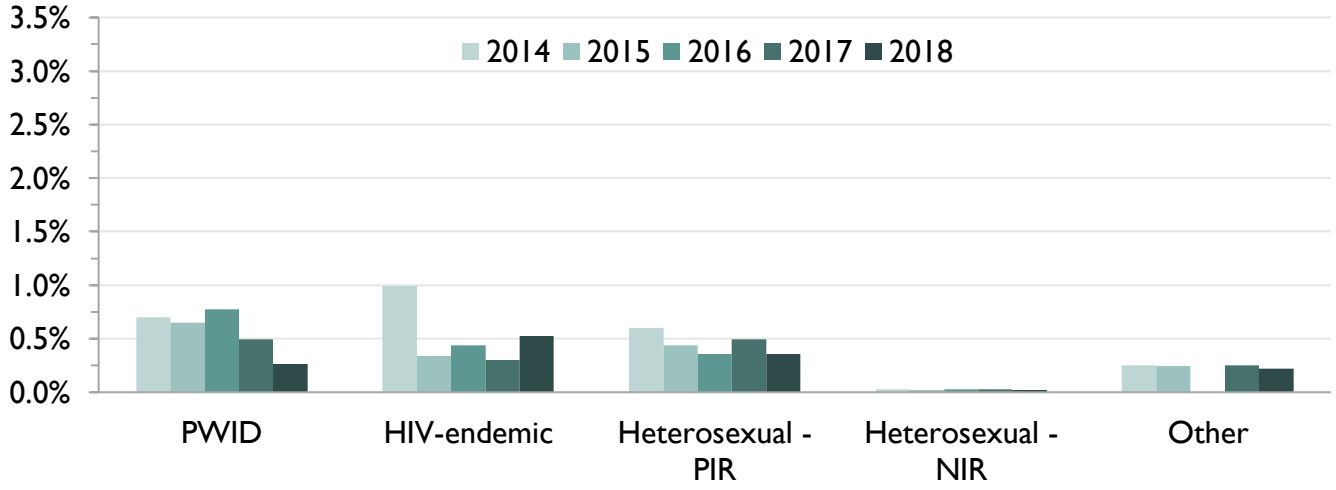
Figure 5.4 HIV test positivity rate by sex and exposure category (where known), males, Ontario, 2014 to 2018



Snapshot

Between 2014 and 2018, the HIV test positivity rate among males was highest for MSM-PWID. The HIV test positivity rate among males showed downward trends for MSM, PWID, and HIV-endemic exposure categories.

Figure 5.5 HIV test positivity rate by sex and exposure category (where known), females, Ontario, 2014 to 2018



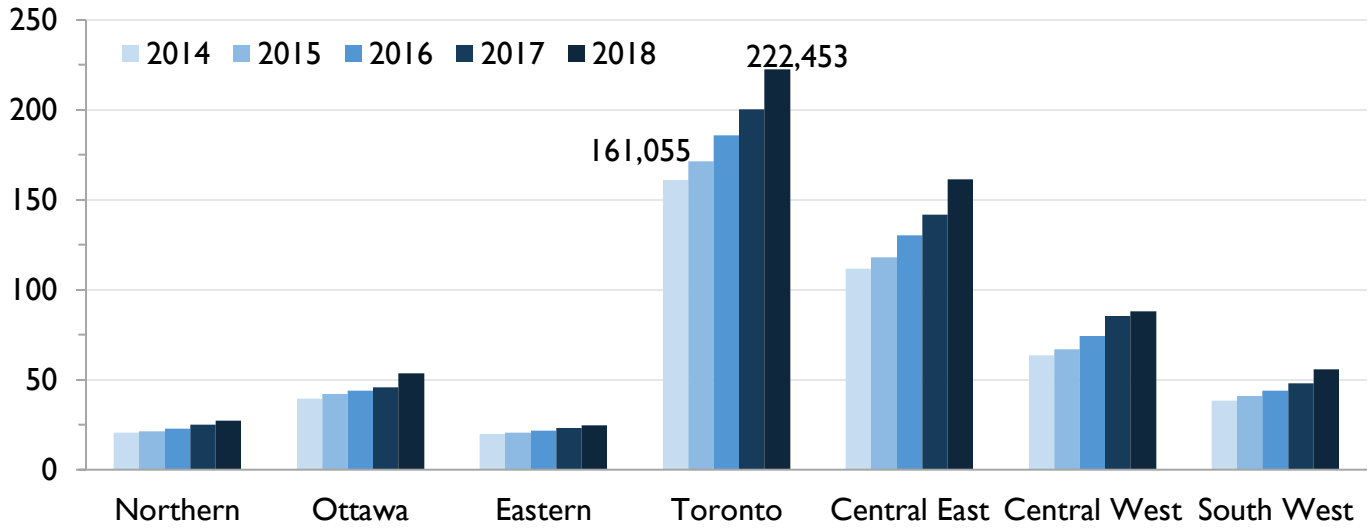
Snapshot

Between 2014 and 2018, the HIV test positivity rate among females showed downward trends for PWID and Heterosexual-PIR exposure categories.

Notes: Data provided by Public Health Ontario Laboratory. MSM = men who have sex with men, PWID = people who use injection drugs, PIR = partner with identified risk, NIR = partner with no identified risk. HIV-negative prenatal tests not included. Tests with unknown exposure category not included (approximately 67%). See Appendices for more information. See **Table 5.7** and **Table 5.8** for underlying data. Missing bar denotes 0% HIV test positivty rate due to zero positive HIV tests in that year and specific exposrue category.

6. By health region

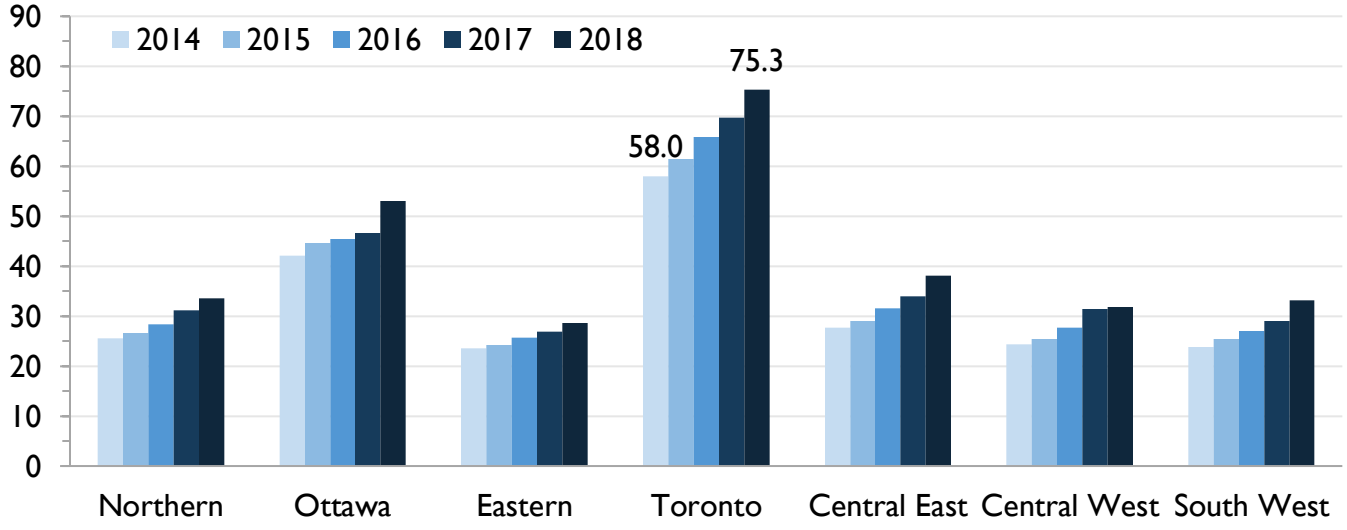
Figure 6.1 Number of HIV tests (thousands) by health region, Ontario, 2014 to 2018



Snapshot

Between 2014 and 2018, the number of HIV tests performed increased across all health regions. The number of HIV tests was highest in Toronto followed by Central East, and lowest in Northern and Eastern health regions. The South West region had the largest relative increase (46%).

Figure 6.2 HIV testing rate per 1,000 people by health region, Ontario, 2014 to 2018

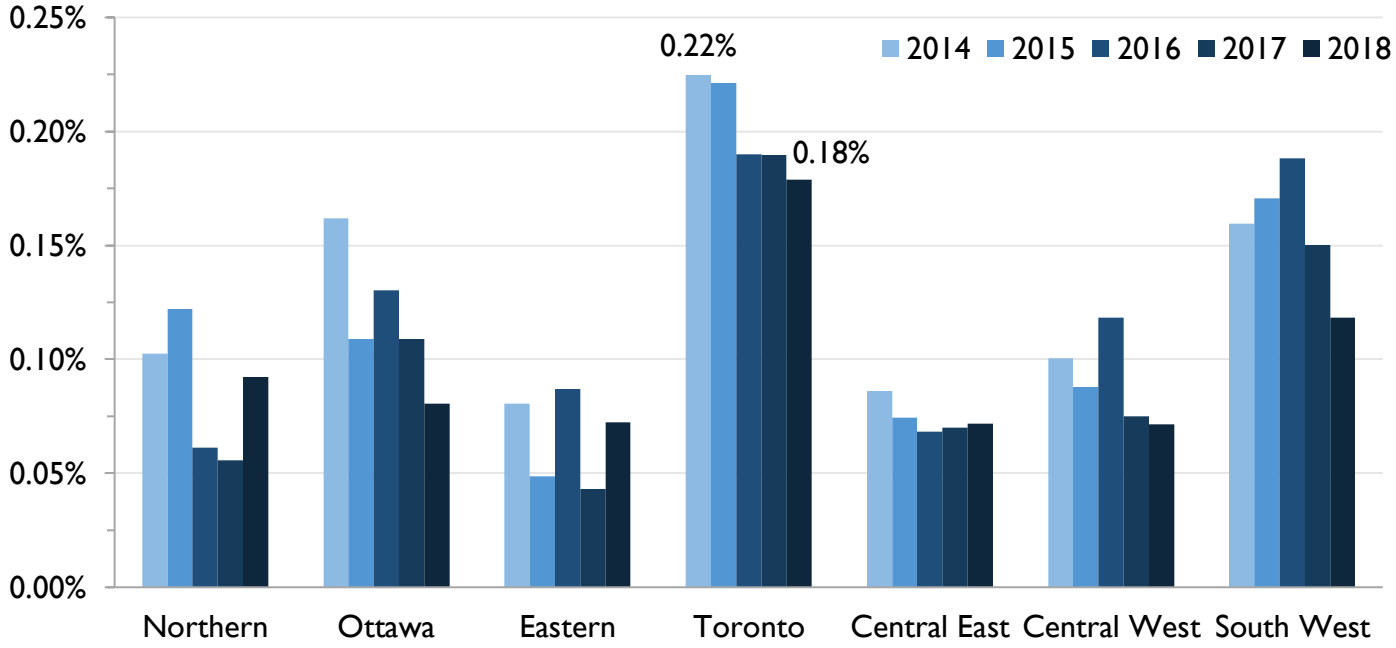


Snapshot

Between 2014 and 2018, the HIV testing rates increased across all regions. The HIV testing rate per 1,000 people was highest in Toronto followed by Ottawa, and then relatively similar in the remaining health regions. The South West region had the largest relative increase (40%).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Tests with unknown health region not included (less than 0.0%). Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information. See **Table 6.1** for underlying data.

