HIV in Ontario by public health unit: Testing, new diagnoses and care cascade

About OHESI

The Ontario HIV Epidemiology and Surveillance Initiative (OHESI) is a collaboration involving the AIDS Bureau of the Ontario Ministry of Health and Long-Term Care (MOHLTC), 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.

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 (OHESI Champions 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 MOHLTC, to support ongoing production of epidemiological information to support Ontario's response to HIV.

In 2014-2015, the 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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Introduction

Timely, relevant HIV epidemiological data are critical for public health units (PHUs) to monitor their local HIV epidemic, and evaluate and plan health promotion and prevention programs. OHESI has previously reported on HIV indicators broken down by the seven Ontario health regions and 14 local health integration networks (LHINs), but not by the 36 PHUs.[1] PHU-level data is not only important for the health units themselves, but also AIDS service organizations and other community-based organizations whose catchment areas may be better represented by these smaller geographic boundaries.

This report has been developed in response to these needs and contains the most detailed HIV data published by PHU to date. These data include testing and diagnosis indicators (number/rate of tests and diagnoses, test positivity rate) and HIV care cascade indicators (number/percent of individuals living with diagnosed HIV who are in care, on antiretroviral treatment, and virally suppressed). Spanning the breadth of the HIV prevention, engagement and care cascade (see Figure i), these indicators can be used to identify priority areas to improve cascade engagement in each health unit. It is important to note that the data in this report come from the Public Health Ontario Laboratory (PHOL) and not the Integrated Public Health Information System (iPHIS). While iPHIS is a rich data source and well known to PHUs, it is limited to information on HIV-positive diagnoses. In contrast, PHOL houses databases with information on all HIV diagnostic testing (both negative and positive) and viral load testing in Ontario. Use of PHOL data supports measurement of a broader range of indicators than is available through iPHIS.

The limitations of the surveillance data in this report are summarized in the Background and Technical Notes. However, there are several issues of particular importance. First, data on new diagnoses in Ontario can differ between PHOL and iPHIS. Reasons for these differences are summarized in the Technical Notes. Second, while measurement of both the HIV care cascade and the UNAIDS 90-90-90 targets (see Box i) are a priority for OHESI, this report focuses on the care cascade. This is because efforts are currently underway to better characterize the undiagnosed fraction in Ontario (the first 90 target). Finally, while the testing and diagnosis data in this report span a five-year period (2013 to 2017), HIV care cascade indicators are limited to the year 2015, which was the most recent data available when this report was written.

We hope you find the data in this report useful. OHESI aims to produce similar reports in the future. Questions about this report and HIV surveillance and epidemiology in Ontario can be directed to OHESI (ohesi@ohtn.on.ca), while technical and data questions related to this report can be directed towards PHOL Laboratory Surveillance and Data Management (lab.data@oahpp.ca). Other OHESI HIV reports can be found here.

[1] Health regions are aggregations of PHUs. As of 2018, there were 35 PHUs (Oxford and Elgin-St.Thomas were recently combined). However, the data in this report precede 2018 and therefore use the earlier configuration of 36 PHUs.

Summary

See the Background section below for information on interpreting these indicators.

Overall

Testing and diagnosis

Between 2013 and 2017 in Ontario:

- There were a cumulative total of 2,468,395 tests and 4,158 diagnoses – equivalent to a rate of 36.0 tests per 1,000 people and 6.1 diagnoses per 100,000 people.[2] The positivity rate during this period was 0.17%.
- The average rate of tests per 1,000 people was similar for males (35.1) and females (34.5). In contrast, the average diagnosis and positivity rates were four-times higher for males (9.9 per 100,000 and 0.28%) than females (2.4 per 100,000 and 0.07%). Note: the approximately 150,000 HIV-negative prenatal tests conducted in Ontario each year were not included in this report.
- The annual test rate increased by 26% and the annual diagnosis rate increased by 13%. Upon refinement of the surveillance data, OHESI found the increase in diagnosis rate in recent years to be due, in part, to an increase in individuals who were diagnosed with HIV outside of Ontario and subsequently moved to the province and were tested again.[3]

Care cascade (in care, on antiretroviral treatment, virally suppressed)

- As of the end of 2015, there were an estimated 15,917 people with diagnosed HIV living in the province, of whom 87.5% were in care, 81.2% were on antiretroviral treatment (ART) and 79.6% were virally suppressed.[4]

By PHU

Testing and diagnosis

- Testing and diagnosis indicators (2013-2017) ranged widely by PHU as follows:
  - cumulative number of tests - 2,598 to 871,179
  - average rate of tests per 1,000 people - 12.3 to 61.5
  - cumulative number of diagnoses - 0 to 2,220
  - average rate of diagnoses per 100,000 people - 0 to 15.7
  - average positivity rate - 0% to 0.27%.
- There was a particularly uneven geographic distribution in the number of diagnoses across Ontario and relatively small numbers in most PHUs. For example, 21 PHUs had fewer than 25 cumulative diagnoses between 2013 and 2017.
- The cumulative number of tests and diagnoses was much higher in Toronto than in other PHUs. This was expected given Toronto's large population size. When population rates were calculated, there was less variation across PHUs, although Toronto still had the highest testing and diagnosis rates.
- Toronto and Middlesex-London had the highest average diagnosis and positivity rates. The diagnosis rate was highest in Toronto while the positivity rate was slightly higher in Middlesex-

[2] Excludes 17,832 tests and 59 diagnoses with an unknown PHU or known to be living out-of-province.
[3] OHESI blog post. Refining HIV surveillance on new diagnoses in Ontario. August 2018.
[4] Excludes 193 diagnosed individuals with an unknown or out-of-province PHU. This explains why these numbers differ slightly to estimates presented in a different OHESI report on Ontario's care cascade.

London compared to Toronto. The higher diagnosis and positivity rates in these two PHUs were followed by Ottawa, Hamilton and Windsor-Essex (not necessarily in that order).

- Diagnosis and positivity rates were highest in Toronto for males and Middlesex-London for females.
- Test rates per 1,000 people were lowest in Huron County, Haldimand-Norfolk, Grey Bruce, Perth, Oxford and Timiskaming. Many of the PHUs with lower testing rates also had smaller numbers of diagnoses.
- While test rates were generally similar by sex in each PHU, the diagnosis rates were higher for males compared to females in almost all PHUs.
- Between 2013 and 2017, annual test rates increased each year in all PHUs (except Timiskaming), while there were no consistent trends in annual diagnosis rates in any PHU. The largest testing increases were in Wellington-Dufferin-Guelph, Perth and Halton.

Care cascade (in care, on antiretroviral treatment, virally suppressed)

- Care cascade indicators (2015) ranged widely by PHU as follows:
    - number of people living with diagnosed HIV - 8 to 8,649
    - percent of diagnosed people who were in care - 52.9% to 97.4%
    - percent of diagnosed people who were on ART - 41.2% to 97.4%
    - percent of diagnosed people who were virally suppressed - 52.9% to 94.7%.
- There was a particularly uneven geographic distribution in the number of people living with diagnosed HIV across Ontario and relatively small numbers in some PHUs. For example, in 2015, 17 PHUs had fewer than 100 people living with diagnosed HIV and 11 PHUs had fewer than 50.
- The number of people living with diagnosed HIV at the end of 2015 was much higher in Toronto than other PHUs. The next highest PHUs were Ottawa, Peel, Hamilton and Middlesex-London.
- In 2015, the percent of people living with diagnosed HIV who were virally suppressed was highest in Chatham-Kent, Grey Bruce, Haldimand-Norfolk and Peterborough. This percent was lowest in Northwestern, Thunder Bay, Timiskaming, Sudbury, Middlesex-London, Eastern Ontario and Oxford (note: Timiskaming and Northwestern had fewer than 20 diagnosed people in 2015). Many of these PHUs also had the highest and lowest percentages, respectively, of diagnosed people who were in care and on ART.
- PHUs with the largest numbers of diagnosed people living with HIV (Toronto, Ottawa, Peel, Hamilton, Middlesex-London) generally ranked in the middle to lower end of HIV care cascade engagement.

Background

What's in this report?

- To assist in planning local HIV services, this report presents indicators on testing and diagnosis (number/rates of tests and diagnoses, test positivity rates) and the HIV care cascade (number/percent of people living with diagnosed HIV who are in care, on ART and virally suppressed) for each of the 36 public health units (PHUs) in Ontario.[5] Due to the small number of diagnoses in some PHUs, testing and diagnosis data are aggregated over the past five years (2013-2017).
- Each indicator is situated across the HIV prevention, engagement and care cascade (Figure i) and is important for maintaining/improving the health of people living with HIV and preventing new HIV transmissions.
- The data in this report come from the Public Health Ontario Laboratory (PHOL), not the Integrated Public Health Information System (iPHIS). PHOL houses centralized provincial databases with linked diagnostic and viral load (VL) testing data. This allows for analysis of HIV care cascade indicators (in care, on ART, virally suppressed), which is not possible with iPHIS data.
- All individuals with an unknown PHU or known to be living out-of-province are excluded from this report.
- Other OHESI HIV reports can be found on the www.OHESI.ca website.

Why look at HIV testing and test positivity rates?

- Testing and diagnosis are early steps in the HIV prevention, engagement and care cascade (Figure i) and critical in order for people living with HIV to know their status and be linked to care. Testing is also a gateway to prevention services for people who are HIV-negative. Testing and diagnosis are important for reaching the 1st UNAIDS 90-90-90 target (Box i).
- Numbers and rates of HIV testing can be useful for measuring the success of testing initiatives and interpreting data on new HIV diagnoses. For example, a higher rate of testing could partly explain a higher number of diagnoses in a specific PHU.
- The rate of testing refers to the number of tests compared to the size of the overall population. This may not be reflective of testing rates in specific populations (e.g. men who have sex with men). Also, testing rates do not account for the same individual testing multiple times in a year. Importantly, the testing rate may not reflect the actual rates in urban versus rural areas where availability of testing may be very different. High testing in urban areas may mask low testing in rural areas.
- Test positivity rates (percent of tests that are HIV-positive) can provide insight into which PHUs have a higher rate of HIV infection. However, positivity rates are influenced by both HIV risk as well as the number and types of people getting tested and it is difficult to disentangle these effects. For example, a high positivity rate in a specific PHU could be due to a higher rate of infection and/or more targeted testing of people at higher risk of HIV infection. A high positivity rate combined with a low testing rate may indicate the need to increase testing.

Why look at new HIV diagnoses?

- Information on new diagnoses is useful for understanding how many people and who will require HIV care.

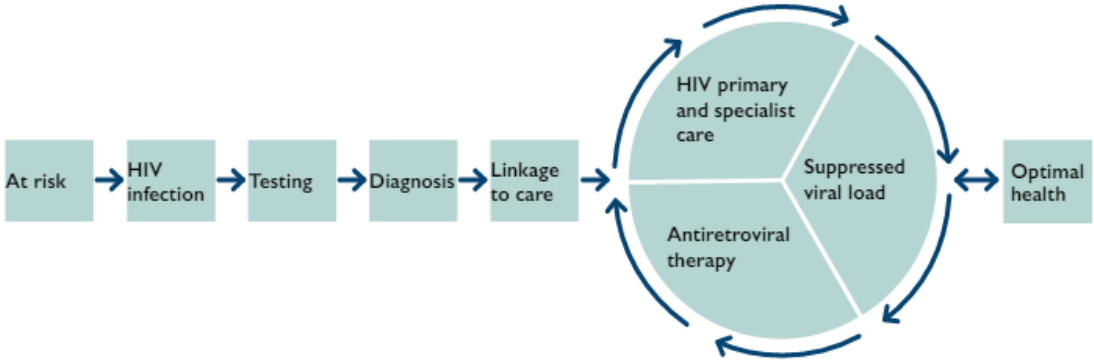
[5] As of 2018, there are 35 PHUs (Oxford and Elgin-St.Thomas were recently combined). However, the data in this report preceed 2018 and therefore we have used the earlier configuration of 36 PHUs.

- New diagnoses can provide insight into HIV infection rates. However, new diagnoses and new infections are not equivalent. This is because some people can remain infected for years before being diagnosed. Also, new HIV diagnoses in Ontario include people who were diagnosed with HIV outside of Ontario and later moved to the province and tested again.
- The rate of diagnoses refers to the number of new diagnoses compared to the size of the overall population. Diagnosis rates have similar limitations as testing rates, which are described in the above section: Why look at HIV testing and test positivity rates?.
- New HIV diagnoses can be influenced by the number of new HIV infections as well as HIV testing and migration patterns and it is difficult to disentangle these effects. For example, a higher rate of diagnoses in a specific PHU could be due to a high rate of infections, migration of HIV-positive people to Ontario and/or changes in testing practices.

Why look at engagement in the HIV care cascade (in care, antiretroviral treatment and viral suppression)?

- To maintain and improve health and reduce the risk of new HIV transmissions, it is important for people living with HIV to be diagnosed, in care, on ART and virally suppressed.
- Understanding engagement in these HIV care cascade steps can help measure the impact of HIV care and monitor progress toward meeting the 2nd and 3rd UNAIDS 90-90-90 targets (Box i).
- Identifying gaps can help the care system prioritize interventions and inform program/policy changes to improve engagement.
- Lower care cascade engagement in specific PHUs may be due to a combination of factors, including:
    - gaps in HIV and related health services;
    - inadequate capacity of HIV and related health services (e.g. PHUs with high numbers of diagnosed people may not have enough service capacity to meet all their needs);
    - different HIV epidemics across jurisdictions (e.g. a PHU's epidemic may be concentrated among populations who are more likely to experience barriers to care, such as people who use injection drugs);
    - drug resistance (e.g. some PHUs may have higher rates of drug resistance, leading to treatment failure and less viral suppression); and/or
    - methodological issues (e.g. individuals who are living in Ontario but receive care outside the province are not considered to be in care, on ART or virally suppressed in this report. This particular issue is most relevant to PHUs that border Manitoba or Quebec).