Figure 6.3 HIV test positivity rate by health region, Ontario, 2014 to 2018



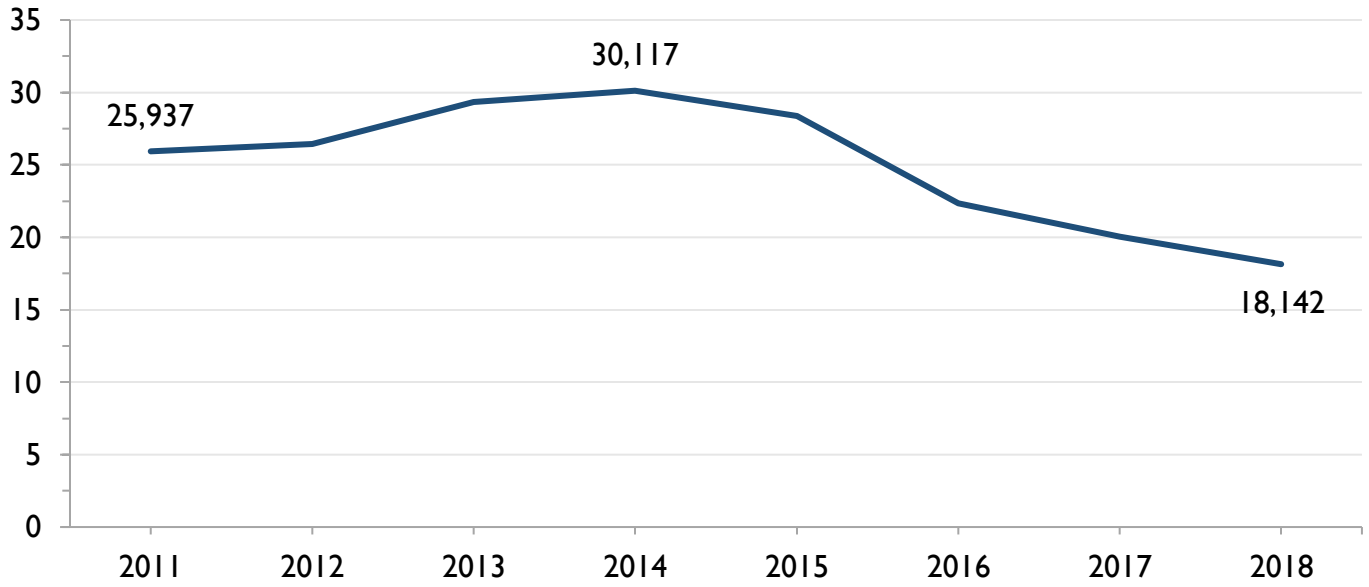
Snapshot

Between 2014 and 2018, the HIV test positivity rate trended downward for Toronto and Ottawa. Trends in the other regions were less clear.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests and positive diagnoses with previous evidence of HIV not included. Tests with unknown health region not included (less than 0.0%).
See Appendices for more information. See **Table 6.1** for underlying data.

7. Point-of-Care (POC) HIV testing

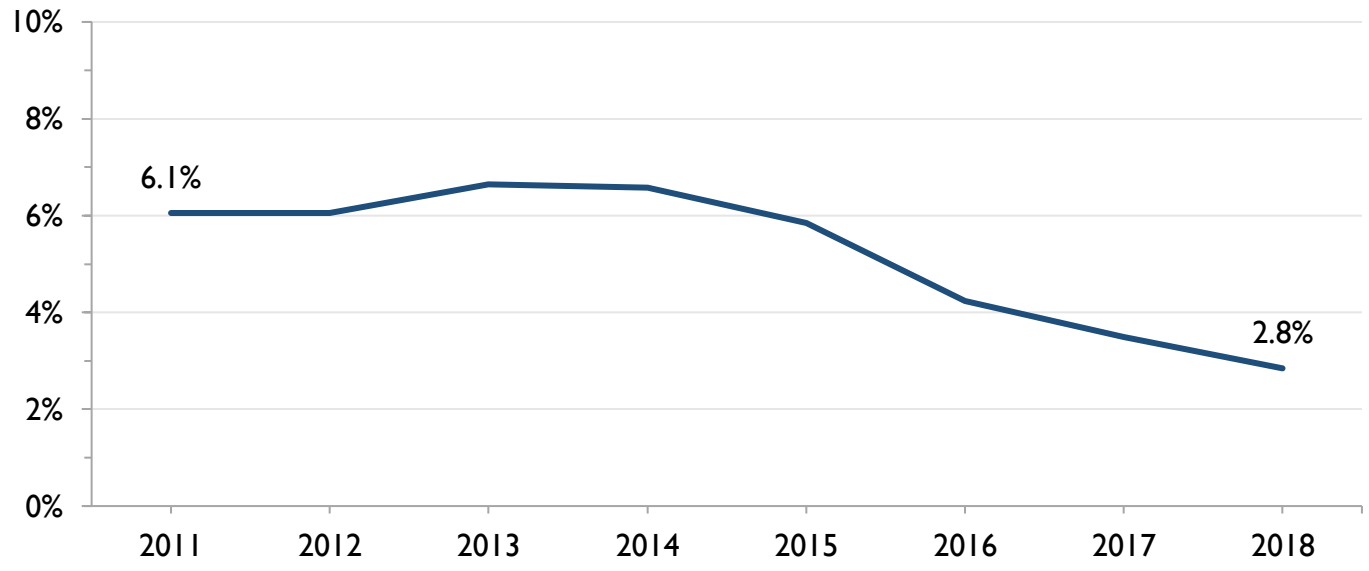
Figure 7.1 Number of POC HIV tests (thousands), Ontario, 2011 to 2018



Snapshot

Between 2011 and 2018, the number of POC HIV tests increased to a high of 30,117 tests in 2014, and then decreased to a low of 18,142 tests in 2018.

Figure 7.2 Percent of HIV tests that were POC tests, Ontario, 2011 to 2018

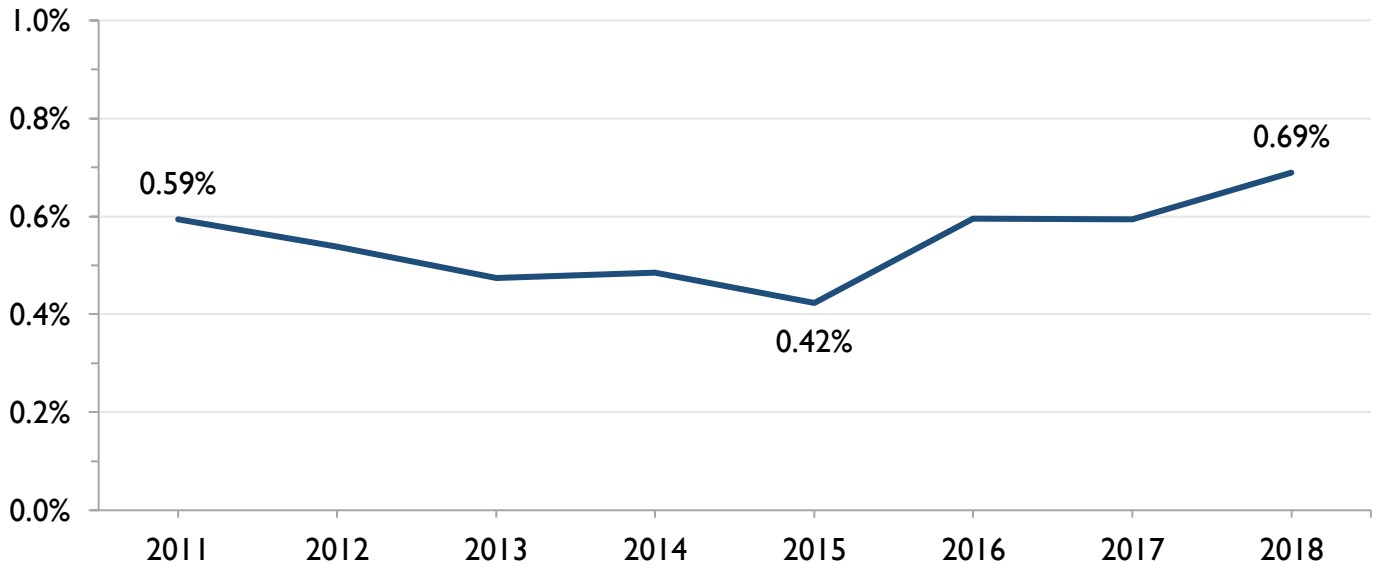


Snapshot

Between 2011 and 2018, the proportion of total HIV tests that were POC tests increased to a high of 6.6% in 2013 and 2014, and then decreased to a low of 2.8% in 2018.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Includes POC HIV tests with previous evidence of HIV. Positivity rate refers to the percent of tests that were HIV-positive. POC=point-of-care. See Appendices for more information. See **Table 7.1** for underlying data.

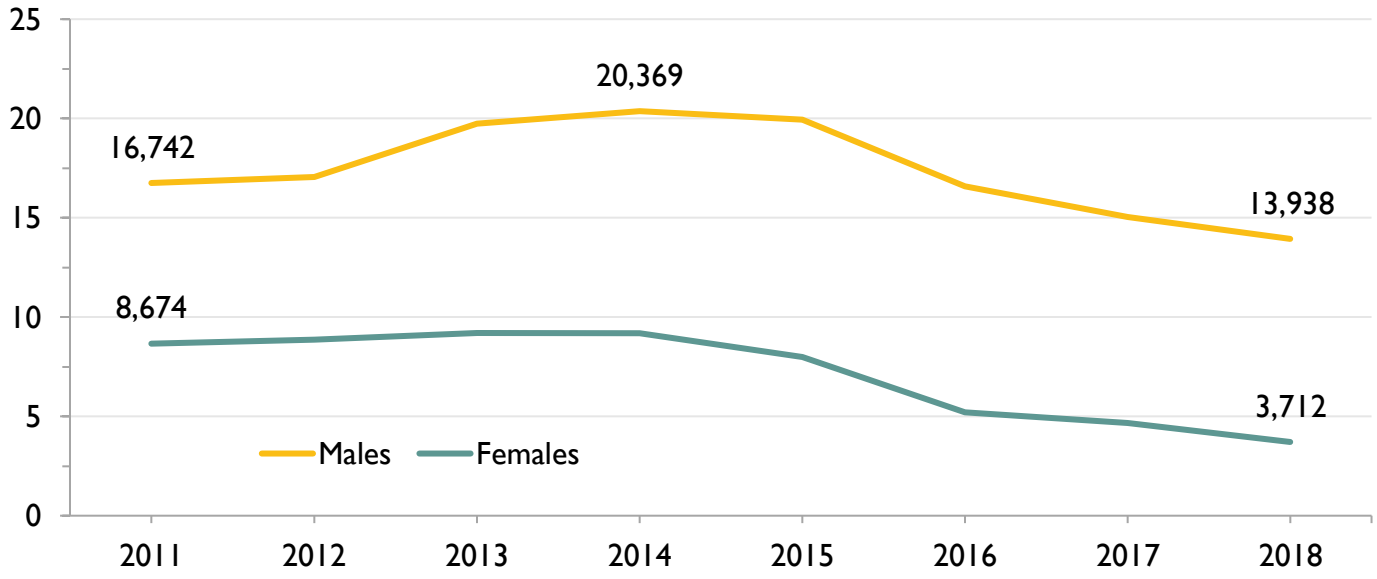
Figure 7.3 POC HIV test positivity rate, Ontario, 2011 to 2018



Snapshot

Between 2011 and 2018, the POC HIV test positivity rate decreased from 0.59% in 2011 to 0.42% in 2015, then increased to a high of 0.69% in 2018.

Figure 7.4 Number of POC HIV tests (thousands), by sex, Ontario, 2011 to 2018

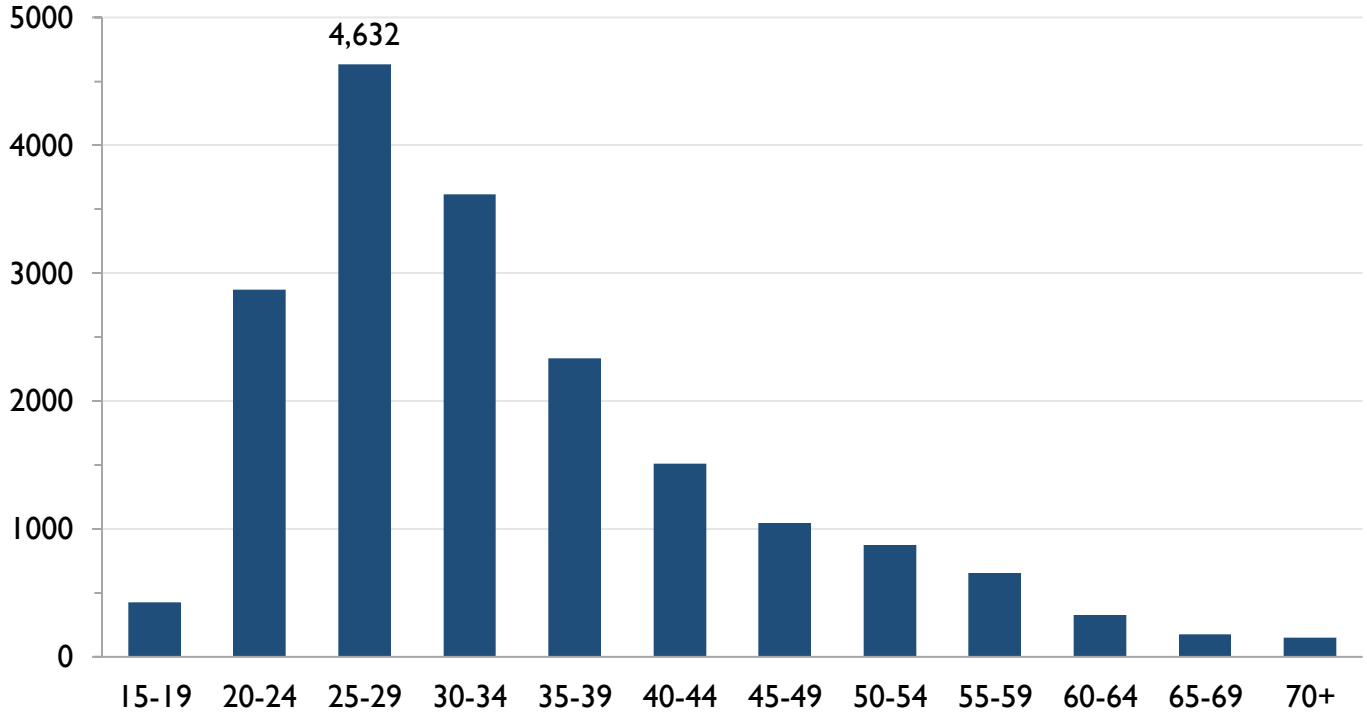


Snapshot

Between 2011 and 2018, the number of POC HIV tests among males increased to a high of 20,369 tests in 2014, and then decreased to a low of 13,938 tests in 2018. The number of POC HIV tests among females was relatively stable between 2011 and 2014, then decreased to a low of 3,712 tests in 2018.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Figure 7.3 does not include POC HIV tests with previous evidence of HIV, Figure 7.4 does. Positivity rate refers to the percent of tests that were HIV-positive. POC HIV tets with unknown sex (approximately 2% per year) not included in Figure 7.4. POC=point-of-care. See Appendices for more information. See **Table 7.2** and **Table 7.3** for underlying data.

Figure 7.5 Number of POC HIV tests, by age, Ontario, 2018

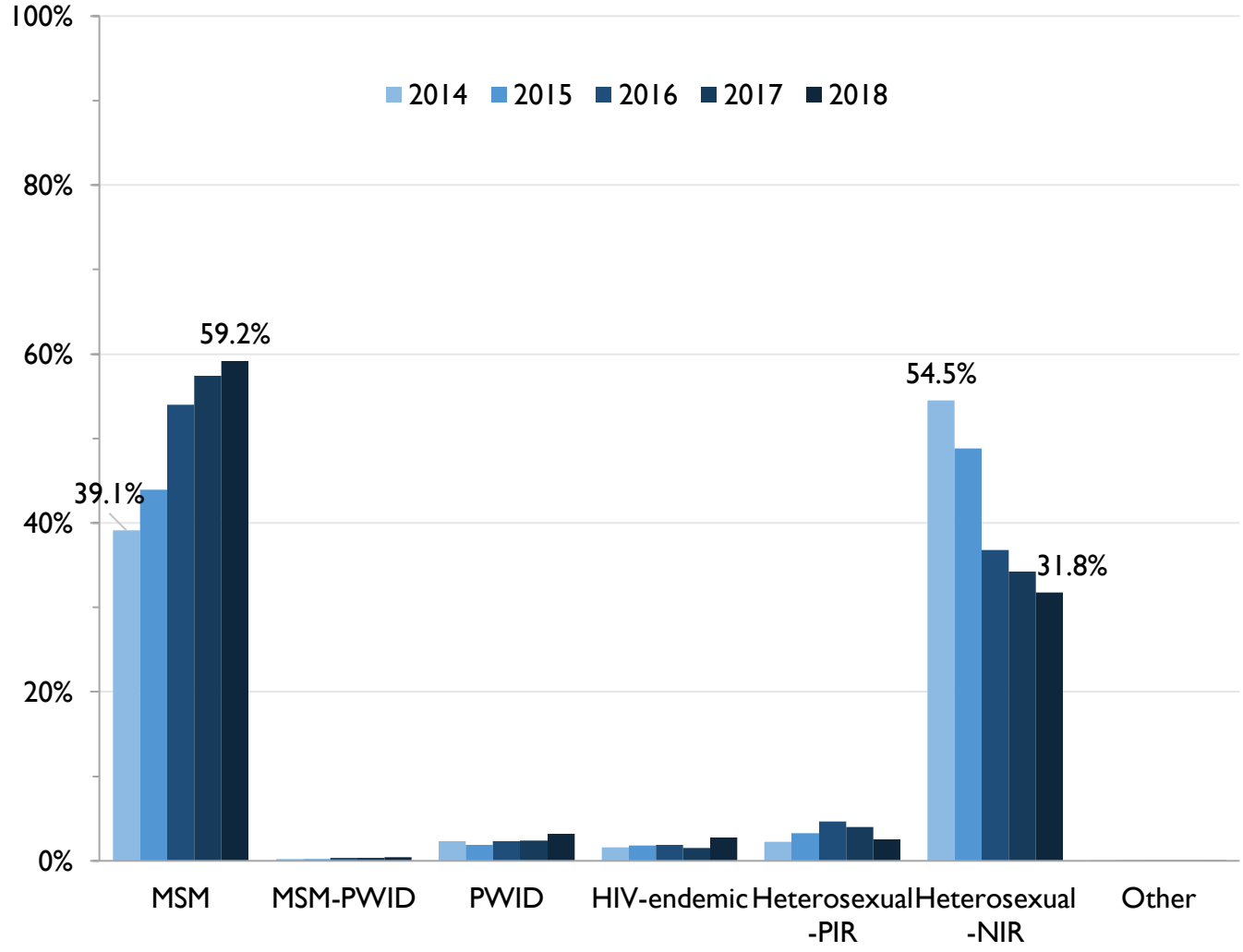


Snapshot

In 2018, the number of HIV POC tests was highest in the 25 to 29 age category (4,632).

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Includes POC HIV tests with previous evidence of HIV. POC HIV tests with unknown age (4.0% in 2018) not included. POC=point-of-care. See Appendices for more information. See **Table 7.4** for underlying data.