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



Box i. UNAIDS 90-90-90 Targets to 2020[6]

1. 90% of all people living with HIV will know their HIV status.
2. 90% of all people diagnosed with HIV will receive ART.
3. 90% of all people receiving ART will have viral suppression.

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.

Where do these data come from?

- Data in this report come from the Public Health Ontario Laboratory (PHOL), which performs centralized HIV diagnostic and VL testing for the province.
- When someone is tested for HIV or receives a VL test in Ontario, the health care provider conducting the test fills out a test requisition form that is sent to PHOL. Both the diagnostic and VL test requisition forms collect information on the person tested, incuding sex and geographic location (which is used to determine PHU). The VL requisition also collects information on ART use.
- The Ontario HIV Laboratory Cohort is used to estimate the number of people with diagnosed HIV living in Ontario and their engagement in the HIV care cascade. This cohort was created by linking PHOL's HIV diagnostic and VL data together for the same individual. See the Technical notes for more information on who is and isn't included in this cohort, as well as definitions for each HIV care cascade indicator.

What are some of the strengths of these data?

- All HIV diagnostic and VL testing conducted by health care providers in Ontario is performed by PHOL and included in this report.
- This report is the first OHESI knowledge product to present HIV care cascade indicators (in care, on ART, virally suppressed) by PHU. The use of linked diagnostic and VL testing databases at PHOL to create the Ontario HIV Laboratory Cohort made this possible.
- The Ontario HIV Laboratory Cohort is a unique data source and contains information on almost 30,000 diagnosed individuals as of the end of 2015.
- Information on sex and geographic location is reliably completed and missing for less than 4% of HIV tests/diagnoses.
- Individuals in the Ontario HIV Laboratory Cohort (used to measure the 'in care', 'on ART', and 'virally suppressed' HIV care indicators) are assigned to a PHU based on their residence at the time of VL testing or, if unknown, the address of the ordering provider. In the 2015 data used to measure the HIV care cascade, only 7% of VL tests were missing information on residence and assigned to a PHU based on provider address.
- HIV tests and diagnoses are presented as numbers as well as rates (e.g. the number of tests per 1,000 people). While numbers of tests and diagnoses are influenced by the size of the underlying population (e.g. greater population = greater numbers of tests/diagnoses), rates take population size into account and remove it as a possible explanatory factor for any observed differences between populations or public health units.

[6] UNAIDS. '90-90-90' – An ambitious treatment target to help end the AIDS epidemic. 2017.

What are some of the limitations of these data?

- Tests and diagnoses are assigned to a PHU based on an individual's residence at the time of the testing or, if unknown, the address of the ordering provider. In recent years, about 23% of diagnostic tests and 34% of new diagnoses were missing information on residence address and assigned based on the provider's address. The percentage of tests/diagnoses missing residence address is higher than the 7% of Ontario HIV Laboratory Cohort individuals who are missing this information (the VL test requisition is primarily used for the cohort).
- Prenatal tests with an HIV-negative result are not included in this report, as they are part of an HIV testing program that is offered to all pregnant females. Approximately 150,000 HIV-negative prenatal tests are conducted in Ontario each year. However, HIV-positive prenatal tests ARE included in this report for the calculation of positivity rates.
- The number of new HIV diagnoses may be higher than the actual number of individuals who were diagnosed, as individuals diagnosed through non-nominal testing (anonymous, coded) may also receive a nominal test when entering care and be counted twice.
- An important limitation of the Ontario HIV Laboratory Cohort is the inability to determine who in the cohort has died or migrated out of the province when estimating the number of people with diagnosed HIV living in Ontario. To account for death and out-migration, individuals with no VL test for greater than two years, and no VL test in later years, are removed from the cohort.
- Use of ART is documented by the ordering provider on the VL test requisition and missing from 18% of forms. Those with missing data are assumed to be 'on ART' only if virally suppressed.
- While testing and diagnosis data are available up to the year 2017, the most recent HIV care cascade estimates from the Ontario HIV Laboratory Cohort were only available up to 2015.
- Due to small counts, data for transgender individuals are not presented separately.
- More information on the above limitations and their implications can be found in the Technical notes.

Key points by indicator

See Background section above for information on interpreting these indicators.

I. Number of tests

Overall

- The cumulative number of HIV tests (2013-2017) in Ontario was 2,468,395, of which 1,180,886 (49.6%) were among males and 1,201,022 (50.4%) were among females.[7] Note: the approximately 150,000 HIV-negative prenatal tests conducted in Ontario each year were not included in this report.
- Between 2013 and 2017, the annual number of tests in Ontario increased by 30% from 438,703 to 569,933.

By PHU

- The cumulative number of tests (2013-2017) ranged from 2,598 in Timiskaming to 871,179 in Toronto.
- Following Toronto, the number of tests was highest in Peel (253,397), Ottawa (210,517) and York (174,537). There were fewer than 100,000 tests in each of the remaining PHUs.
- The number of tests among males and females followed the same ordering as for overall (Toronto, Peel, Ottawa and York).
- Tests were generally split equally by sex in most PHUs, with the percent that were female ranging from 41% in Kingston-Frontenac-Lennox-Addington to 57% in Northwestern and Eastern Ontario.
- Between 2013 and 2017, the annual number of tests increased in all PHUs except for Timiskaming where there was a 15% decrease. The largest percent increases were in Wellington-Dufferin-Guelph (88%), Perth (54%) and Halton (48%).

The above data is presented in Figures 2.1, 2.2 and 2.3 and Tables 1.1 and 1.2

II. Rate of tests per 1,000 people

Overall

- The average test rate per 1,000 people (2013-2017) in Ontario was 36.0 and similar for males (35.1) and females (34.5).[7]
- Between 2013 and 2017, the annual rate of tests increased by 26% from 32.6 to 41.1.

By PHU

- The average rate of tests per 1,000 people (2013-2017) ranged from 12.3 in Huron County to 61.5 in Toronto.
- Following Toronto, the test rate was highest in Ottawa (44.0) and Kingston-Frontenac-Lennox-Addington (42.6). The male and female test rates were also highest in Toronto followed by Kingston-Frontenac-Lennox-Addington (males) or Ottawa (females).
- Test rates were lowest in Huron County (12.3), Haldimand-Norfolk (13.7), Grey Bruce (14.6), Perth (14.6) and Oxford (14.7). The rate was greater than 15.0 in the remaining PHUs.
- The rate of testing was generally similar for males and females in most PHUs.

[7] Excludes 86,487 tests tests with unknown sex and 17,832 tests with an unknown PHU or known to be living out-of-province. 'Unknown' sex includes transgender individuals.

- Between 2013 and 2017, the annual rate of tests between 2013 and 2017 increased in all PHUs except for Timiskaming where there was a 13% decrease. The largest percent increases were in Wellington-Dufferin-Guelph (80%), Perth (53%) and Halton (41%).

The above data is presented in Figures 2.4, 2.5 and 2.6 and Tables 1.3 and 1.4

III. Number of new diagnoses

Overall

- The cumulative number of new HIV diagnoses (2013-2017) in Ontario was 4,158, of whom 3,320 (80.3%) were male and 813 (19.7%) were female.[8]
- Between 2013 and 2017, the annual number of diagnoses in Ontario increased each year from 770 to 906 (equivalent to an 18% increase). The increase in diagnoses in recent years was due, in part, to an increase in individuals who were diagnosed with HIV outside of Ontario and subsequently moved to the province and were tested again.[9]

By PHU

- The cumulative number of diagnoses (2013-2017) ranged from 0 in Huron County to 2,220 in Toronto.
- Following Toronto, the number of diagnoses was highest in Ottawa (383), Peel (254) and Middlesex-London (235). These PHUs (including Toronto) accounted for approximately 74% of all diagnoses between 2013 and 2017.
- Apart from Hamilton (164), York (131) and Windsor-Essex (116), there were fewer than 100 cumulative diagnoses in the remaining 29 PHUs and fewer than 25 diagnoses in 21 PHUs.
- The numbers of male and female diagnoses were also highest in Toronto, Ottawa, Peel and Middlesex-London (in that order).
- Among PHUs with the highest number of diagnoses, the percent that were female was lowest in Toronto (14.5%) and highest in Ottawa (29.2%), Middlesex-London (29.1%) and Peel (29.0%).
- Despite an overall increase each year between 2013 and 2017, there were no PHUs with a consistent increase or decrease in the annual number of diagnoses.

The above data is presented in Figures 3.1, 3.2 and 3.3 and Tables 2.1 and 2.2

IV. Rate of new diagnoses per 100,000 people

Overall

- The average rate of new diagnoses per 100,000 people (2013-2017) in Ontario was 6.1.[8] The rate was four-times higher for males (9.9) than for females (2.4).
- Between 2013 and 2017, the annual rate of diagnoses in Ontario increased by 13% from 5.8 to 6.6. The increase in diagnosis rate in recent years was due, in part, to an increase in individuals who were diagnosed with HIV outside of Ontario and subsequently moved to the province and were tested again.[9]

By PHU

- The average rate of diagnoses per 100,000 people (2013-2017) ranged from 0 in Huron County to 15.7 in Toronto.

[8] Excludes 25 diagnoses with unknown sex and 59 diagnoses with an unknown PHU or known to be living out-of-province. 'Unknown' sex includes transgender individuals.
[9] OHESI blog post. Refining HIV surveillance on new diagnoses in Ontario. August 2018.

- Following Toronto, the diagnosis rate was highest in Middlesex-London (10.0) followed by Ottawa (8.0), Hamilton (5.9) and Windsor-Essex (5.7).
- The rate of male diagnoses was highest in Toronto (27.4), followed by Middlesex-London (14.5), Ottawa (11.5), Windsor-Essex (9.9) and Hamilton (8.5).
- In contrast, the rate of female diagnoses was highest in Middlesex-London (5.7), Ottawa (4.5) and Toronto (4.4), followed by Hamilton (3.3) and Sudbury (3.0).
- The diagnosis rate was lowest in Huron County (0.0; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.3; 3 diagnoses), Grey Bruce (0.6; 5 diagnoses) and Porcupine (0.7; 3 diagnoses).
- Between 2013 and 2017, there were no consistent trends in the annual rate of diagnoses for any PHU.

The above data is presented in Figures 3.4, 3.5 and 3.6 and Tables 2.3 and 2.4

V. Test positivity rate

Overall

- The average test positivity rate (2013-2017) in Ontario was 0.17%. The rate was four-times higher for males (0.28%) than females (0.07%).
- Between 2013 and 2017, the overall annual positivity rate decreased from 0.18% to 0.16% (equivalent to an 9% decrease).

By PHU

- The average positivity rate (2013-2017) ranged from 0% in Huron County to 0.27% in Middlesex-London.
- Following Middlesex-London, the positivity rate was highest in Toronto (0.25%) followed by Windsor-Essex (0.19%), Hamilton (0.18%), Ottawa (0.18%) and Haldimand-Norfolk (0.17%).
- The male positivity rate was highest in Toronto (0.44%), Middlesex-London (0.40%), Windsor-Essex (0.35%) and Haldimand-Norfolk (0.32%).
- In contrast, the female positivity rate was highest in Middlesex-London (0.16%), followed by Timiskaming (0.14%), Ottawa (0.11%), Hamilton (0.11%) and Sudbury (0.10%). Note: there were two female diagnoses in Timiskaming between 2013 and 2017.
- The positivity rate overall was lowest in Huron County (0.00%; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.02%; 3 diagnoses), Grey Bruce (0.04%; 5 diagnoses) and Porcupine (0.04%; 3 diagnoses).
- Between 2013 and 2017, there were no consistent trends in the annual positivity rate for any PHU.

The above data is presented in Figures 4.1, 4.2 and 4.3 and Tables 3.1 and 3.2

VI. Number of people living with diagnosed HIV

Overall

- As of the end of 2015, there were an estimated 15,917 people living with diagnosed HIV in Ontario.[10]

By PHU

- The number of people living with diagnosed HIV in 2015 ranged from 8 in Huron County to 8,649 in Toronto.

[10] Excludes 193 people with an unknown PHU or known to be living out-of-province.

- Following Toronto, the number of diagnosed people was highest in Ottawa (1,630), Peel (824) and Hamilton (599). These PHUs (including Toronto) accounted for approximately 74% of all diagnosed people in 2015.
- Seventeen PHUs had fewer than 100 people living with diagnosed HIV, 11 had fewer than 50 people and four had fewer than 25.

The above data is presented in Figure 5.1 and Table 4.1

VII. In care

Overall

- In 2015, the percent of people with diagnosed HIV living in Ontario who were in care was 87.5%.[11]

By PHU

- Across PHUs, the percent of people living with diagnosed HIV who were in care in 2015 ranged from 52.9% to 97.4%.
- The percent who were in care was highest in Chatham-Kent (97.4% of 38 people), Grey Bruce (96.4% of 55 people) and Porcupine (94.7% of 19 people).
- This percent was lowest in Northwestern (52.9% of 17 people), Huron County (75.0% of 8 people), Thunder Bay (77.2% of 101 people) and Timiskaming (78.6% of 14 people).

The above data is presented in Figure 5.2 and Tables 4.1 and 4.2

VIII. On ART

Overall

- In 2015, the percent of people with diagnosed HIV living in Ontario who were on ART was 81.2%.[11]

By PHU

- Across PHUs, the percent of people living with diagnosed HIV who were on ART in 2015 ranged from 41.2% to 97.4%.
- The percent who were on ART was highest in Chatham-Kent (97.4% of 38 people), Grey Bruce (94.5% of 55 people), Haldimand-Norfolk (92.9% of 42 people) and Peterborough (89.9% of 69 people).
- This percent was lowest in Northwestern (41.2% of 17 people), Timiskaming (64.3% of 14 people), Thunder Bay (67.3% of 101 people), Sudbury (73.6% of 182 people) and Eastern Ontario (73.9% of 111 people).

The above data is presented in Figure 5.3 and Tables 4.1 and 4.2

IX. Virally suppressed

Overall

- In 2015, the percent of people with diagnosed HIV living in Ontario who were virally suppressed was 79.6%.[11]

[11] Excludes 193 people with an unknown PHU or known to be living out-of-province.

By PHU

- Across PHUs, the percent of people living with diagnosed HIV who were virally suppressed in 2015 ranged from 52.9% to 94.7%.
- The percent who were virally suppressed was highest in Chatham-Kent (94.7% of 38 people), Grey Bruce (92.7% of 55 people), Haldimand-Norfolk (90.5% of 42 people) and Peterborough (89.9% of 69 people).
- This percent was lowest in Northwestern (52.9% of 17 people),[12] Thunder Bay (62.4% of 101 people), Timiskaming (64.3% of 14 people), Sudbury (69.2% of 182 people), Middlesex-London (72.4% of 490 people), Eastern Ontario (73.0% of 111 people) and Oxford (73.7% of 38 people).

The above data is presented in Figure 5.4 and Tables 4.1 and 4.2

[12] It is possible for the percent 'virally suppressed' to exceed the percent 'on ART' due to the inclusion individuals who are virally suppressed but documented as not 'on ART'.

List of figures

List of tables

Data and figures

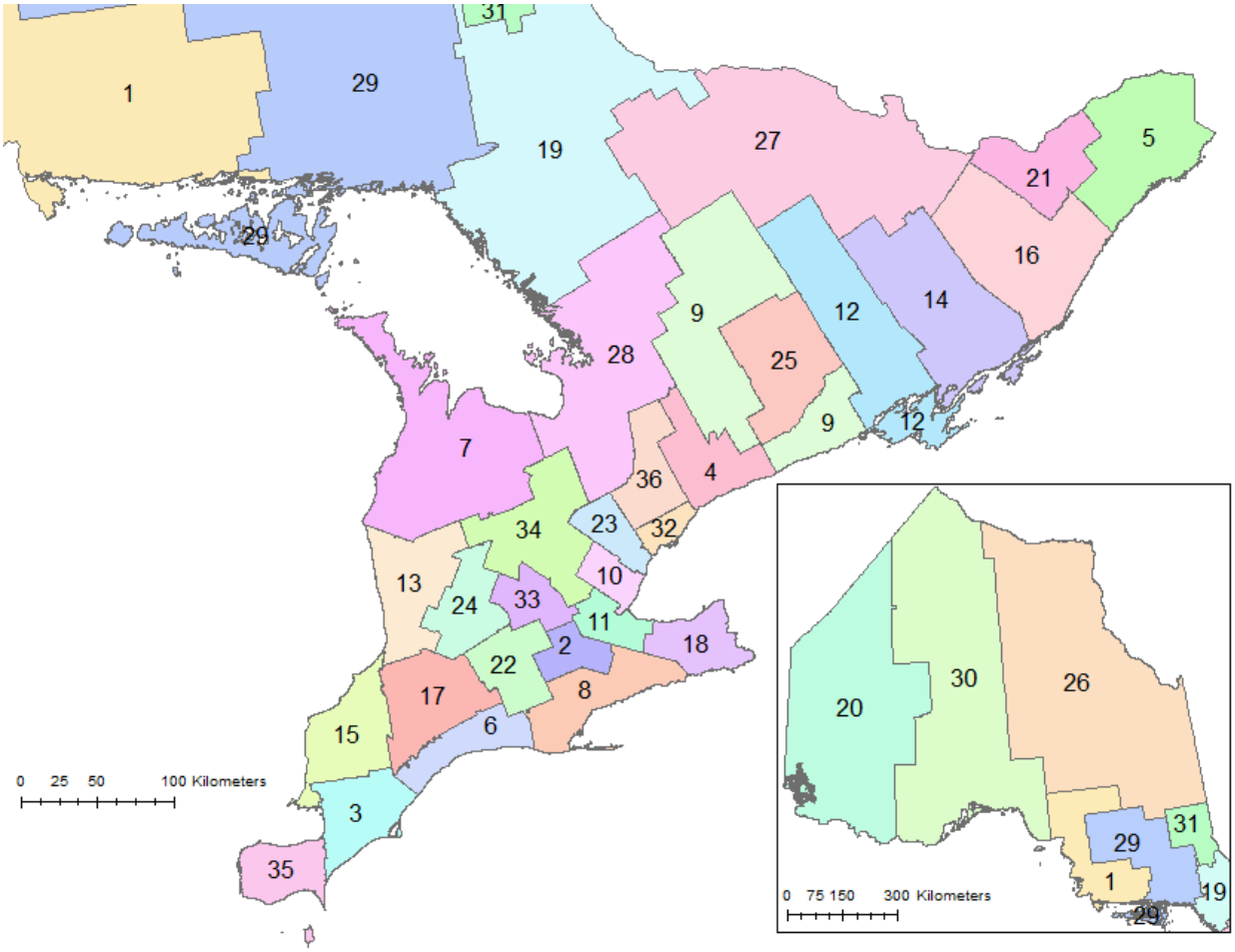
The figures in this section contain maps presenting a range of different HIV indicators by PHU. This includes cumulative HIV testing and new diagnosos data (2013-2017), as well as estimates of the number of people with diagnosed HIV living in Ontario and the percent who were in care, on ART and virally suppressed in 2015. While trends over time are not presented in these maps, tables at the end of the report do contain annual data on HIV testing, new diagnoses and positivity rates for 2013 to 2017.

Each map presents PHU-level data using different shades/colors. Each shade/colour represents a different range of values, as denoted by the map legend. Importantly, range cutoffs are based on the distribution of data (using a combination of natural breaks and quartile methods) and are therefore different for each map. The main section of the map shows central/southern Ontario, while the inset map (enclosed in a square box) shows northern Ontario. Each map is also accompanied by a brief, non exhaustive description of the data. Cross-hatching of specific PHUs in some maps indicates that estimates are based on small numbers and should be interpreted with caution.

Maps presenting PHU locations and population sizes can be found in Figures 1.1 and 1.2. See the Technical notes section for more information on data sources and indicators were calculated.

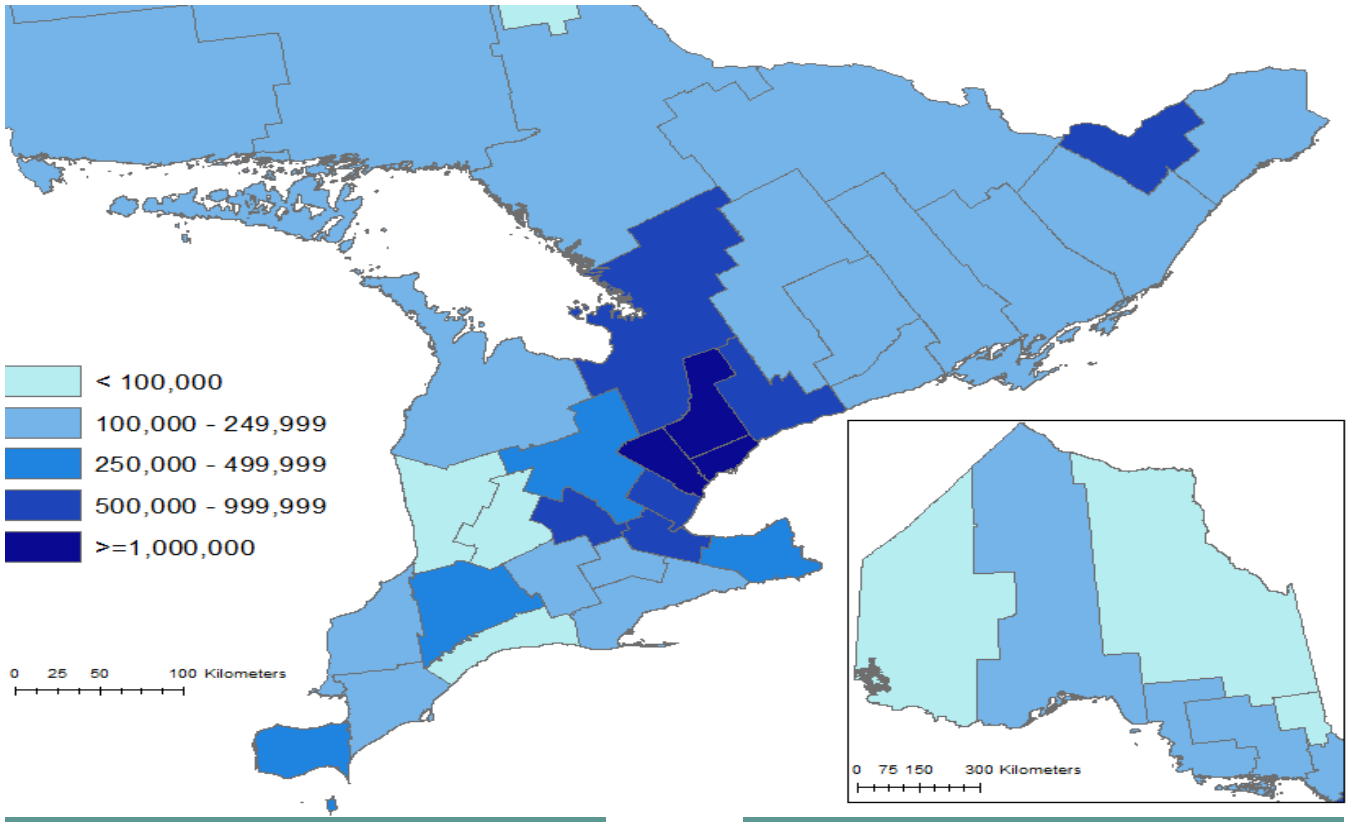
1. Public health unit locations and population size

Figure 1.1 Location of public health units, Ontario, 2017



Legend	
1. Algoma	19. North Bay-Parry Sound
2. Brant	20. Northwestern
3. Chatham-Kent	21. Ottawa
4. Durham	22. Oxford
5. Eastern Ontario	23. Peel
6. Elgin-St. Thomas	24. Perth
7. Grey Bruce	25. Peterborough
8. Haldimand-Norfolk	26. Porcupine
9. Haliburton-Kawartha-Pine-Ridge	27. Renfrew
10. Halton	28. Simcoe-Muskoka
11. Hamilton	29. Sudbury
12. Hastings-Prince Edward	30. Thunder Bay
13. Huron County	31. Timiskaming
14. Kingston-Frontenac-Lennox-Addington	32. Toronto
15. Lambton	33. Waterloo
16. Leeds-Grenville-Lanark	34. Wellington-Dufferin-Guelph
17. Middlesex-London	35. Windsor-Essex
18. Niagara	36. York

Figure 1.2 Public health units by average population size (number of people), Ontario, 2013-2017



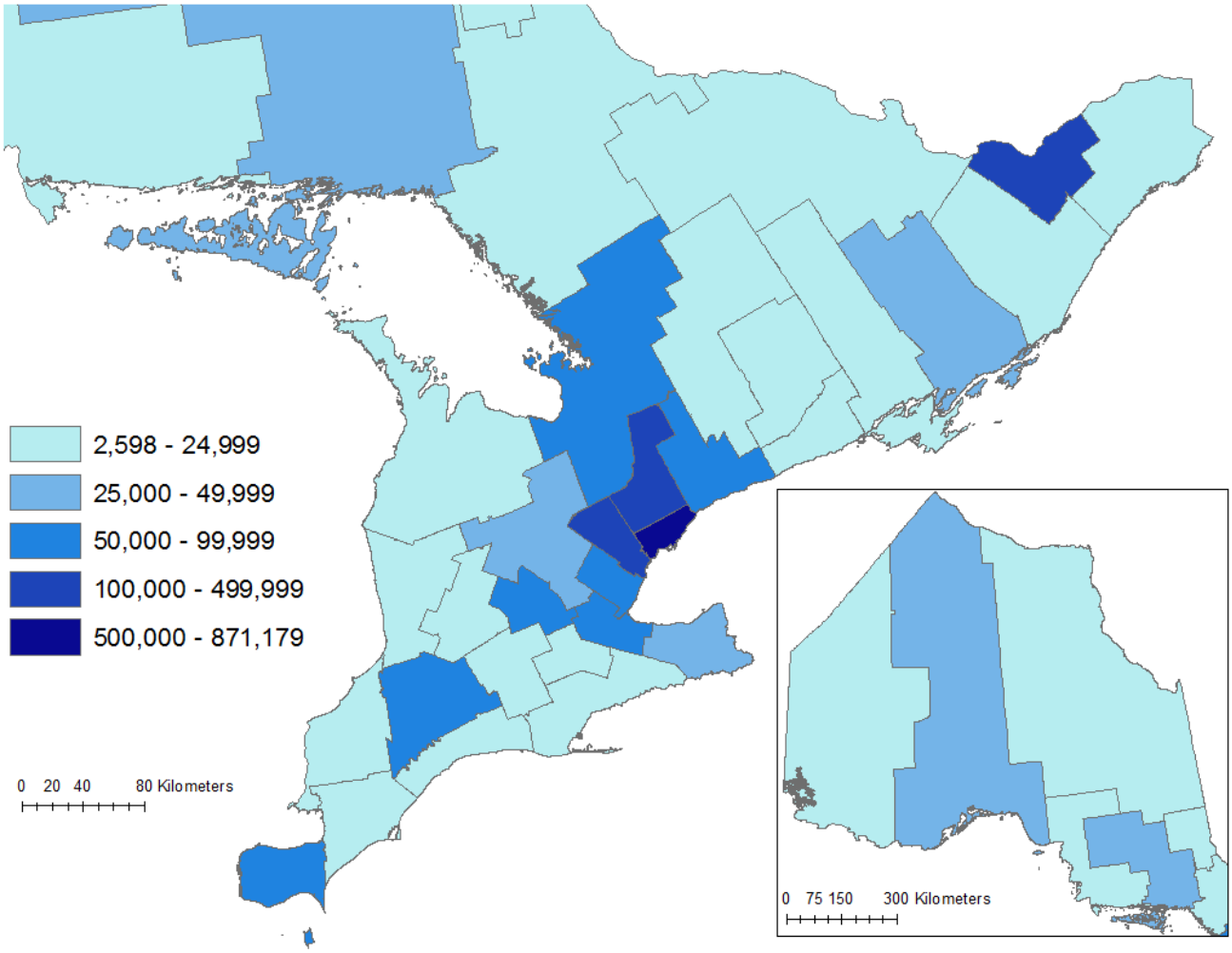
Public Health Unit	Avg. population (2013 to 2017)
Algoma	115,679
Brant	146,111
Chatham-Kent	105,815
Durham	662,802
Eastern Ontario	204,891
Elgin-St. Thomas	91,042
Grey Bruce	164,540
Haldimand-Norfolk	111,111
Haliburton-Kawartha-Pine-Ridge	180,962
Halton	559,668
Hamilton	556,292
Hastings-Prince Edward	164,317
Huron County	59,255
Kingston-Frontenac-Lennox-Addington	202,355
Lambton	130,278
Leeds-Grenville-Lanark	169,802
Middlesex-London	471,363
Niagara	451,344

Public Health Unit	Avg. population (2013 to 2017)
North Bay-Parry Sound	128,455
Northwestern	86,594
Ottawa	961,583
Oxford	112,060
Peel	1,442,375
Perth	78,377
Peterborough	141,114
Porcupine	84,801
Renfrew	106,211
Simcoe-Muskoka	551,124
Sudbury	199,137
Thunder Bay	150,583
Timiskaming	33,788
Toronto	2,842,507
Waterloo	544,709
Wellington-Dufferin-Guelph	286,829
Windsor-Essex	405,854
York	1,135,371

Notes: Population estimates retrieved from Statistics Canada.