Figure 7.6 Percent of POC HIV tests by exposure category (where known), Ontario, 2014 to 2018



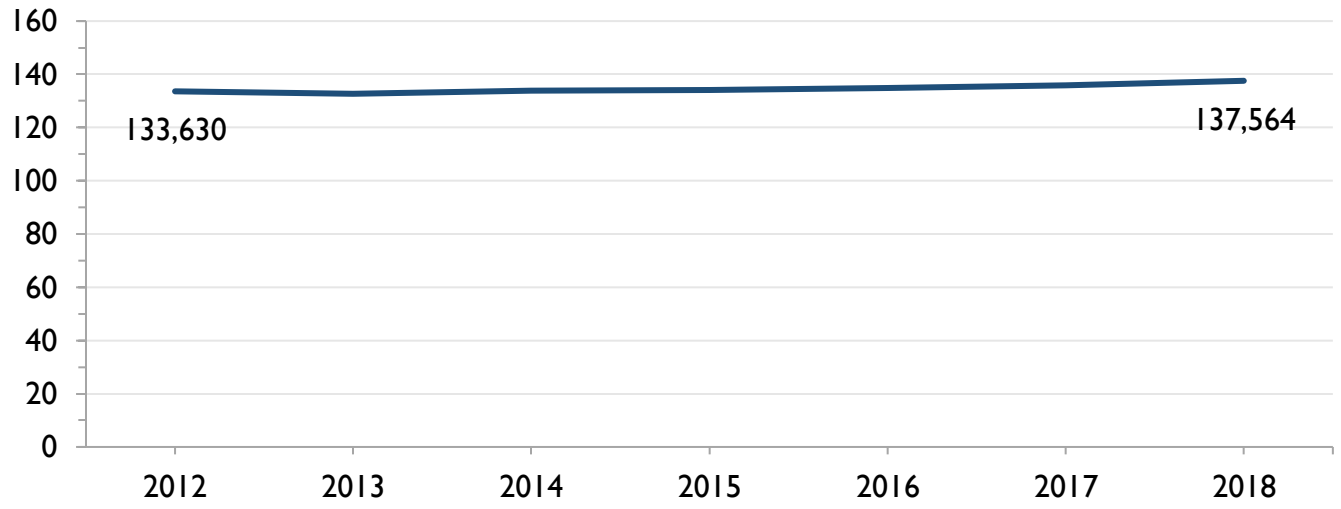
Snapshot

Between 2014 and 2018, the proportion of POC HIV tests attributed to the MSM exposure category increased from 39.1% to 59.2%. Conversely, the percent of POC HIV tests attributed to the Heterosexual-NIR exposure category decreased from 54.5% to 31.8%.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. POC HIV tests and positive diagnoses with previous evidence of HIV included. In 2018, a "country of birth" field was added to the HIV test requisition form which better informed attribution to the HIV-endemic exposure category and likely contributed to the larger proportion of HIV tests attributed to this category in this year. As exposure category attribution follows a hierarchy, increasing proportions in higher categories would decrease proportions attributed to subsequent categories and hence, the proportion attributed to the Heterosexual – PIR/NIR category has correspondingly decreased. See Exposure categories in the Appendices for further explanation. Tests with unknown exposure category not included (approximately 5.0% per year). See **Table 7.5** and **Table 7.6** for underlying data.

8. Prenatal HIV testing

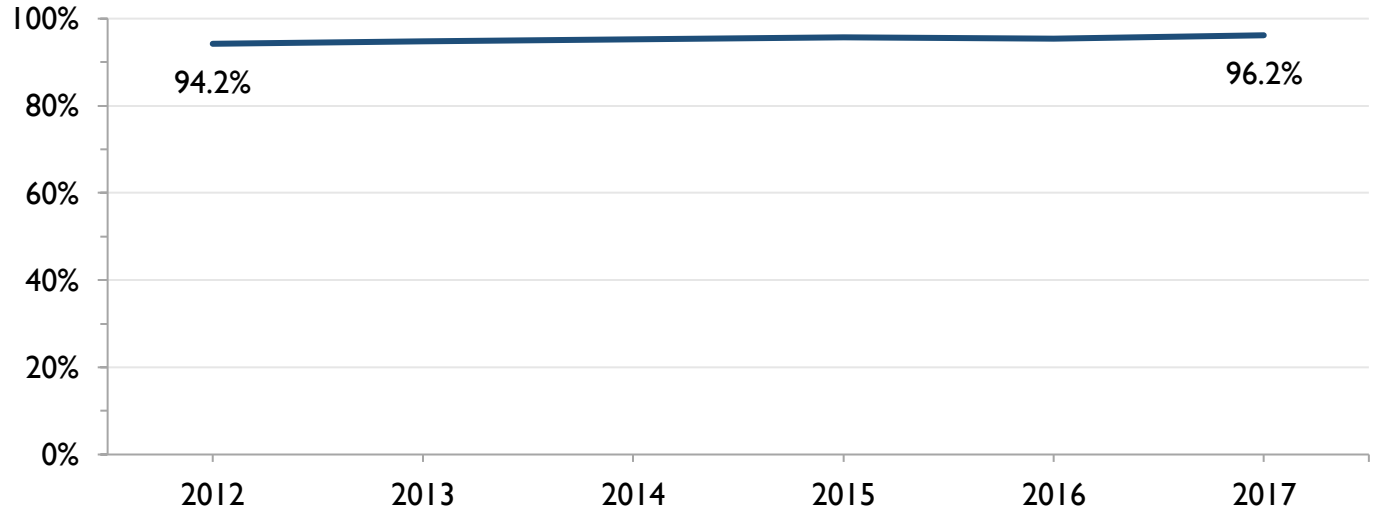
Figure 8.1 Number of unique pregnant people who received a prenatal HIV test (thousands), Ontario, 2012 to 2018



Snapshot

Between 2012 and 2018, the number of pregnant people who received a prenatal HIV test increased from 133,630 tests to 137,564 tests.

Figure 8.2 Estimated percent of pregnant people who received a prenatal HIV test, Ontario, 2012 to 2017



Snapshot

Between 2012 and 2017, the estimated percent of pregnant people who received a prenatal HIV test increased from 94.2% to 96.2%.

Notes: The annual number of pregnant woman in Ontario provided by Public Health Ontario Laboratory and the Better Outcomes Registry & Network (BORN). HIV tests with previous evidence of HIV included. Figure 8.2 does do not include 2018 due to an unstable reported number of pregnant people in 2018. See Appendices for more information. See **Table 8.1** for underlying data.

Appendices

1. Definitions

Anonymous HIV testing

A type of non-nominal HIV diagnostic testing where no identifying information on the individual being tested is collected on a special anonymous HIV test requisition form. The lack of identifying information means that it is not possible to link anonymous HIV-positive diagnostic tests to viral load tests within the HIV Datamart.

Coded HIV testing

A type of non-nominal HIV diagnostic testing where a code created by the ordering physician, instead of the name of the individual being tested, is collected on the test requisition form. The lack of identifying information means that it is not possible to link coded HIV-positive diagnostic tests to viral load tests within the HIV Datamart.

Exposure category

A category meant to represent an individual's most likely means of HIV transmission. An individual getting tested is assigned to an exposure category based on reported HIV risk factors collected on the test requisition form. Exposure categories are mutually exclusive, which means an individual can only be assigned to one category. When more than one exposure category is applicable for a single individual, a hierarchy is used to assign them to a single category. This hierarchy is based on the level of HIV risk associated with different exposure categories. While data on HIV testing are broken down by exposure categories, data on new HIV diagnoses (i.e. HIV-positive tests) are broken down by non-mutually exclusive priority populations (and can be found in a separate report). See Exposure categories within the Appendices for more information.

Health regions

Groupings of public health units that have historically been used in HIV epidemiology and surveillance reports. There are seven health regions: Northern, Ottawa, Eastern, Toronto, Central East, Central West and Southwest. See technical notes for more information on these groupings and boundaries.

HIV Datamart

All data in this report is stored in the HIV Datamart, an integrated data platform composed of Public Health Ontario Laboratory's diagnostic and viral load testing databases. Within the Datamart, diagnostic and viral load test records are linked together for the same person (however, linkage is not possible for anonymous and coded HIV-positive diagnostic tests).

HIV-positive diagnostic test

Defined as 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 separate test (Western Blot, p24 antigen confirmatory test, or polymerase chain reaction for children <18 months). HIV-positive diagnostic tests in the HIV Datamart includes all people who were diagnosed with HIV. That is, 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 elsewhere and moved to Ontario and tested again ('out-of-province' diagnoses).

HIV test positivity rate

The percent of HIV diagnostic tests with a confirmed HIV-positive result. HIV test positivity rates can provide insight into which sub-populations have a higher level of HIV risk. However, HIV test positivity rates should be interpreted with the awareness that although they are calculated with the counts of first-time diagnoses, some of the diagnoses likely still represent individuals with prior knowledge of their HIV-positive status who are unable to be identified in the HIV Datamart. See Technical notes for more information.

HIV test with previous evidence of HIV

An HIV test with previous evidence of HIV includes anyone with a previous positive diagnostic test as indicated on the test history section of the laboratory enhancement program (LEP) form or the test requisition form, regardless of the location of the previous positive test (inside or outside of Ontario). 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. See Exclusion of HIV tests with previous evidence of HIV in the technical notes for more information.

Laboratory Enhancement Program (LEP)

When a person receives a new HIV diagnosis in Ontario, a Laboratory Enhancement Program (LEP) form is sent to the health care provider who ordered the test in order to collect further information on the person who tested HIV-positive. This includes information collected on the original test requisition (e.g. risk factors), as well as additional information. Since 2009, the LEP form has collected information on race/ethnicity and country of birth. The test requisition form was revised in 2018 to collect this information as well. As LEP data does not exist for HIV-negative tests, it informs only HIV-positive diagnostic tests in this report.

Positive HIV diagnosis

An individual receiving a first-time confirmed HIV-positive test in Ontario. A reactive rapid/point-of-care test result (i.e. suggestive of an HIV-positive result) must be confirmed through laboratory testing to be counted as a new HIV diagnosis. HIV tests with previous evidence of HIV (see above) are excluded in this report. See Exclusion of HIV tests with previous evidence of HIV for more information.