2. HIV testing

Figure 2.1 Cumulative number of HIV tests by public health unit, **both sexes**, Ontario, 2013 to 2017

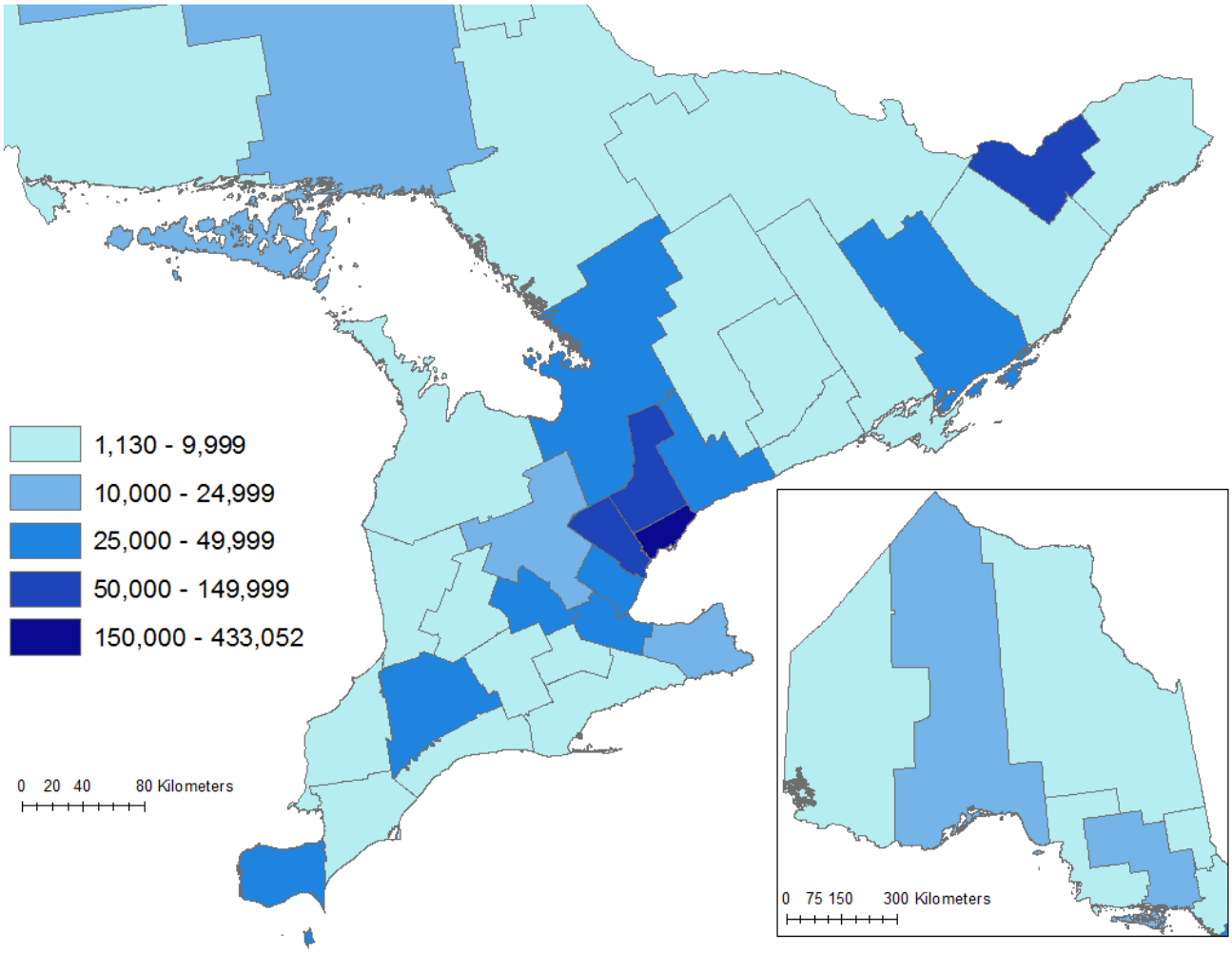


Snapshot

The cumulative number of tests was highest in Toronto (871,179), followed by Peel (253,397), Ottawa (210,517) and York (174,537). Overall, the cumulative number of tests in Ontario between 2013 and 2017 was 2,468,395.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.1 for data.

Figure 2.2 Cumulative number of HIV tests by public health unit, **males**, Ontario, 2013 to 2017

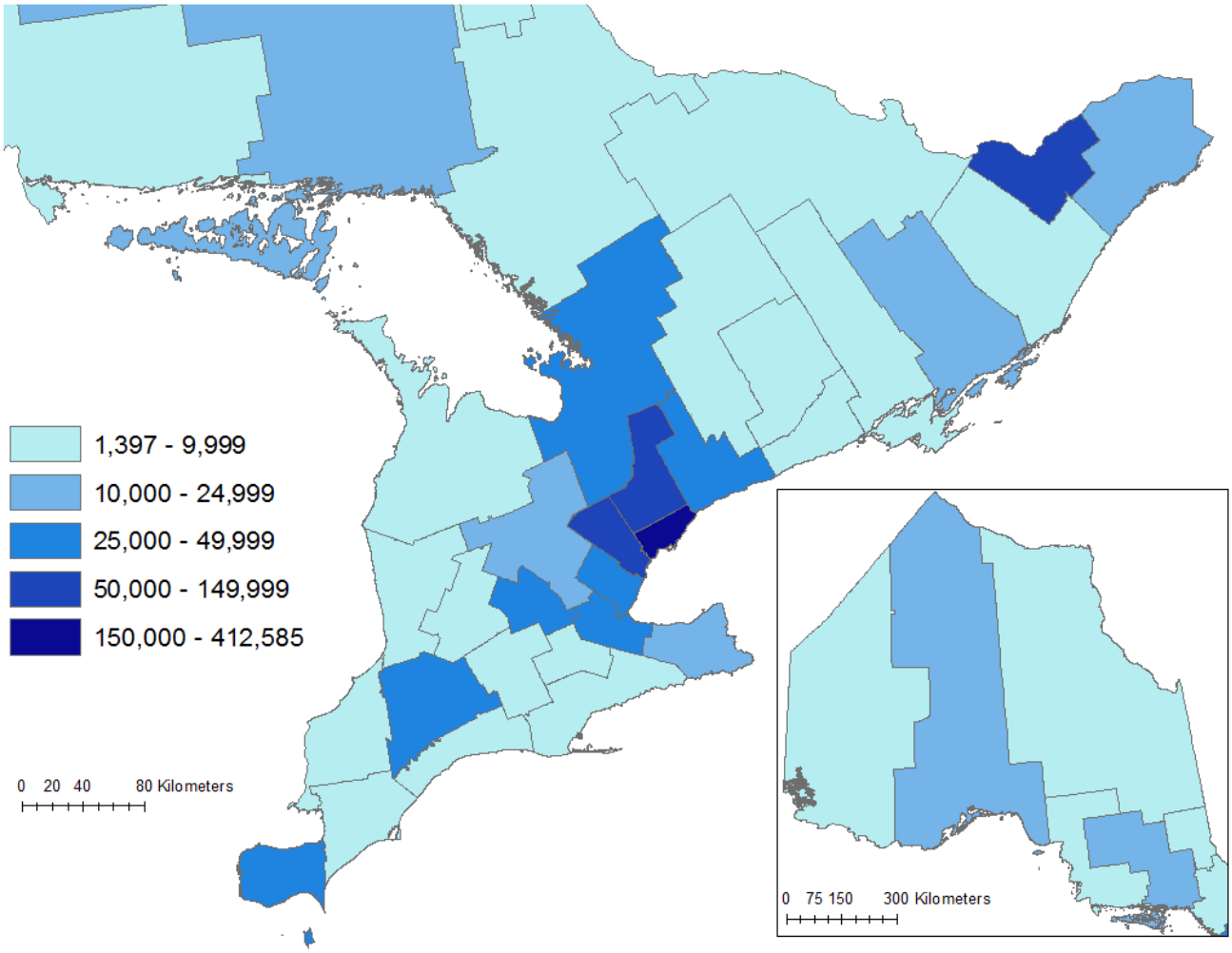


Snapshot

The cumulative number of tests among males was highest in Toronto (433,052), followed by Peel (119,432), Ottawa (102,480) and York (79,781). Overall, the cumulative number of tests among males in Ontario between 2013 and 2017 was 1,180,886.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.1 for data.

Figure 2.3 Cumulative number of HIV tests by public health unit, **females**, Ontario, 2013 to 2017

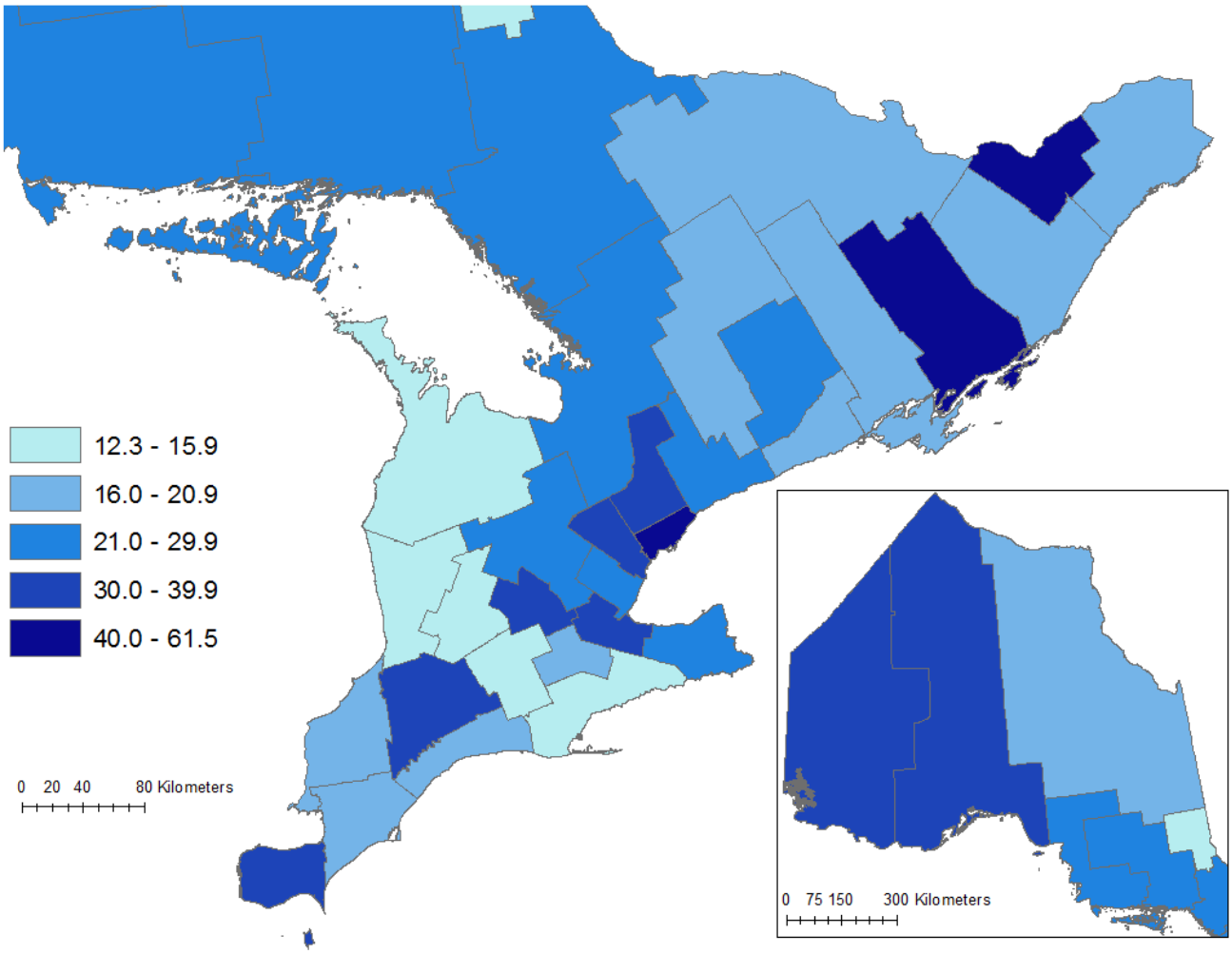


Snapshot

The cumulative number of tests among females was highest in Toronto (412,585), followed by Peel (126,759), Ottawa (104,935) and York (85,246). Overall, the cumulative number of tests among females in Ontario between 2013 and 2017 was 1,201,022.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.8%). Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.1 for data.