Nominal HIV testing

A type of HIV diagnostic testing where the test requisition form contains the name of the individual being tested. Nominal HIV tests can be linked to viral load tests in the HIV Datamart using patient identifiers.

Non-nominal HIV testing

A type of HIV diagnostic testing where the test requisition form does not contain the name of the individual being tested. There are two types of non-nominal testing in Ontario: anonymous and coded. The lack of identifying information means that it is not possible to link non-nominal HIV-positive diagnostic tests to previous diagnostic tests and viral load tests within the HIV Datamart.

Point-of-care (POC) testing

HIV diagnostic testing that provides initial results at the same visit as the test. The rapid test currently used in Ontario can provide results within minutes. Rapid testing was first introduced in Ontario in 2007. Rapid tests are provided to all 38 currently active anonymous testing organizations as well as four other organizations that are not legislated to provide anonymous testing. If a POC test is reactive (i.e. suggestive of an HIV-positive result), the result is not considered to be a final diagnosis. To confirm the result, a blood sample must be taken and sent to the laboratory for additional testing. If a POC test is non-reactive, it is included in the total testing numbers as a negative test. This report includes POC tests provided by the Ministry of Health (MOH) only.

Prenatal HIV test

An HIV test that was done either as part of a prenatal screening requisition form or a regular HIV test requisition form with 'Prenatal' checked as the reason for testing.

Previous evidence of HIV (PEH)

HIV diagnoses with previous evidence of HIV include both 1) people who may be new to the province who already knew their HIV-positive status and have a confirmatory HIV test in Ontario ('out-of-province' HIV diagnoses) and 2) people who may have been infected in Ontario and have been living and receiving care (viral load testing) in the province but have no prior linked confirmatory diagnostic test in Ontario.

Public health unit

A health agency that provides health promotion and disease prevention programs. There are 35 public health units in Ontario and each has its own unique geographical boundary. See technical notes for more information.

Test requisition form

A form filled out by a health care provider along with each HIV diagnostic test. The HIV diagnostic test requisition form collects information on the age, sex and HIV risk factors of the person getting tested. As of February 2018, the HIV test requisition form also collects information on race/ethnicity, country of birth, transgender identity and PrEP status. Note, race/ethnicity and country of birth information has been collected on the Laboratory Enhancement Program (LEP) form since 2009.

Test type

There are three main test types as defined by the type of identifier collected on the test requisition form. HIV tests can be conducted under a patient's name (nominal), a code assigned by a healthcare provider or a unique anonymous number. Coded and anonymous testing are both forms of non-nominal testing.

Testing rate per 1,000 people

Refers to the number of HIV tests per 1,000 people in Ontario. While the number of tests is influenced by the size of the underlying population (e.g. greater population = greater number of tests), rates take population size into account and remove it as a possible explanatory factor for any observed differences over time or between populations.

Importantly, this report uses the number of HIV tests in Ontario to calculate testing rates. It does NOT use the number of unique individuals tested. This means trends may reflect changes in both the number of times an individual gets tested in a year as well as the total number of unique people who get tested.

2. Abbreviations

LEP = Laboratory Enhancement Program

OHESI = Ontario HIV Epidemiology and Surveillance Initiative

MSM = Men who have sex with men

PHO = Public Health Ontario

PHU = Public Health Unit

POC = Point-of-care testing

PWID = People who use injection drugs

3. Technical notes

The data in this report come from laboratory databases at Public Health Ontario (PHO) Laboratory. These data are collected for clinical purposes and completeness is reliant on clinicians and other providers completing the test requisitions and other related forms.

All HIV diagnostic testing conducted by health care providers in Ontario is done by PHO. This includes tests conducted in Canada as part of an immigration medical exam. Information on test results and the two forms which are completed as part of the testing process (test requisition and LEP forms) are compiled in a central database at Public Health Ontario, known as the 'HIV Datamart'. Tests conducted for purposes of blood/tissue/organ donation and life insurance eligibility are conducted outside of the public health laboratory system and are not included in this report.

When someone gets an HIV test in Ontario, the health care provider conducting the test fills out an HIV test requisition that collects information on the individual getting tested for HIV, including age, sex and HIV risk factors. With most HIV testing in Ontario, a blood sample is also taken and sent with the form to PHO. However, with rapid/POC testing, a blood sample is only taken and sent to the laboratory if the test is reactive (i.e. suggestive of an HIV-positive result). This is done in order for the result to be confirmed through additional testing at the laboratory. A blood sample may also be taken and sent to the laboratory if a rapid/POC test is non-reactive but there is reason to believe the person is in the window period (period of time during which an individual has been potentially exposed to HIV but the HIV test may not give an accurate result). This is done in order for the sample to be tested using an HIV test with a shorter window period. Unless followed by a confirmatory laboratory test, reactive POC tests are included in the total testing numbers but not as a positive diagnosis when calculating positivity rates.

If laboratory testing confirms an HIV-positive result and the person has no previous HIV-positive test in the laboratory database system, a second form is sent to the health care provider who ordered the test in order to collect information that may have been missed on the HIV test requisition. This second form was implemented in 1999 and is referred to as the Laboratory Enhancement Program (LEP) form. The LEP form was changed in 2009 to collect information on race/ethnicity and country of birth, both of which were only collected on the HIV test requisition since 2018. Information on race/ethnicity was not available on HIV test requisition forms up to and including part of 2018, therefore we are unable to report on HIV testing among different races/ethnicities in this report. Data from the requisition and LEP forms are combined and used for describing trends in new HIV diagnoses (i.e. HIV-positive tests) in Ontario. However, with the exception of identifying duplicate positive tests of the same individual, only data from the test requisition are used in this report as LEP data are not available for HIV-negative tests.

Prenatal HIV tests are part of an ongoing HIV testing program offered to all pregnant individuals as part of their prenatal care. Prenatal HIV testing results are included separately in this report (Section 8). They are not included in the number of HIV tests or population testing rates in this report. However, to calculate HIV positivity rates, HIV-positive prenatal tests are included in the numerator while HIV-negative prenatal tests are not included in the denominator. From 2012 to 2018, the annual number of HIV-positive prenatal tests ranged from 2 to 10 (where no previous evidence of HIV infection exists). To calculate the estimated percent of pregnant people who received a prenatal HIV test, the number of unique individuals who received an HIV test as part of the prenatal panel (either as part of a prenatal screening requisition form or a regular HIV test requisition form with 'Prenatal' checked as the reason for testing) were divided by the total number of pregnant individuals (live or still births) for each year (provided by the Better

Outcomes Registry & Network [BORN]). The estimated proportion of pregnant people who received a prenatal test in 2018 is not reported due to an unstable reported number of pregnant people in 2018.

4. Exclusion of HIV tests with previous evidence of HIV

Counts of HIV tests in this report exclude positive HIV tests from individuals with previous evidence of HIV. This is true for the calculation of HIV test positivity rates in this report as well. The aim of this is to better reflect HIV tests from those who are testing to learn their HIV status for the first time and, therefore, which people might be at greater risk of HIV transmission in Ontario today. Previous evidence of HIV includes a previous positive diagnostic test indicated on the HIV test requisition or LEP forms, regardless of the location of the previous positive test (inside or outside of Ontario). Previous evidence of HIV also includes evidence of being in care for HIV by means of linked viral load testing history in Ontario: this includes 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. Known duplicate HIV-positive tests are also excluded from counts of HIV tests – that is, a diagnosis with a documented history of a previous HIV diagnosis within Ontario. Duplicates can be recognized by lab records or the test history section of the LEP/HIV test requisition form indicating a previous positive in Ontario. Counts of HIV tests do include individuals who reside in another province but have an HIV test performed in Ontario.

It is not possible to exclude all individuals with a previous HIV-positive result from the new diagnoses numbers. Many individuals who test HIV-positive through coded or anonymous testing re-test a second time through nominal testing (e.g. confirming an HIV-positive test is standard practice for some healthcare providers when an HIV-positive person first presents to care). Unless this previous HIV-positive test result is indicated on the LEP/HIV test requisition form, since these two tests cannot be linked together, both are reported as a first-time HIV diagnosis - leading to double-counting of these individuals. Also, incomplete information on the HIV test requisition and/or LEP questionnaire from individuals who have previously been diagnosed with HIV outside of Ontario may lead to them being included as new diagnoses at the time of their first positive test in Ontario. This means that the reported number of fist-time HIV diagnoses each year is likely higher than the true number of diagnoses and may influence the positivity rates reported.

5. Exposure categories

An attempt is made to assign each HIV test to an exposure category based on what reported HIV risk factor information is collected on the requisition form. The exposure category is meant to represent an individual's most likely source of HIV risk. The exposure categories are mutually exclusive. When more than one risk factor is reported for a single individual, a hierarchy is used to assign an HIV test to a single exposure category. This hierarchy is as follows:

1. Mother-to-child transmission (MTC): Being a child of an HIV-positive mother or aged less than 18 months
2. Men who have sex with men and who use injection drugs (MSM-PWID): Being male and indicating sex with men and needle use
3. Men who have sex with men (MSM): Being male and indicating sex with men
4. People who use injection drugs (PWID): Indicating needle use
5. HIV-endemic: Having lived in an HIV-endemic area or outside of Canada

6. Heterosexual – partner with identified risk (PIR): Being male or female and indicating sex with a person of the opposite sex/gender who is either HIV-positive, a person at risk of HIV, injects drugs, from an HIV-endemic area, had a blood or clotting factor transfusion, or is bisexual.
7. Heterosexual – partner with no identified risk (NIR): Being male or female and indicating sex with a person of the opposite sex/gender who has no identified risk.
8. Clotting factor (pre 1986): Indicating clotting factor pre 1986
9. Transfusion (pre 1986): Indicating a blood transfusion pre 1986
10. No identified risk: Indicating "none" or "other" or "needlestick injury" as a risk factor
11. Unknown/missing: No risk factors indicated (form not completed)

The exposure category data in this report also contains an "Other" category, which includes tests assigned to the MTC (category #1), clotting factor (category #8) and transfusion categories (category #9). Tests categorized as "no identified risk" (category #10), or where the form is not completed (category #11), are excluded from the exposure category data in this report.

HIV-endemic areas (category #5) are classified by the Public Health Agency of Canada as countries where the prevalence of HIV among adults (15-49 years old) is 1.0% or greater and one of the following criteria is met: at least 50% are attributed to heterosexual transmission; a male to female ratio of 2:1 or less among prevalent infections; or HIV prevalence greater than or equal to 2% among women receiving prenatal care. A list of these countries can be found here.