Figure 2.4 Average rate of HIV tests per 1,000 people by public health unit, **both sexes**, Ontario, 2013 to 2017

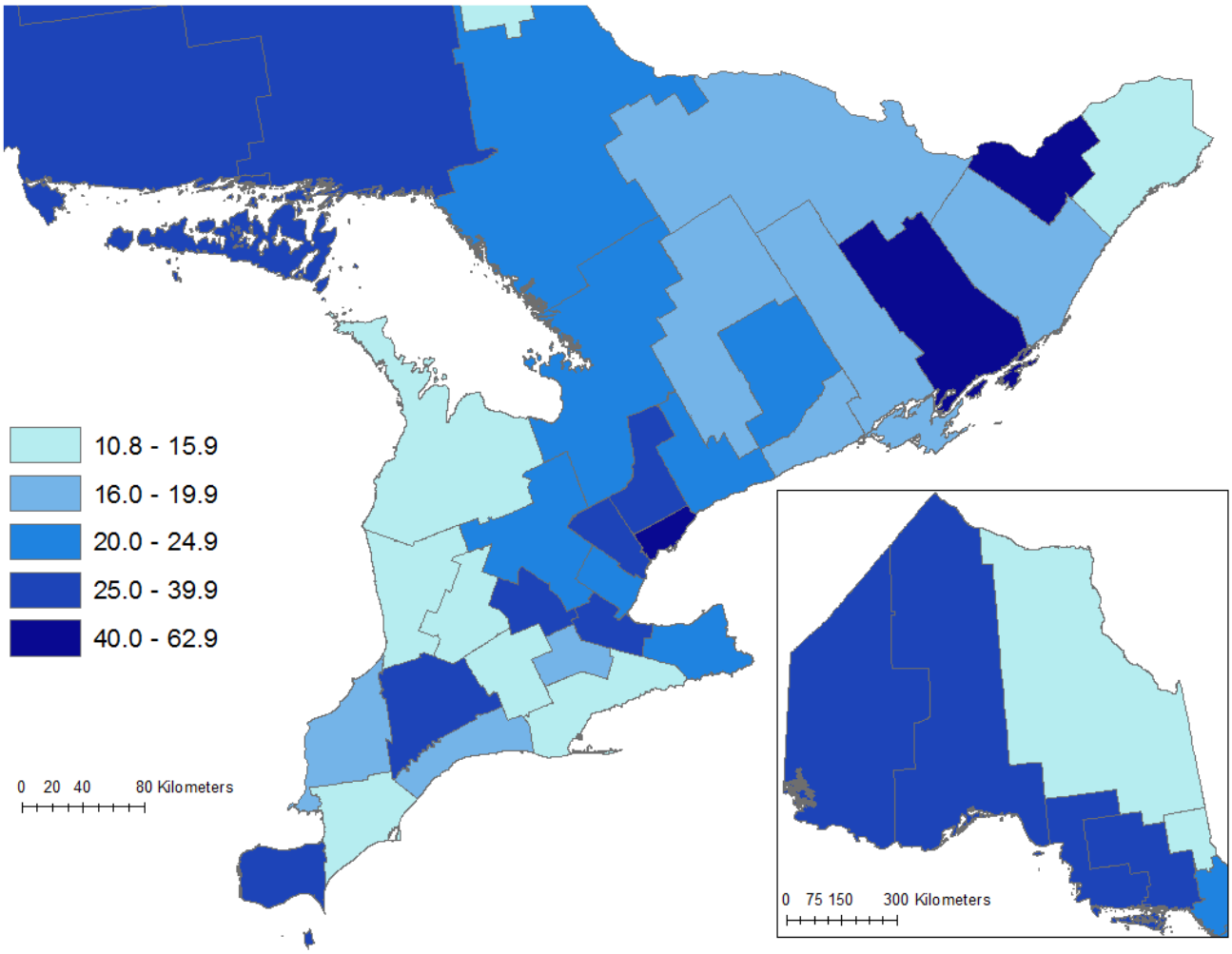


Snapshot

The test rate per 1,000 people was highest in Toronto (61.5), Ottawa (44.0) and Kingston-Frontenac-Lennox-Addington (42.6). The rates were lowest in Huron County (12.3), Haldimand-Norfolk (13.7), Perth (14.6), Grey Bruce (14.6), Oxford (14.7) and Timiskaming (15.4). Overall, the average test rate in Ontario between 2013 and 2017 was 36.0 per 1,000 people.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Population estimates retrieved from Statistics Canada. Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.3 for data.

Figure 2.5 Average rate of HIV tests per 1,000 people by public health unit, **males**, Ontario, 2013 to 2017

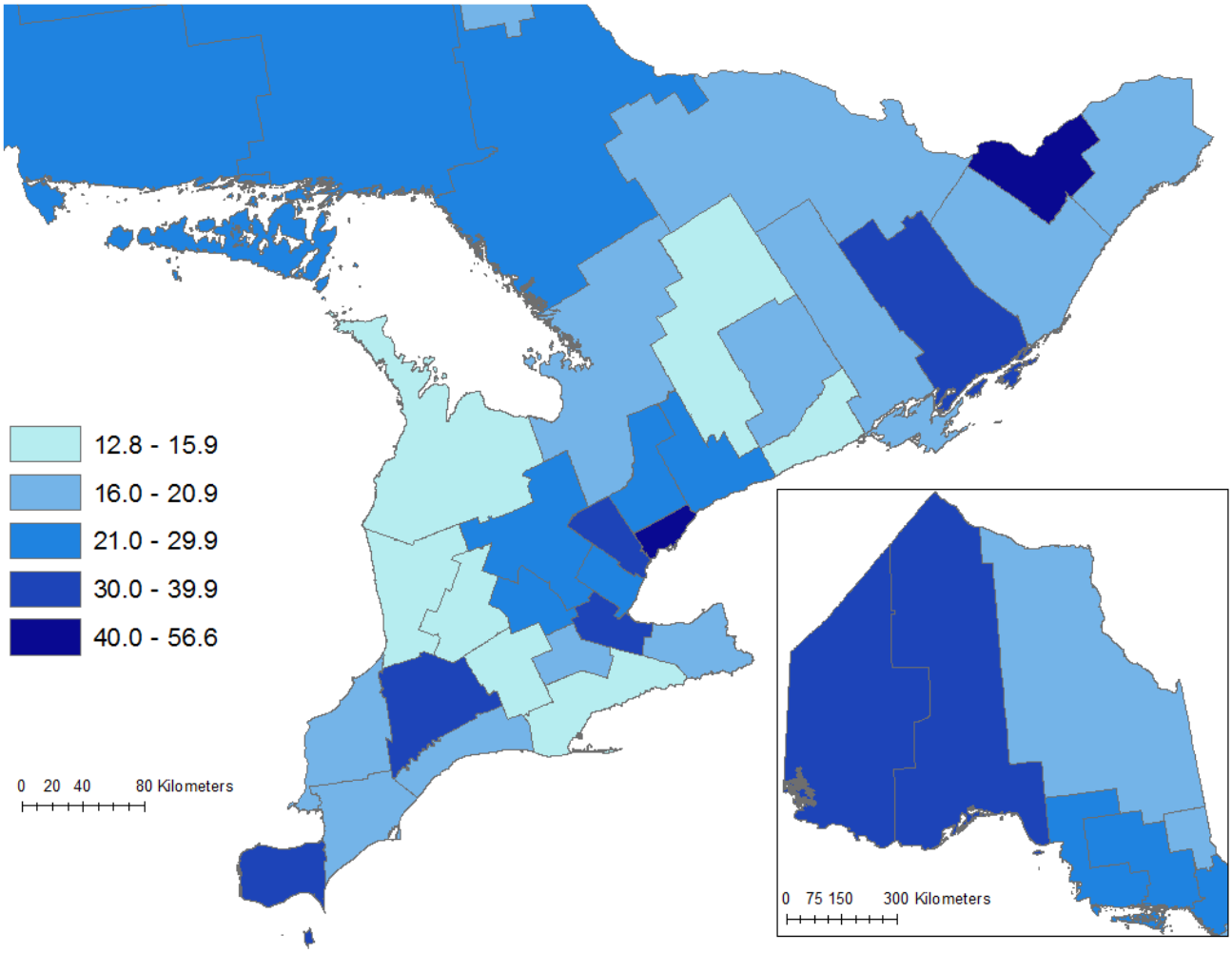


Snapshot

The test rate per 1,000 males was highest in Toronto (62.9), Kingston-Frontenac-Lennox-Addington (50.2) and Ottawa (43.8). The rates were lowest in Huron County (10.8), Haldimand-Norfolk (12.2), Grey Bruce (12.2), Oxford (12.7), Timiskaming (13.5), Perth (14.0), Porcupine (14.6), Chatham-Kent (15.1) and Eastern Ontario (15.3). Overall, the average test rate among males in Ontario between 2013 and 2017 was 35.1 per 1,000 people.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Population estimates retrieved from Statistics Canada. Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.3 for data.

Figure 2.6 Average rate of HIV tests per 1,000 by public health unit, **females**, Ontario, 2013 to 2017



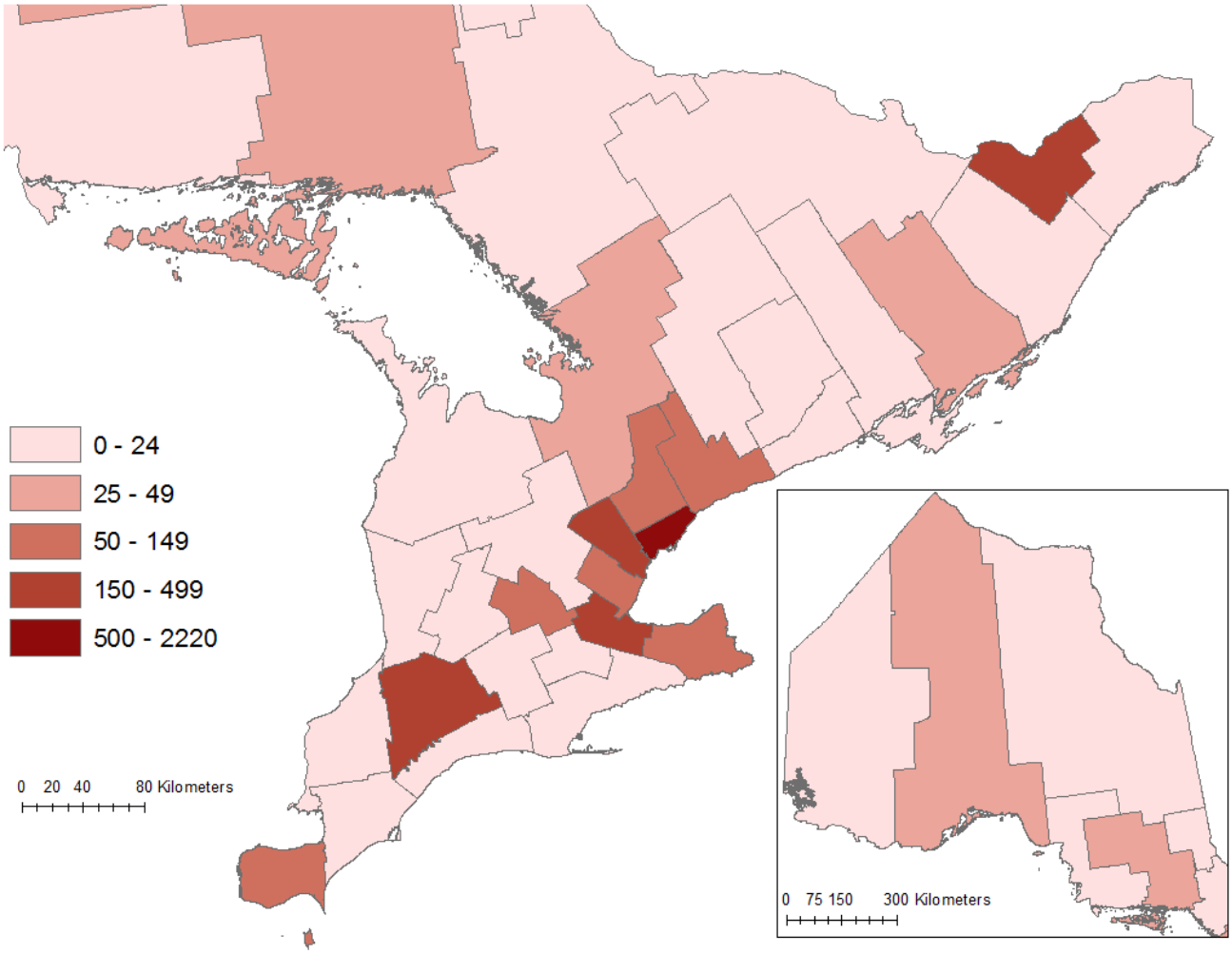
Snapshot

The test rate per 1,000 females was highest in Toronto (56.6) and Ottawa (42.9). The rates were lowest in Huron County (12.8), Haldimand-Norfolk (13.3), Perth (14.2), Oxford (14.7), Grey Bruce (14.7) and Haliburton-Kawartha-Pine-Ridge (15.9). Overall, the average test rate among females in Ontario between 2013 and 2017 was 34.5 per 1,000 people.

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Excludes individuals with an unknown PHU or known to be living out-of-province (0.8%). Population estimates retrieved from Statistics Canada. Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 1.3 for data.

3. New HIV diagnoses

Figure 3.1 Cumulative number of new HIV diagnoses by public health unit, **both sexes**, Ontario, 2013 to 2017

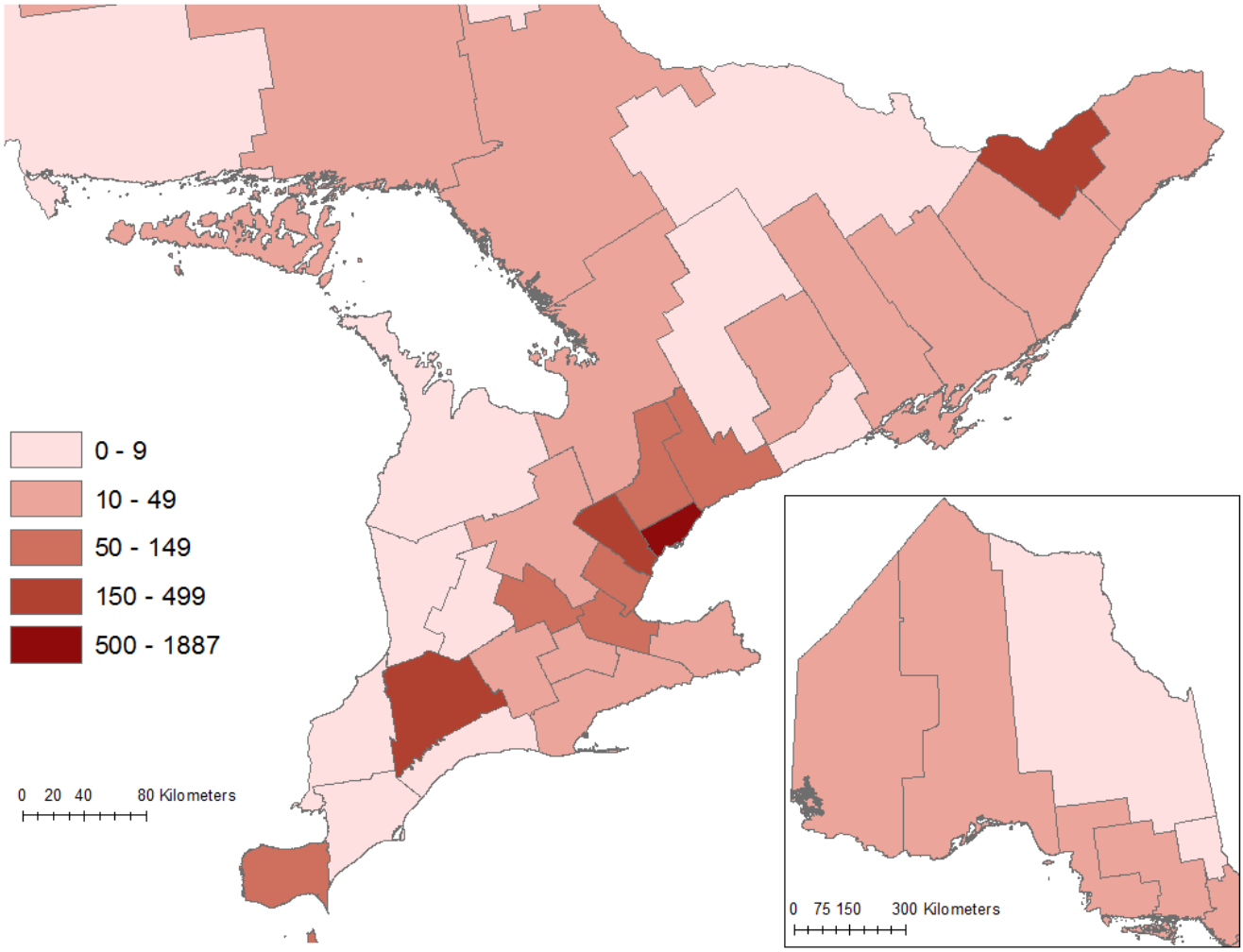


Snapshot

The cumulative number of diagnoses was highest in Toronto (2,220) followed by Ottawa (383), Peel (254), Middlesex-London (235) and Hamilton (164). Overall, the cumulative number of diagnoses in Ontario between 2013 and 2017 was 4,158.

Notes: Data provided by Public Health Ontario Laboratory. Excludes individuals with an unknown PHU or known to be living out-of-province (1.4%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.1 for data.

Figure 3.2 Cumulative number of new HIV diagnoses by public health unit, **males**, Ontario, 2013 to 2017

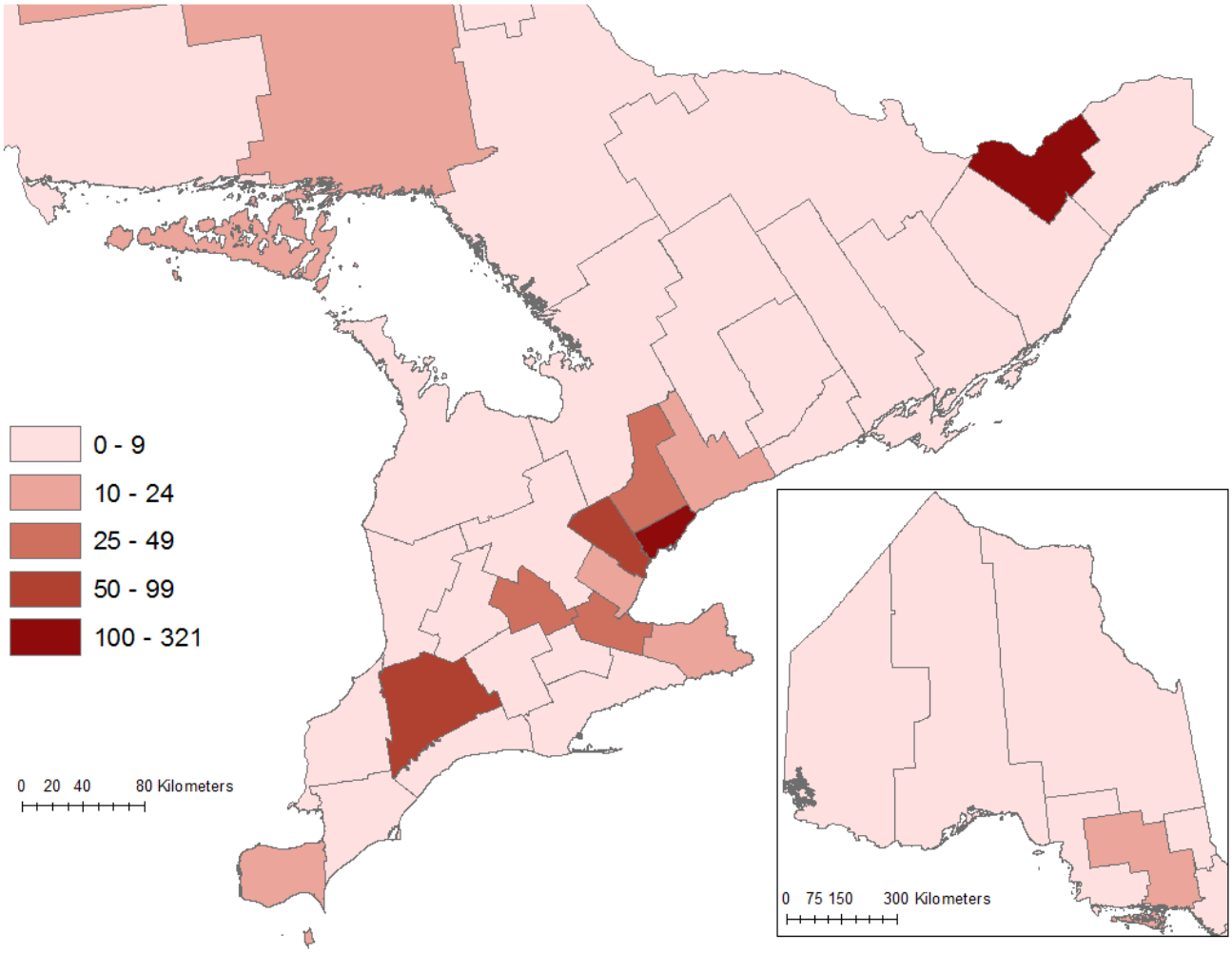


Snapshot

The cumulative number of male diagnoses was highest in Toronto (1,887) followed by Ottawa (269), Peel (179) and Middlesex-London (166). Overall, the cumulative number of diagnoses among males in Ontario between 2013 and 2017 was 3,320.

Notes: Data provided by Public Health Ontario Laboratory. Excludes individuals with an unknown PHU or known to be living out-of-province (1.3%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.1 for data.

Figure 3.3 Cumulative number of new HIV diagnoses by public health unit, **females**, Ontario, 2013 to 2017

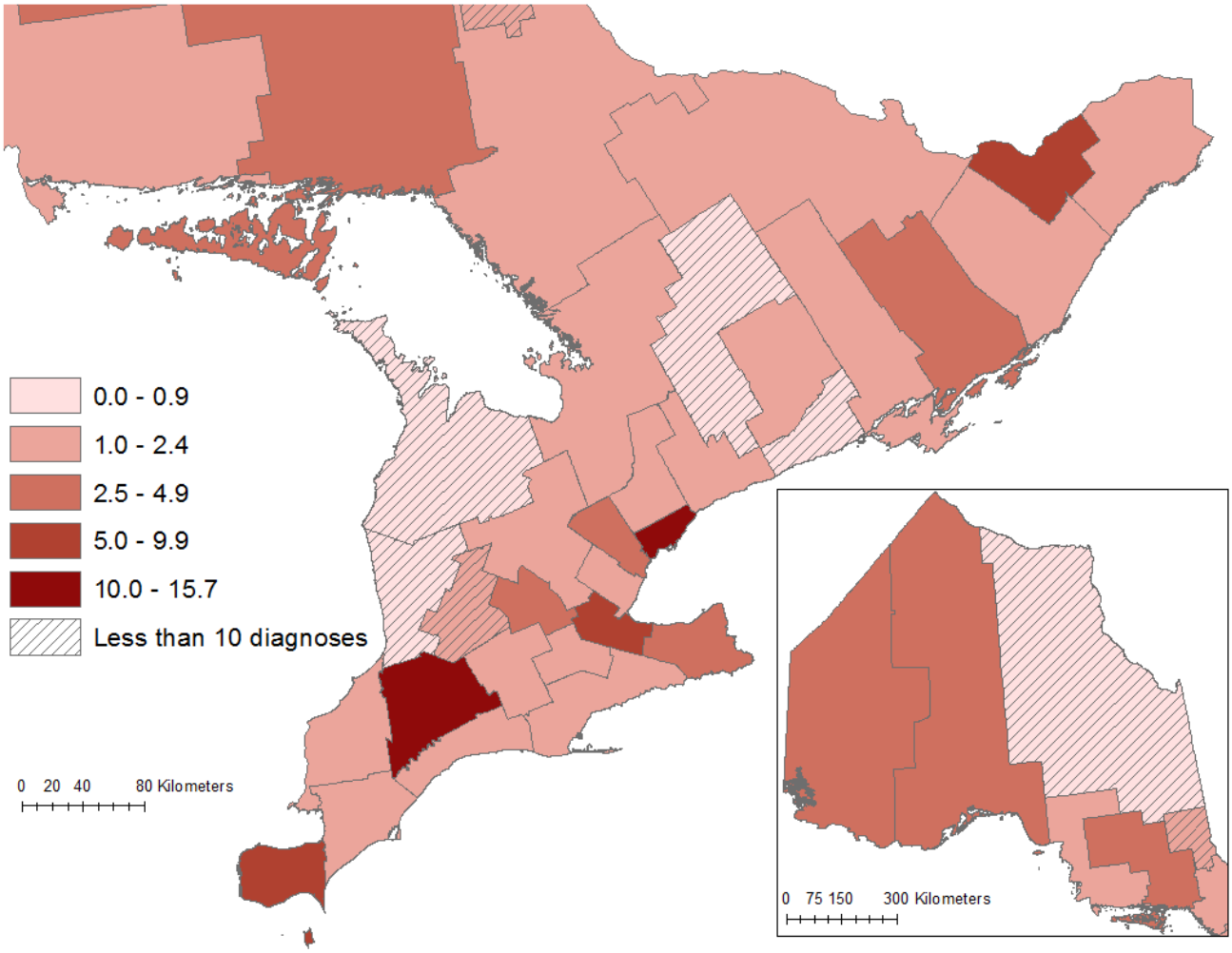


Snapshot

The cumulative number of female diagnoses was highest in Toronto (321) followed by Ottawa (111), Peel (73) and Middlesex-London (68). Overall, the cumulative number of diagnoses among females in Ontario between 2013 and 2017 was 813.

Notes: Data provided by Public Health Ontario Laboratory. Excludes individuals with an unknown PHU or known to be living out-of-province (1.7%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.1 for data.