HIV risk factor data used to determine an individual's exposure category is missing for about half of requisitions and marked as "none" for 15.5% of requisitions since 2009. These tests are excluded from breakdowns by exposure category. Due to the extent of missing risk factor information necessary for determination of exposure category, it may be more valid to focus on trends over time rather than the actual proportions.

It is unknown whether individuals with certain HIV risk factors, and hence exposure categories, are more likely to be missing information, which could introduce bias into the exposure category breakdowns. Also, provider practices for filling out the requisition forms may vary, leading to further bias. For example, some providers may ask people getting tested about their risk factors, while others may make assumptions or not ask.

In 2018, a "country of birth" field was added to the HIV test requisition form which better informed attribution to the HIV-endemic exposure category and likely contributed to the larger proportion of HIV tests attributed to this category in this year. As exposure category attribution follows a hierarchy, increasing proportions in higher categories would decrease proportions attributed to subsequent categories and hence, the proportion attributed to the Heterosexual – PIR/NIR category has correspondingly decreased. Any interpretation of changes between exposure category proportions of HIV tests in 2018 and the years prior should remain mindful of this caveat.

6. Health regions

Individuals who receive an HIV diagnostic test are assigned to a geographic region based on their residence or, if unknown, the address of the ordering provider. Approximately 17% of diagnoses are missing information on address of residence in 2018 and assigned based on provider address. Less than 0.0% of tests have unknown health region.

Ontario can be divided geographically by health region or public health units (PHU). These are defined below:

- Health regions – Groupings of PHUs that have historically been used in HIV epidemiology and surveillance reports. See the following page for health region breakdowns.
    - Public health unit – A health agency that provides health promotion and disease prevention programs. There are currently (2020) 34 PHUs in Ontario and each has its own unique geographical boundary. This is different from previous years where there were 36 PHUs. The change reflects the Oxford PHU being combined with the Elgin-St. Thomas PHU to form the new 'Southwestern' PHU. It also reflects Huron and Perth being combined. The larger health regions did not change from previous reports.
    - HIV testing data by public health unit is included in the OHESI report entitled "HIV in Ontario by public health unit: Testing, new diagnoses and care cascade," released in 2018.

Groupings of public health units for each health region

Ottawa health region
- Ottawa

Northern health region
- Algoma
- North Bay Parry Sound
- Northwestern
- Porcupine
- Sudbury
- Thunder Bay
- Timiskaming

Eastern health region
- Eastern Ontario
- Hastings and Prince Edward Counties
- Kingston, Frontenac, Lennox & Addington
- Leeds, Grenville and Lanark
- Renfrew

Central East health region
- Durham
- Haliburton, Kawartha, Pine Ridge
- Peel
- Peterborough
- Simcoe Muskoka
- York

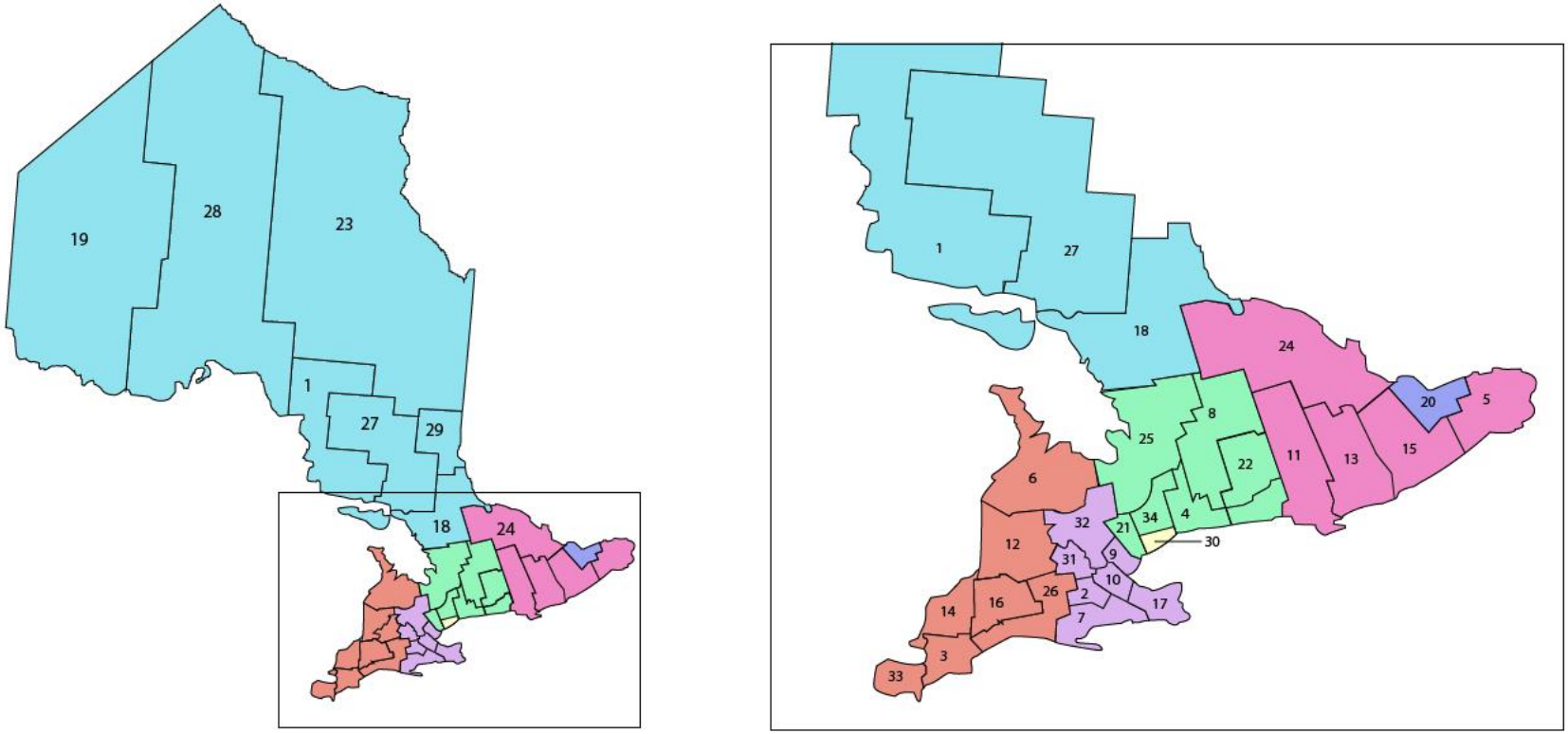
Toronto health region
- Toronto

Central West health region
- Brant
- Haldimand-Norfolk
- Halton
- Hamilton
- Niagara
- Waterloo
- Wellington-Dufferin-Guelph

South West health region
- Grey Bruce
- Huron / Perth
- Chatham-Kent
- Lambton
- Middlesex-London
- Southwestern (Oxford, Elgin and St. Thomas)
- Windsor-Essex

Health regions

Figure ii. Geographic map of health region and public health unit boundaries (created using Statistics Canada boundary files).



Public health units (map legend)

1. Algoma
2. Brant
3. Chatham-Kent
4. Durham
5. Eastern Ontario
6. Grey Bruce
7. Haldimand-Norfolk
8. Haliburton, Kawartha, Pine Ridge
9. Halton
10. Hamilton
11. Hastings and Prince Edward Counties
12. Huron / Perth
13. Kingston, Frontenac, Lennox & Addington
14. Lambton
15. Leeds, Grenville and Lanark
16. Middlesex-London
17. Niagara
18. North Bay Parry Sound
19. Northwestern
20. Ottawa
21. Peel
22. Peterborough
23. Porcupine
24. Renfrew
25. Simcoe Muskoka
26. Southwestern
27. Sudbury
28. Thunder Bay
29. Timiskaming
30. Toronto
31. Waterloo
32. Wellington-Dufferin-Guelph
33. Windsor-Essex
34. York

Data Tables

1. Overall

Table 1.1 Number and HIV testing rate per 1,000 people, Ontario, 2009 to 2018

Year	Number of tests	Population (all ages)	Rate per 1,000
2009	425,151	12,998,345	32.7
2010	418,219	13,135,778	31.8
2011	428,472	13,261,381	32.3
2012	436,118	13,390,632	32.6
2013	441,683	13,510,781	32.7
2014	457,773	13,617,553	33.6
2015	485,105	13,707,118	35.4
2016	527,091	13,875,394	38.0
2017	573,815	14,071,445	40.8
2018	637,780	14,322,757	44.5

Table 1.2 Number of HIV tests and test positivity rate, Ontario, 2009 to 2018

Year	Number of tests	Positive results	Positivity rate
2009	425,151	814	0.19%
2010	418,219	844	0.20%
2011	428,472	835	0.19%
2012	436,118	707	0.16%
2013	441,683	666	0.15%
2014	457,773	695	0.15%
2015	485,105	686	0.14%
2016	527,091	714	0.14%
2017	573,815	695	0.12%
2018	637,780	738	0.12%

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. See Appendices for more information. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019.

2. By sex

Table 2.1 Number of HIV tests and HIV test positivity rate, by sex, Ontario, 2009 to 2018

Year	Males			Females			Unknown sex		
	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate
2009	193,822	636	0.33%	220,617	170	0.08%	10,712	8	0.07%
2010	191,407	670	0.35%	212,939	160	0.08%	13,873	14	0.10%
2011	199,527	658	0.33%	212,568	164	0.08%	16,377	13	0.08%
2012	203,853	560	0.27%	216,029	143	0.07%	16,236	<5	0.02%
2013	209,620	555	0.26%	217,401	106	0.05%	14,662	5	0.03%
2014	218,782	559	0.26%	223,200	130	0.06%	15,791	6	0.04%
2015	231,182	557	0.24%	236,283	127	0.05%	17,640	<5	0.01%
2016	251,363	566	0.23%	256,307	140	0.05%	19,421	8	0.04%
2017	277,699	567	0.20%	276,918	125	0.05%	19,198	<5	0.02%
2018	308,844	576	0.19%	309,163	160	0.05%	19,773	<5	0.01%

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. See Appendices for more information.

Table 2.2 Number and rate of HIV tests per 1,000 people, by sex, Ontario, 2009 to 2018

Year	Males			Females		
	Number of tests	Population (all ages)	Rate per 1,000	Number of tests	Population (all ages)	Rate per 1,000
2009	193,822	6,390,255	30.3	220,617	6,608,090	33.4
2010	191,407	6,453,206	29.7	212,939	6,682,572	31.9
2011	199,527	6,513,084	30.6	212,568	6,748,297	31.5
2012	203,853	6,581,938	31.0	216,029	6,808,694	31.7
2013	209,620	6,643,473	31.6	217,401	6,867,308	31.7
2014	218,782	6,698,984	32.7	223,200	6,918,569	32.3
2015	231,182	6,746,804	34.3	236,283	6,960,314	33.9
2016	251,363	6,835,845	36.8	256,307	7,039,549	36.4
2017	277,699	6,937,613	40.0	276,918	7,133,832	38.8
2018	308,844	7,069,861	43.7	309,163	7,252,896	42.6

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown sex not included (approximately 3% each year). Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information.

3. By age

Table 3.1 Number of HIV tests and HIV test positivity rate by age and sex, Ontario, 2018

Age	Total			Male			Female		
	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate
<15	4,434	9	0.20%	1,975	5	0.25%	2,280	<5	0.18%
15 to 19	30,729	15	0.05%	11,381	13	0.11%	18,128	<5	0.01%
20 to 24	93,705	70	0.07%	40,767	60	0.15%	49,822	10	0.02%
25 to 29	119,962	141	0.12%	57,787	122	0.21%	59,244	18	0.03%
30 to 34	107,093	119	0.11%	51,192	99	0.19%	53,348	20	0.04%
35 to 39	85,408	114	0.13%	40,844	80	0.20%	42,474	34	0.08%
40 to 44	56,650	74	0.13%	28,349	55	0.19%	26,805	18	0.07%
45 to 49	38,419	61	0.16%	20,904	46	0.22%	16,293	15	0.09%
50 to 54	28,989	43	0.15%	16,296	33	0.20%	11,644	10	0.09%
55 to 59	22,963	45	0.20%	12,815	31	0.24%	9,241	14	0.15%
60 to 64	16,890	15	0.09%	9,314	10	0.11%	6,945	5	0.07%
65 to 69	11,858	14	0.12%	6,634	10	0.15%	4,793	<5	0.08%
70+	18,059	17	0.09%	9,779	11	0.11%	7,628	6	0.08%

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown age not included (less than 1%). See Appendices for more information.

Table 3.2 Number and rate of HIV tests per 1,000 people by age and sex, Ontario, 2018

Age	Total			Males			Females		
	Number of tests	Population	Rate per 1,000	Number of tests	Population	Rate per 1,000	Number of tests	Population	Rate per 1,000
<15	4,434	2,266,070	2.0	1,975	1,156,644	1.7	2,280	1,109,426	2.1
15 to 19	30,729	858,779	35.8	11,381	442,236	25.7	18,128	416,543	43.5
20 to 24	93,705	1,010,922	92.7	40,767	528,919	77.1	49,822	482,003	103.4
25 to 29	119,962	1,014,007	118.3	57,787	521,392	110.8	59,244	492,615	120.3
30 to 34	107,093	975,779	109.8	51,192	490,250	104.4	53,348	485,529	109.9
35 to 39	85,408	934,918	91.4	40,844	457,837	89.2	42,474	477,081	89.0
40 to 44	56,650	905,902	62.5	28,349	438,816	64.6	26,805	467,086	57.4
45 to 49	38,419	948,166	40.5	20,904	466,122	44.8	16,293	482,044	33.8
50 to 54	28,989	1,020,454	28.4	16,296	507,211	32.1	11,644	513,243	22.7
55 to 59	22,963	1,049,597	21.9	12,815	520,316	24.6	9,241	529,281	17.5
60 to 64	16,890	913,345	18.5	9,314	444,033	21.0	6,945	469,312	14.8
65 to 69	11,858	757,793	15.6	6,634	361,729	18.3	4,793	396,064	12.1
70+	18,059	1,667,025	10.8	9,779	734,356	13.3	7,628	932,669	8.2

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown age not included (less than 1%). Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information.

Table 3.3 Rate of HIV tests per 1,000 people by age, 2014 to 2018

Year	Age category (HIV test rate per 1,000 people)												
	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
2014	1.2	26.0	74.4	92.1	87.0	67.4	45.2	29.1	20.6	16.2	13.5	11.1	7.4
2015	1.2	27.4	77.7	97.5	91.0	72.2	47.6	31.1	21.9	17.5	14.3	11.6	8.3
2016	1.5	29.5	82.0	103.0	96.4	77.6	51.9	34.1	24.0	18.6	16.0	13.2	9.2
2017	2.1	32.4	87.5	112.8	102.1	83.6	55.7	35.9	25.6	19.4	16.3	13.9	9.3
2018	2.0	35.8	92.7	118.3	109.8	91.4	62.5	40.5	28.4	21.9	18.5	15.6	10.8

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown age not included (less than 1%). Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information.

Table 3.4 Rate of HIV tests per 1,000 males by age, males, 2014 to 2018

Year	Age category (HIV test rate per 1,000 people)												
	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
2014	1.1	18.8	63.8	84.1	81.2	65.2	46.5	32.2	23.3	18.5	15.7	13.4	9.3
2015	1.0	19.1	64.9	89.2	84.7	69.6	48.2	34.4	24.8	20.4	16.9	13.9	10.5
2016	1.3	20.6	67.9	94.7	89.5	75.2	52.8	38.0	27.0	21.2	18.1	15.3	11.3
2017	1.9	22.7	72.7	106.1	96.5	81.7	57.6	39.9	29.3	22.2	19.0	16.5	11.7
2018	1.7	25.7	77.1	110.8	104.4	89.2	64.6	44.8	32.1	24.6	21.0	18.3	13.3

Table 3.5 Rate of HIV tests per 1,000 males by age, females, 2014 to 2018

Year	Age category (HIV test rate per 1,000 people)												
	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
2014	1.3	31.6	80.7	94.5	87.4	65.4	41.1	23.9	16.1	12.8	10.4	8.2	5.6
2015	1.3	33.9	85.9	100.0	91.4	70.0	43.5	25.3	17.3	13.1	10.9	8.7	6.1
2016	1.5	36.4	91.2	105.1	97.5	75.1	47.4	27.7	18.9	14.5	12.8	10.4	7.0
2017	2.0	40.0	97.3	113.8	102.2	80.6	50.6	29.5	19.8	15.1	12.6	10.4	6.9
2018	2.1	43.5	103.4	120.3	109.9	89.0	57.4	33.8	22.7	17.5	14.8	12.1	8.2

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown age and sex not included (approximately 3%). Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information.

4. By test type

Table 4.1 Number of HIV tests and HIV test positivity rate by test type, Ontario, 2009 to 2018

Year	Nominal			Coded			Anonymous		
	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate	Number of tests	Positive results	Positivity rate
2009	389,003	606	0.16%	22,096	87	0.39%	14,047	121	0.86%
2010	380,407	630	0.17%	22,812	74	0.32%	14,955	140	0.94%
2011	389,072	628	0.16%	23,187	75	0.32%	16,213	132	0.81%
2012	397,048	525	0.13%	22,902	68	0.30%	16,167	114	0.71%
2013	401,670	496	0.12%	22,817	55	0.24%	17,192	115	0.67%
2014	423,091	569	0.13%	17,242	18	0.10%	17,434	108	0.62%
2015	452,282	565	0.12%	15,568	28	0.18%	17,253	93	0.54%
2016	500,864	603	0.12%	10,633	15	0.14%	15,590	96	0.62%
2017	549,966	589	0.11%	9,186	17	0.19%	14,662	89	0.61%
2018	615,945	631	0.10%	8,105	10	0.12%	13,730	97	0.71%

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. See Appendices for more information.

Table 4.2 Number of HIV tests by test type and sex, Ontario, 2009 to 2018

Year	Males			Females		
	Nominal	Coded	Anonymous	Nominal	Coded	Anonymous
2009	173,313	11,236	9,271	206,489	9,616	4,511
2010	169,533	11,789	10,082	198,773	9,562	4,601
2011	175,892	12,452	11,183	198,249	9,607	4,712
2012	180,384	12,557	10,911	201,446	9,635	4,948
2013	184,155	13,185	12,279	203,519	9,204	4,675
2014	196,683	9,488	12,608	211,329	7,294	4,574
2015	209,522	8,913	12,747	225,741	6,239	4,301
2016	233,141	6,277	11,944	248,958	3,954	3,392
2017	261,323	5,214	11,161	270,089	3,501	3,328
2018	293,523	4,596	10,725	303,334	3,123	2,706

Table 4.3 Percent of HIV tests by test type, Ontario, 2009 to 2018

Year	Nominal	Coded	Anonymous
2009	91.5%	5.2%	3.3%
2010	91.0%	5.5%	3.6%
2011	90.8%	5.4%	3.8%
2012	91.0%	5.3%	3.7%
2013	90.9%	5.2%	3.9%
2014	92.4%	3.8%	3.8%
2015	93.2%	3.2%	3.6%
2016	95.0%	2.0%	3.0%
2017	95.8%	1.6%	2.6%
2018	96.6%	1.3%	2.2%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown sex not included in Table 4.2 (approximately 3% each year). See Appendices for more information.

5. By exposure category

Table 5.1 Number of HIV tests by exposure category, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total	Unknown (excluded)
2014	21,836	280	5,214	1,325	2,216	123,412	900	155,183	302,590
2015	24,972	253	5,474	1,331	2,388	130,235	847	165,500	319,605
2016	27,859	260	5,588	1,536	2,617	134,110	999	172,969	354,122
2017	31,126	259	6,066	1,439	2,355	141,651	925	183,821	389,994
2018	35,487	295	6,973	3,012	1,616	151,632	1032	200,047	437,733

Table 5.2 Percent of HIV tests by exposure category, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total
2014	14.1%	0.2%	3.4%	0.9%	1.4%	79.5%	0.6%	100%
2015	15.1%	0.2%	3.3%	0.8%	1.4%	78.7%	0.5%	100%
2016	16.1%	0.2%	3.2%	0.9%	1.5%	77.5%	0.6%	100%
2017	16.9%	0.1%	3.3%	0.8%	1.3%	77.1%	0.5%	100%
2018	17.7%	0.1%	3.5%	1.5%	0.8%	75.8%	0.5%	100%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown exposure category not included (approximately 67%). See Appendices for more information.