Figure 3.4 Average rate of new HIV diagnoses per 100,000 people by public health unit, **both sexes**, Ontario, 2013 to 2017

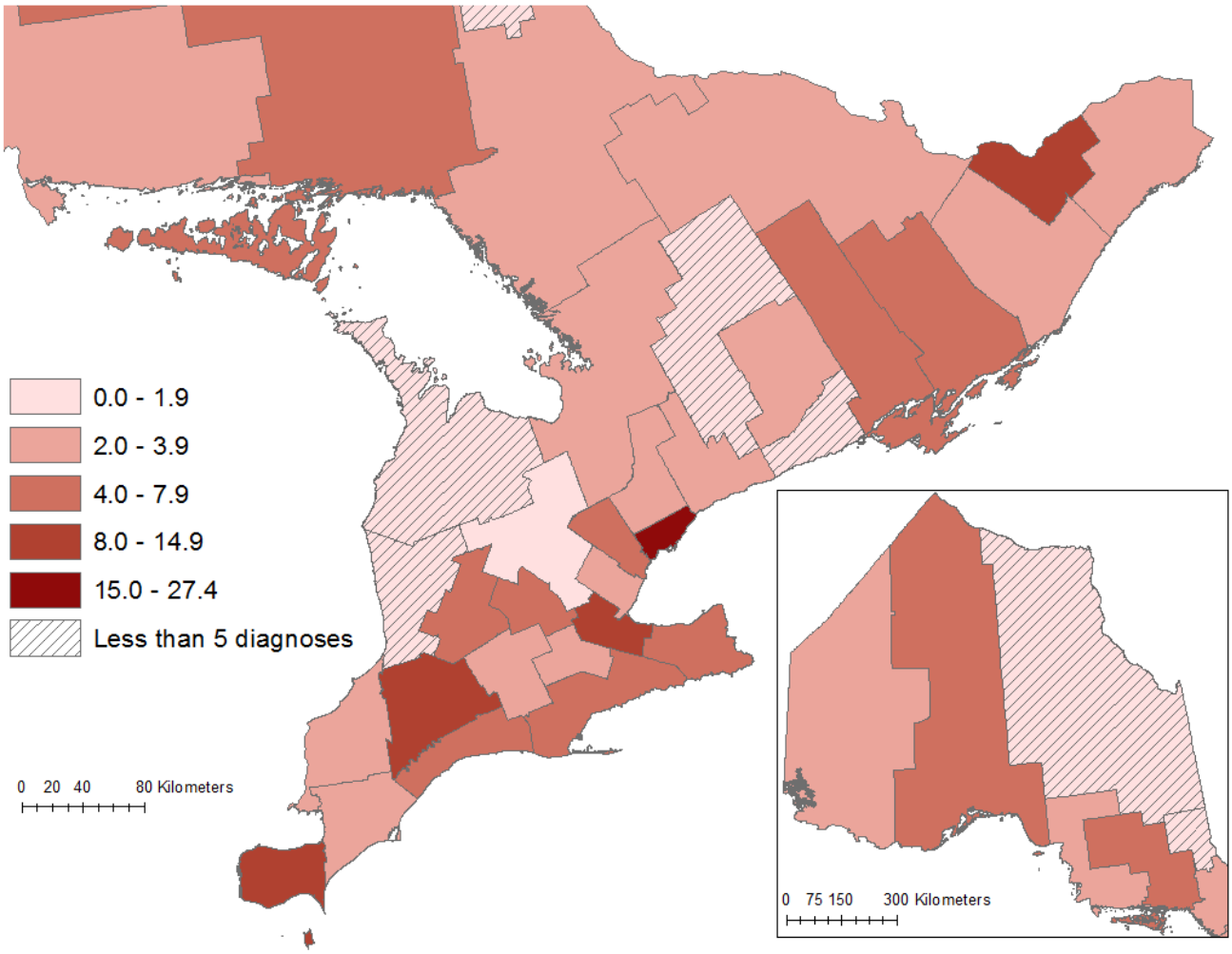


Snapshot

The diagnosis rate per 100,000 people was highest in Toronto (15.7) and Middlesex-London (10.0), followed by Ottawa (8.0), Hamilton (5.9) and Windsor-Essex (5.7). The rate was lowest in Huron County (0.0; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.3; 3 diagnoses), Grey Bruce (0.6; 5 diagnoses) and Porcupine (0.7; 3 diagnoses). Overall, the average rate of diagnoses per 100,000 people in Ontario between 2013 and 2017 was 6.1.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 10 diagnoses indicates rates should be interpreted with caution. Excludes individuals with an unknown PHU or known to be living out-of-province (1.4%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.3 for data.

Figure 3.5 Average rate of new HIV diagnoses per 100,000 people by public health unit, **males**, Ontario, 2013 to 2017

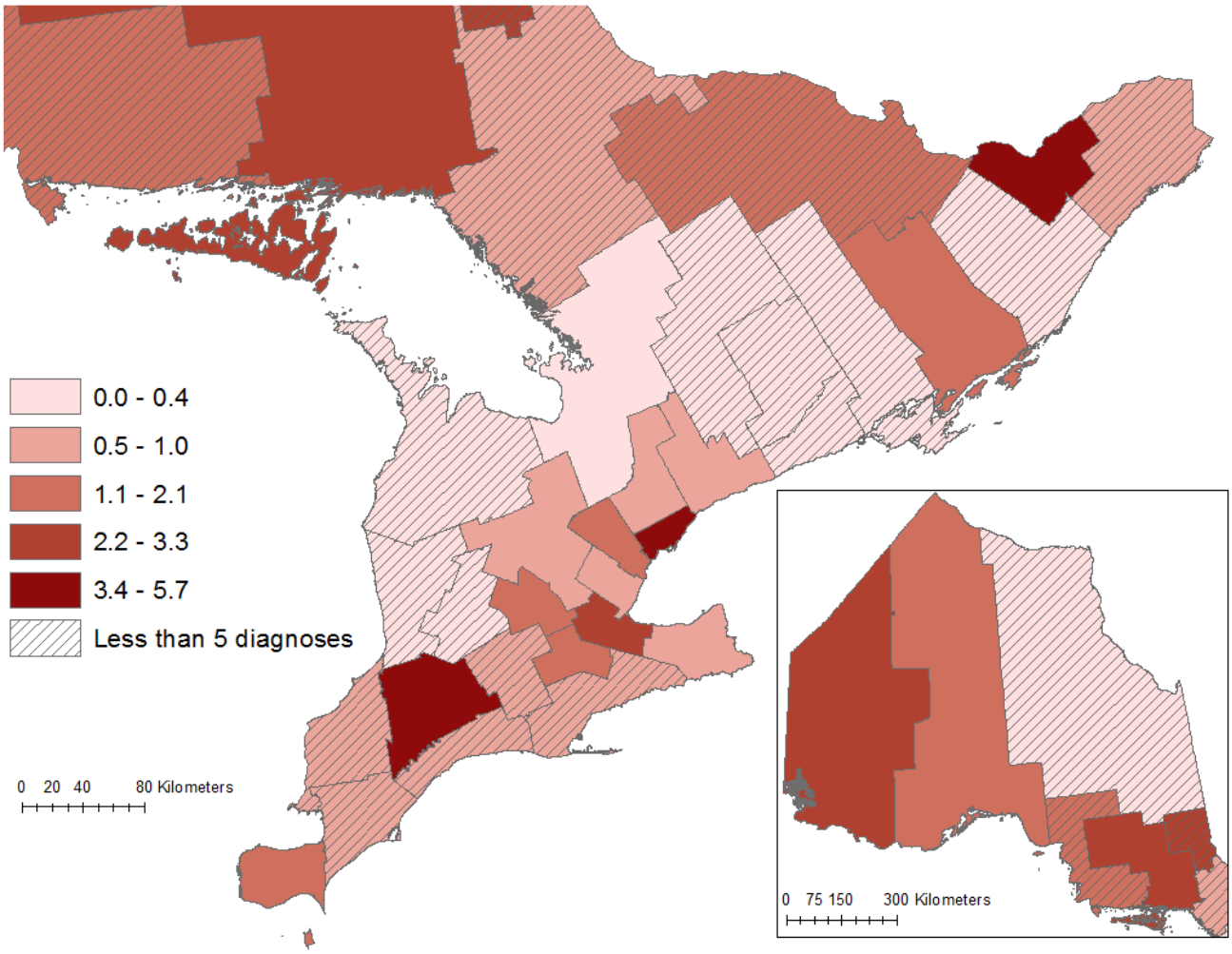


Snapshot

The diagnosis rate per 100,000 males was highest in Toronto (27.4), followed by Middlesex-London (14.5), Ottawa (11.5), Windsor-Essex (9.9) and Hamilton (8.5). The rate was lowest in Huron County (0.0; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.7; 3 diagnoses), Grey Bruce (1.0; 4 diagnoses), Timiskaming (1.2; 1 diagnosis) and Porcupine (1.4; 3 diagnoses). Overall, the average rate of diagnoses per 100,000 males in Ontario between 2013 and 2017 was 9.9.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 5 diagnoses indicates rates should be interpreted with caution. Excludes individuals with an unknown PHU or known to be living out-of-province (1.3%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.3 for data.

Figure 3.6 Average rate of new HIV diagnoses per 100,000 people by public health unit, **females**, Ontario, 2013 to 2017



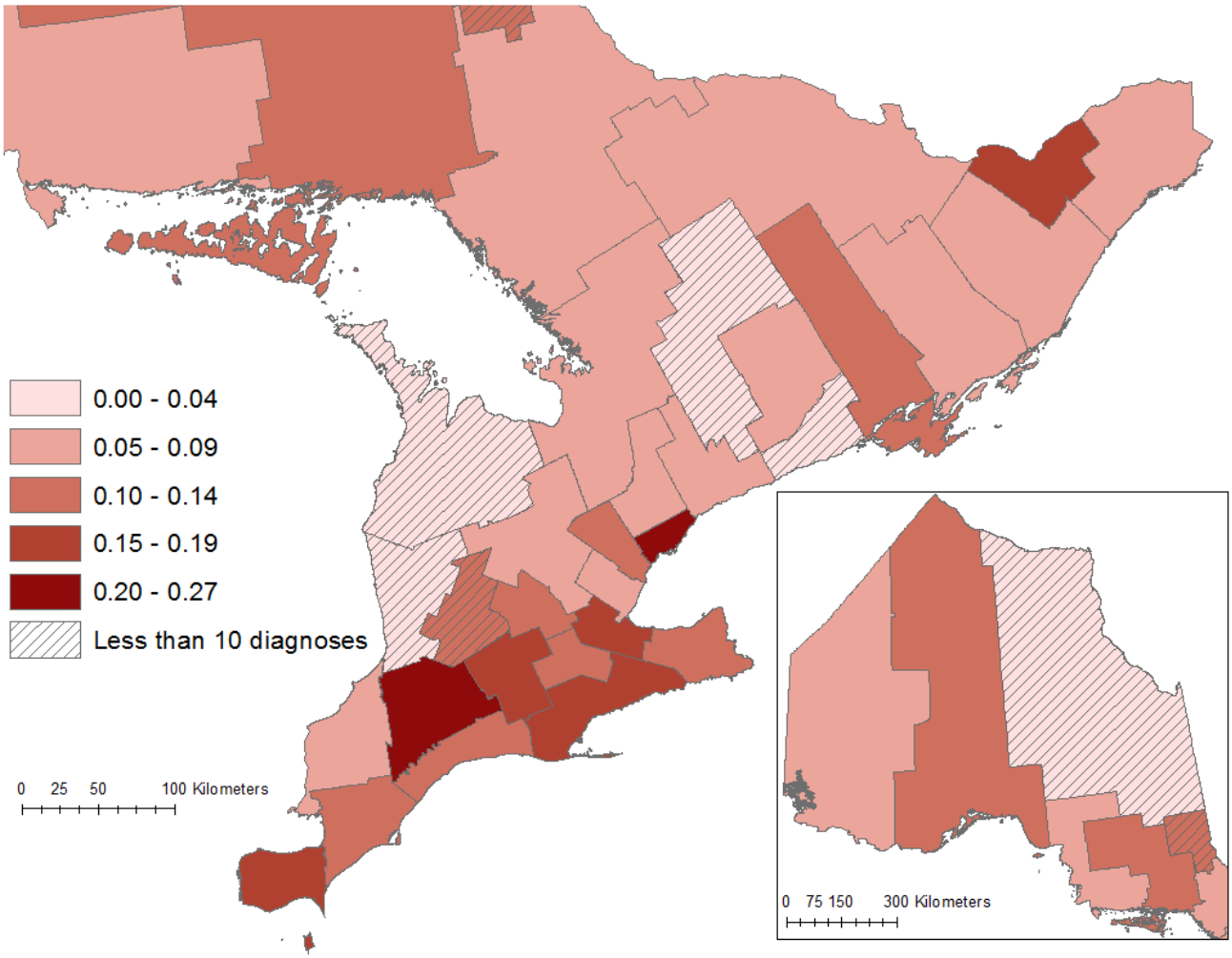
Snapshot

The diagnosis rate per 100,000 females was highest in Middlesex-London (5.7), Ottawa (4.5) and Toronto (4.4), followed by Hamilton (3.3), Sudbury (3.0), Northwestern (2.8; 6 diagnoses) and Timiskaming (2.4; 2 diagnoses). Overall, the average rate of diagnoses per 100,000 females in Ontario between 2013 and 2017 was 2.4.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 5 diagnoses indicates rates should be interpreted with caution. Excludes individuals with an unknown PHU or known to be living out-of-province (1.7%). Diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 2.3 for data.