Table 5.3 Number of HIV tests by exposure category, males, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total	Unknown (excluded)
2014	21,836	280	2,799	680	544	57,375	457	83,971	134,811
2015	24,972	253	3,065	683	560	59,694	402	89,629	141,553
2016	27,859	260	3,108	742	666	61,963	500	95,098	156,265
2017	31,126	259	3,374	726	528	64,435	465	100,913	176,786
2018	35,487	295	4,035	1,412	506	67,764	537	110,036	198,808

Table 5.4 Percent of HIV tests by exposure category, males, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total
2014	26.0%	0.3%	3.3%	0.8%	0.6%	68.3%	0.5%	100%
2015	27.9%	0.3%	3.4%	0.8%	0.6%	66.6%	0.4%	100%
2016	29.3%	0.3%	3.3%	0.8%	0.7%	65.2%	0.5%	100%
2017	30.8%	0.3%	3.3%	0.7%	0.5%	63.9%	0.5%	100%
2018	32.3%	0.3%	3.7%	1.3%	0.5%	61.6%	0.5%	100%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown exposure category not included (approximately 63%). See Appendices for more information.

Table 5.5 Number of HIV tests by exposure category, females, Ontario, 2014 to 2018

Year	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total	Unknown (excluded)
2014	2,150	604	1,672	66,037	395	70,858	152,342
2015	2,154	589	1,828	70,541	404	75,516	160,767
2016	2,202	684	1,951	72,147	435	77,419	178,888
2017	2,432	658	1,827	77,216	398	82,531	194,387
2018	2,673	1,522	1,110	83,868	454	89,627	219,536

Table 5.6 Percent of HIV tests by exposure category, females, Ontario, 2014 to 2018

Year	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total
2014	3.0%	0.9%	2.4%	93.2%	0.6%	100.0%
2015	2.9%	0.8%	2.4%	93.4%	0.5%	100.0%
2016	2.8%	0.9%	2.5%	93.2%	0.6%	100.0%
2017	2.9%	0.8%	2.2%	93.6%	0.5%	100.0%
2018	3.0%	1.7%	1.2%	93.6%	0.5%	100.0%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown exposure category not included (approximately 69%). See Appendices for more information.

Table 5.7 HIV test positivity rate by exposure category, males, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Unknown
2014	1.08%	2.50%	0.79%	1.18%	0.55%	0.07%	0.00%	0.18%
2015	0.82%	1.58%	0.65%	0.73%	0.00%	0.08%	0.00%	0.20%
2016	0.72%	1.92%	0.58%	0.67%	0.45%	0.07%	0.40%	0.18%
2017	0.63%	3.09%	0.27%	0.41%	0.76%	0.06%	0.22%	0.18%
2018	0.58%	1.69%	0.40%	0.14%	0.40%	0.04%	0.56%	0.16%

Table 5.8 HIV test positivity rate by exposure category, females, Ontario, 2014 to 2018

Year	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Unknown
2014	0.70%	0.99%	0.60%	0.03%	0.25%	0.05%
2015	0.65%	0.34%	0.44%	0.02%	0.25%	0.05%
2016	0.77%	0.44%	0.36%	0.03%	0.00%	0.05%
2017	0.49%	0.30%	0.49%	0.02%	0.25%	0.04%
2018	0.26%	0.53%	0.36%	0.02%	0.22%	0.06%

Notes: Data provided by Public Health Ontario Laboratory. Positivity rate refers to the percent of tests that were HIV-positive. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Tests with unknown exposure category not included (approximately 69%). See Appendices for more information.

6. By health region

Table 6.1 Number and rate of HIV tests per 1,000 people by health region, Ontario, 2014 to 2018

Health Region	2014	2015	2016	2017	2018
Northern					
Number of Tests	20,518	21,306	22,809	25,089	27,142
Population (all ages)	803,848	801,871	802,794	804,474	807,932
Rate per 1,000	26	27	28	31	34
Positive results	21	26	14	14	25
Positivity rate	0.10%	0.12%	0.06%	0.06%	0.09%
Ottawa					
Number of Tests	39,560	42,267	43,792	45,863	53,437
Population (all ages)	939,708	948,063	964,448	984,279	1,007,501
Rate per 1,000	42	45	45	47	53
Positive results	64	46	57	50	43
Positivity rate	0.16%	0.11%	0.13%	0.11%	0.08%
Eastern					
Number of Tests	19,858	20,530	21,852	23,170	24,839
Population (all ages)	844,285	846,559	852,188	859,791	868,891
Rate per 1,000	24	24	26	27	29
Positive results	16	10	19	10	18
Positivity rate	0.08%	0.05%	0.09%	0.04%	0.07%
Toronto					
Number of Tests	161,055	171,385	185,981	200,509	222,453
Population (all ages)	2,775,417	2,786,570	2,822,901	2,878,590	2,956,024
Rate per 1,000	58	62	66	70	75
Positive results	362	379	353	380	398
Positivity rate	0.22%	0.22%	0.19%	0.19%	0.18%
Central East					
Number of Tests	111,662	118,063	130,194	141,657	161,335
Population (all ages)	4,031,658	4,070,028	4,122,545	4,170,888	4,232,746
Rate per 1,000	28	29	32	34	38
Positive results	96	88	89	99	116
Positivity rate	0.09%	0.07%	0.07%	0.07%	0.07%
Central West					
Number of Tests	63,712	67,094	74,388	85,451	87,963
Population (all ages)	2,616,589	2,642,343	2,681,632	2,722,005	2,768,848
Rate per 1,000	24	25	28	31	32
Positive results	64	59	88	64	63
Positivity rate	0.10%	0.09%	0.12%	0.07%	0.07%
South West					
Number of Tests	38,211	41,008	44,097	47,978	55,803
Population (all ages)	1,606,048	1,611,684	1,628,886	1,651,418	1,680,815
Rate per 1,000	24	25	27	29	33
Positive results	61	70	83	72	66
Positivity rate	0.16%	0.17%	0.19%	0.15%	0.12%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. HIV tests with previous evidence of HIV not included. Rates calculated using Statistics Canada population estimates for all ages, accessed 08/22/2019. See Appendices for more information.

7. Point-of-Care (POC) HIV testing

Table 7.1 Number of POC HIV tests, total number of HIV tests, and percent of total HIV tests that were POC, Ontario, 2011 to 2018

Year	Number of POC tests	Total number of tests	Percent of total tests that were POC
2011	25,937	428,472	6.1%
2012	26,427	436,118	6.1%
2013	29,352	441,683	6.6%
2014	30,117	457,773	6.6%
2015	28,364	485,105	5.8%
2016	22,329	527,091	4.2%
2017	20,038	573,815	3.5%
2018	18,142	637,780	2.8%

Table 7.2 Number of POC HIV tests, confirmed positive POC tests, and test positivity rate, Ontario, 2011 to 2018

Year	Number of POC tests	Positive POC results	Positivity rate
2011	25,937	154	0.59%
2012	26,427	142	0.54%
2013	29,352	139	0.47%
2014	30,117	146	0.48%
2015	28,364	120	0.42%
2016	22,329	133	0.60%
2017	20,038	119	0.59%
2018	18,142	125	0.69%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. POC HIV tests with previous evidence of HIV included in number of tests, not included in calculation of positivity rate. Positivity rate refers to the percent of tests that were HIV-positive. POC=point-of-care. See Appendices for more information.

Table 7.3 Number of POC HIV tests, by sex, Ontario, 2011 to 2018

Year	Males	Females
2011	16,742	8,674
2012	17,044	8,849
2013	19,738	9,185
2014	20,369	9,187
2015	19,931	7,998
2016	16,595	5,213
2017	15,030	4,682
2018	13,938	3,712

Table 7.4 Number of HIV tests and test positivity rate by age and sex, Ontario, 2018

Age	Number of POC tests
15 to 19	428
20 to 24	2,872
25 to 29	4,632
30 to 34	3,618
35 to 39	2,335
40 to 44	1,510
45 to 49	1,049
50 to 54	877
55 to 59	655
60 to 64	328
65 to 69	177
70+	151

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. POC HIV tests with previous evidence of HIV included. Positivity rate refers to the percent of tests that were HIV-positive. POC=point-of-care. See Appendices for more information.

Table 7.5 Number of HIV tests by exposure category, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total	Unknown (excluded)
2014	10,912	61	645	443	628	15,205	11	27,905	1,969
2015	11,770	59	505	495	875	13,082	18	26,804	1,337
2016	11,529	71	499	399	1,001	7,856	12	21,367	814
2017	11,058	67	462	300	776	6,591	11	19,265	646
2018	10,101	78	549	475	430	5,424	11	17,068	971

Table 7.6 Number of HIV tests by exposure category, Ontario, 2014 to 2018

Year	MSM	MSM-PWID	PWID	HIV-endemic	Heterosexual - PIR	Heterosexual - NIR	Other	Total
2014	39.1%	0.2%	2.3%	1.6%	2.3%	54.5%	0.0%	100%
2015	43.9%	0.2%	1.9%	1.8%	3.3%	48.8%	0.1%	100%
2016	54.0%	0.3%	2.3%	1.9%	4.7%	36.8%	0.1%	100%
2017	57.4%	0.3%	2.4%	1.6%	4.0%	34.2%	0.1%	100%
2018	59.2%	0.5%	3.2%	2.8%	2.5%	31.8%	0.1%	100%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. POC HIV tests with previous evidence of HIV included. Positivity rate refers to the percent of tests that were HIV-positive. POC=point-of-care. See Appendices for more information.

8. Prenatal HIV testing

Table 8.1 Number of pregnant people, pregnant people who received a prenatal HIV test, and percent of pregnant people who received a prenatal HIV test, Ontario, 2012 to 2018

Year	Pregnant people	Pregnant people who received a prenatal HIV test	Estimated percent of pregnant people who received a prenatal HIV test
2012	141,807	133,630	94.2%
2013	140,051	132,693	94.7%
2014	140,385	133,743	95.3%
2015	140,117	134,185	95.8%
2016	141,283	134,849	95.4%
2017	141,359	135,960	96.2%
2018	-	137,564	-

Notes: Annual number of pregnant women provided by Public Health Ontario Laboratory and the Better Outcomes Registry & Network (BORN). Data on the number of pregnant people, and hence the estimated proportion of pregnant people who received a prenatal HIV test in 2018 was not reported due an unstable denominator. HIV tests with previous evidence of HIV included. See Appendices for more information.