4. HIV test positivity rate

Figure 4.1 Average HIV test positivity rate by public health unit, **both sexes**, Ontario, 2013 to 2017

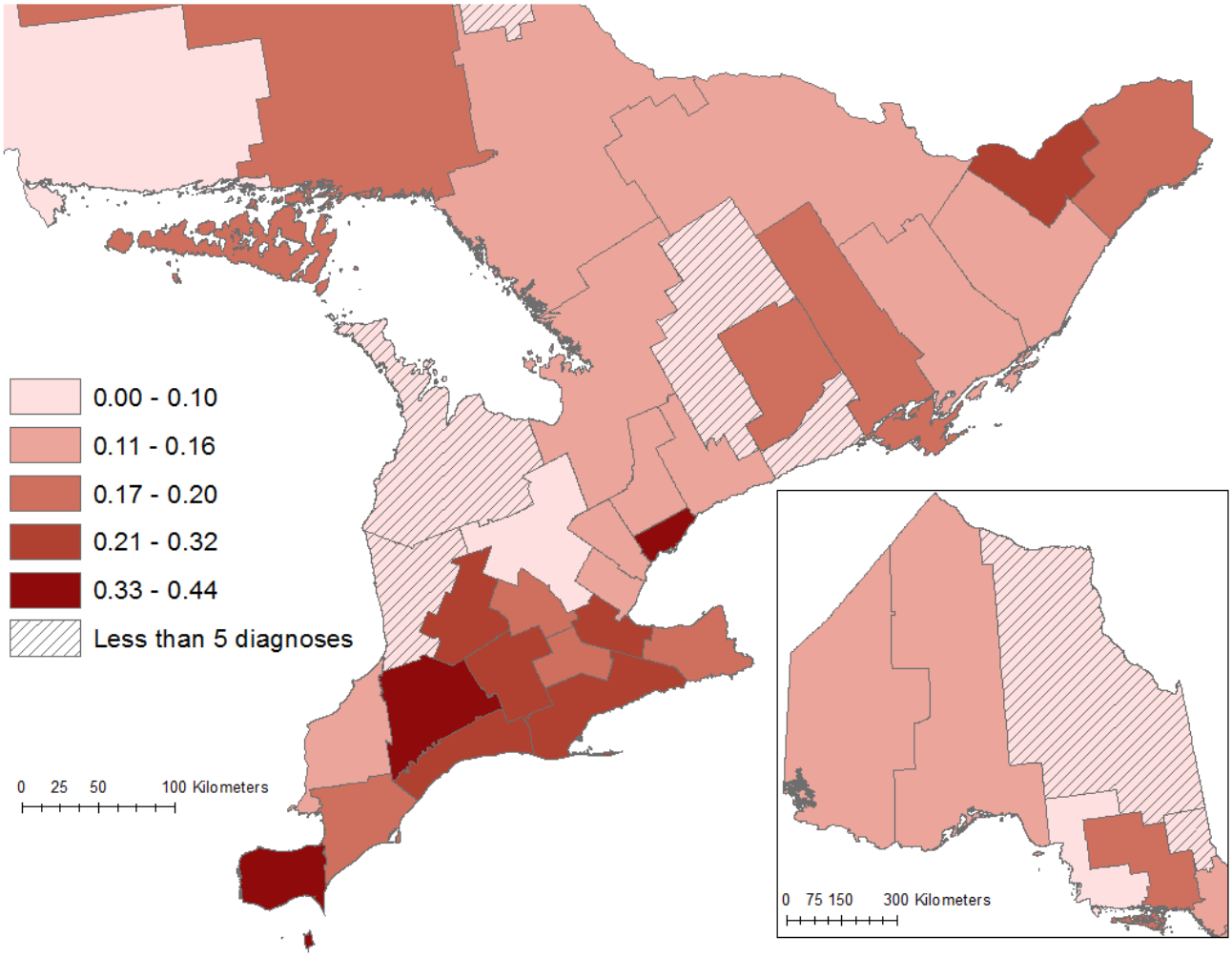


Snapshot

The test positivity rate was highest in Middlesex-London (0.27%) and Toronto (0.25%), followed by Windsor-Essex (0.19%), Hamilton (0.18%), Ottawa (0.18%), Haldimand-Norfolk (0.17%) and Oxford (0.15%). The rate was lowest in Huron County (0.00%; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.02%; 3 diagnoses), Grey Bruce (0.04%; 5 diagnoses) and Porcupine (0.04%; 3 diagnoses). Overall, the average positivity rate in Ontario between 2013 and 2017 was 0.17%.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 10 diagnoses indicates percentages should be interpreted with caution. HIV-negative prenatal tests not included. Positivity rate refers to the percent of tests that were HIV-positive. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Tests and diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 3.1 for data.

Figure 4.2 Average HIV test positivity rate by public health unit, **males**, Ontario, 2013 to 2017

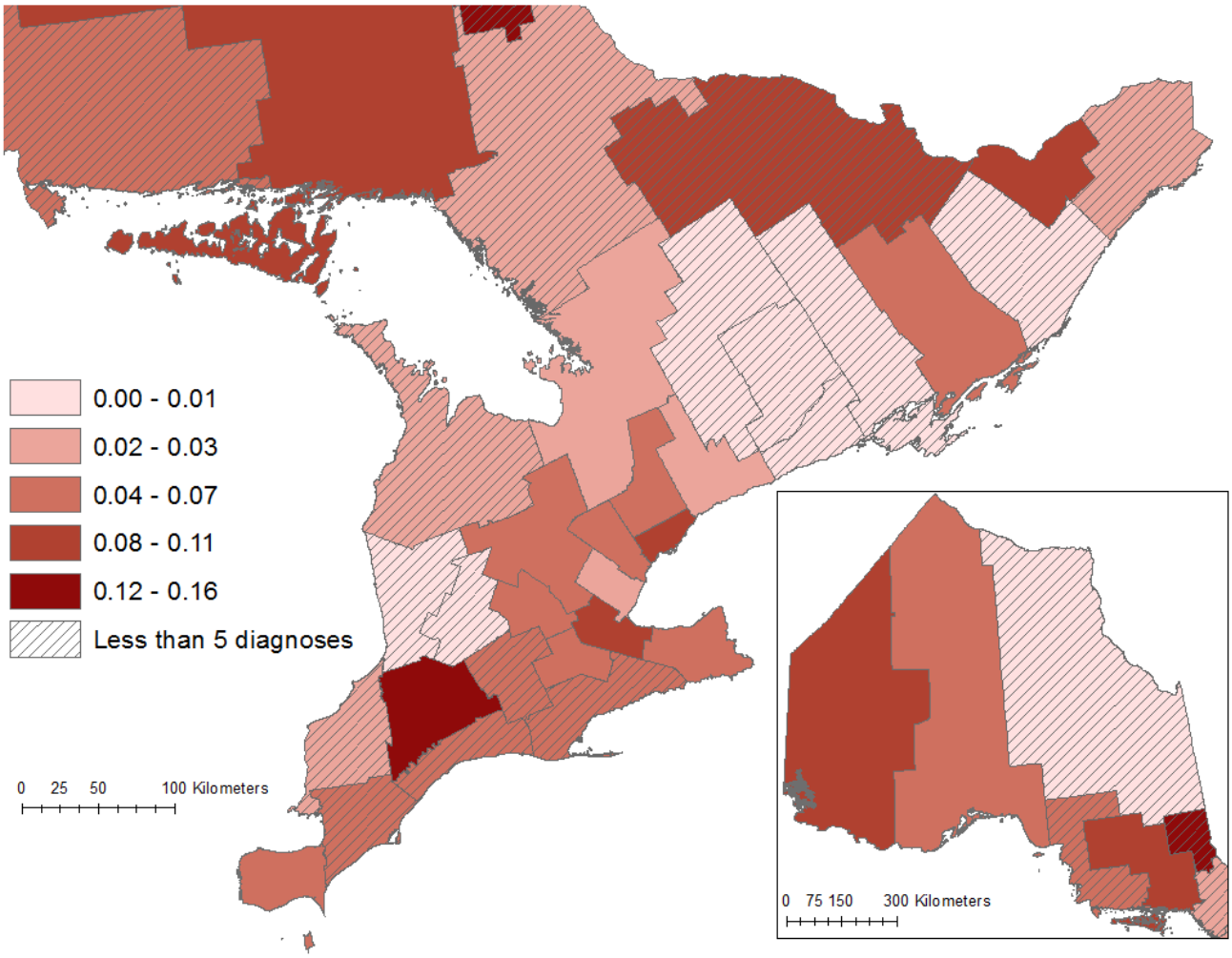


Snapshot

The test positivity rate among males was highest in Toronto (0.44%), Middlesex-London (0.40%) and Windsor-Essex (0.35%) followed by Haldimand-Norfolk (0.32%), Perth (0.30%), Oxford (0.28%), Hamilton (0.27%), Ottawa (0.26%) and Elgin-St.Thomas (0.24%). The rate was lowest in Huron County (0.00%; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.04%; 3 diagnoses), Grey Bruce (0.08%; 4 diagnoses), Timiskaming (0.09%; 1 diagnosis), Wellington-Dufferin-Guelph (0.09%; 13 diagnoses) and Algoma (0.09%; 7 diagnoses). Overall, the average positivity rate among males in Ontario between 2013 and 2017 was 0.28%.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 5 diagnoses indicates percentages should be interpreted with caution. Positivity rate refers to the percent of tests that were HIV-positive. Excludes individuals with an unknown PHU or known to be living out-of-province (0.7%). Tests and diagnoses assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 3.1 for data.

Figure 4.3 Average HIV test positivity rate by public health unit, **females**, Ontario, 2013 to 2017



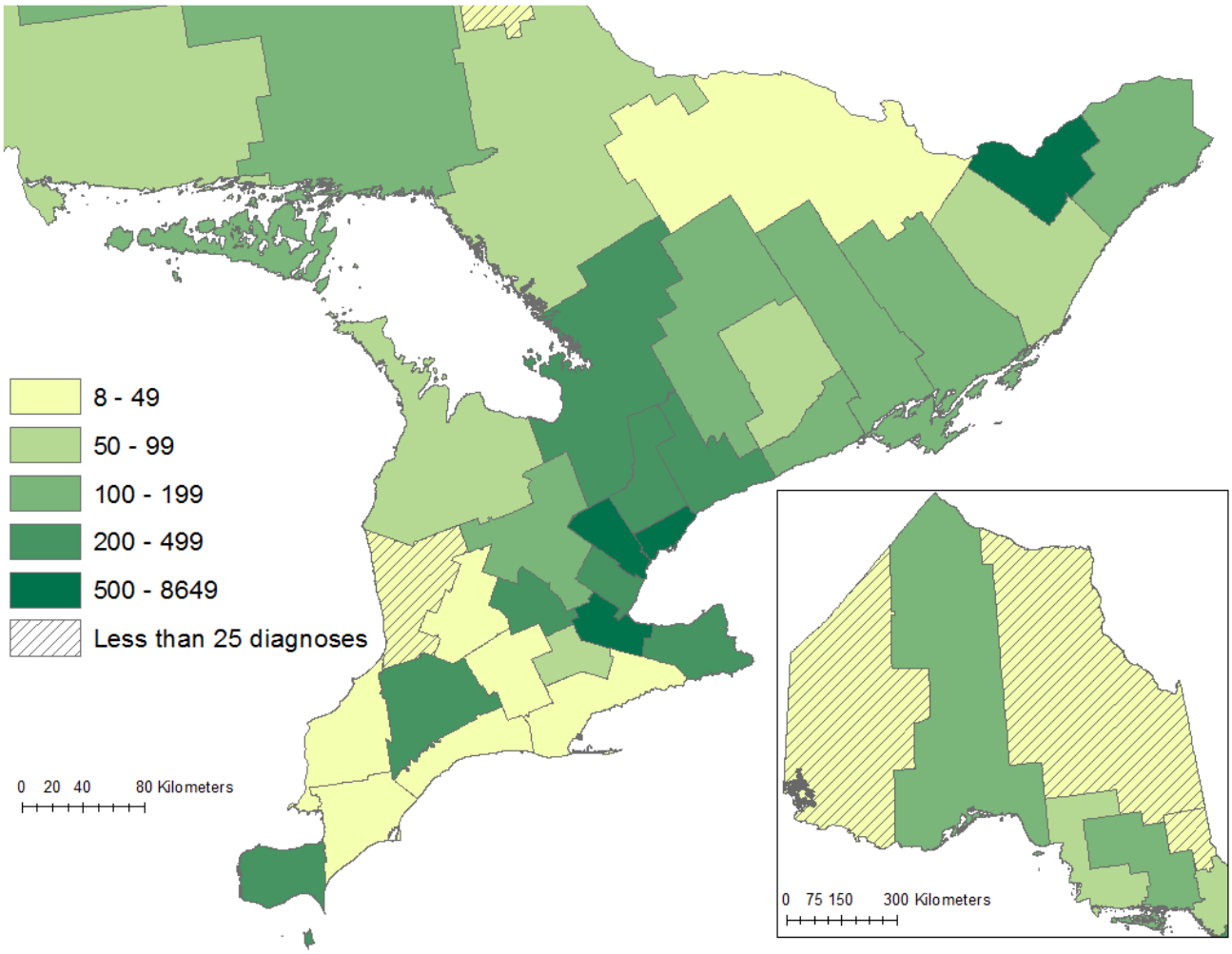
Snapshot

The test positivity rate among females was highest in Middlesex-London (0.16%) and Timiskaming (0.14%; 2 diagnoses), followed by Hamilton (0.11%), Ottawa (0.11%), Sudbury (0.10%), Toronto (0.08%), Northwestern (0.08%; 6 diagnoses) and Renfrew (0.08%; 4 diagnoses). The rate was lowest in Huron County (0.00%; 0 diagnoses), Haliburton-Kawartha-Pine-Ridge (0.00%; 0 diagnoses), Porcupine (0.00%; 0 diagnoses), Peterborough (0.00%; 0 diagnoses), Perth (0.00%; 0 diagnoses), Leeds-Grenville-Lanark (0.01%; 1 diagnosis) and Hastings-Prince Edward (0.01%; 1 diagnosis). Overall, the average positivity rate among females in Ontario between 2013 and 2017 was 0.07%.

Notes: Data provided by Public Health Ontario Laboratory. Cross-hatching of PHUs with less than 5 diagnoses indicates percentages should be interpreted with caution. HIV-negative prenatal tests not included. Positivity rate refers to the percent of tests that were HIV-positive. Excludes individuals with an unknown PHU or known to be living out-of-province (0.8%). Tests assigned to a PHU based on an individual's address of residence or, if unknown, the address of the ordering provider. See Table 3.1 for data.

5. HIV care cascade (diagnosed, in care, on ART and virally suppressed)

Figure 5.1 Number of people with diagnosed HIV living in Ontario by public health unit, **both sexes**, 2015

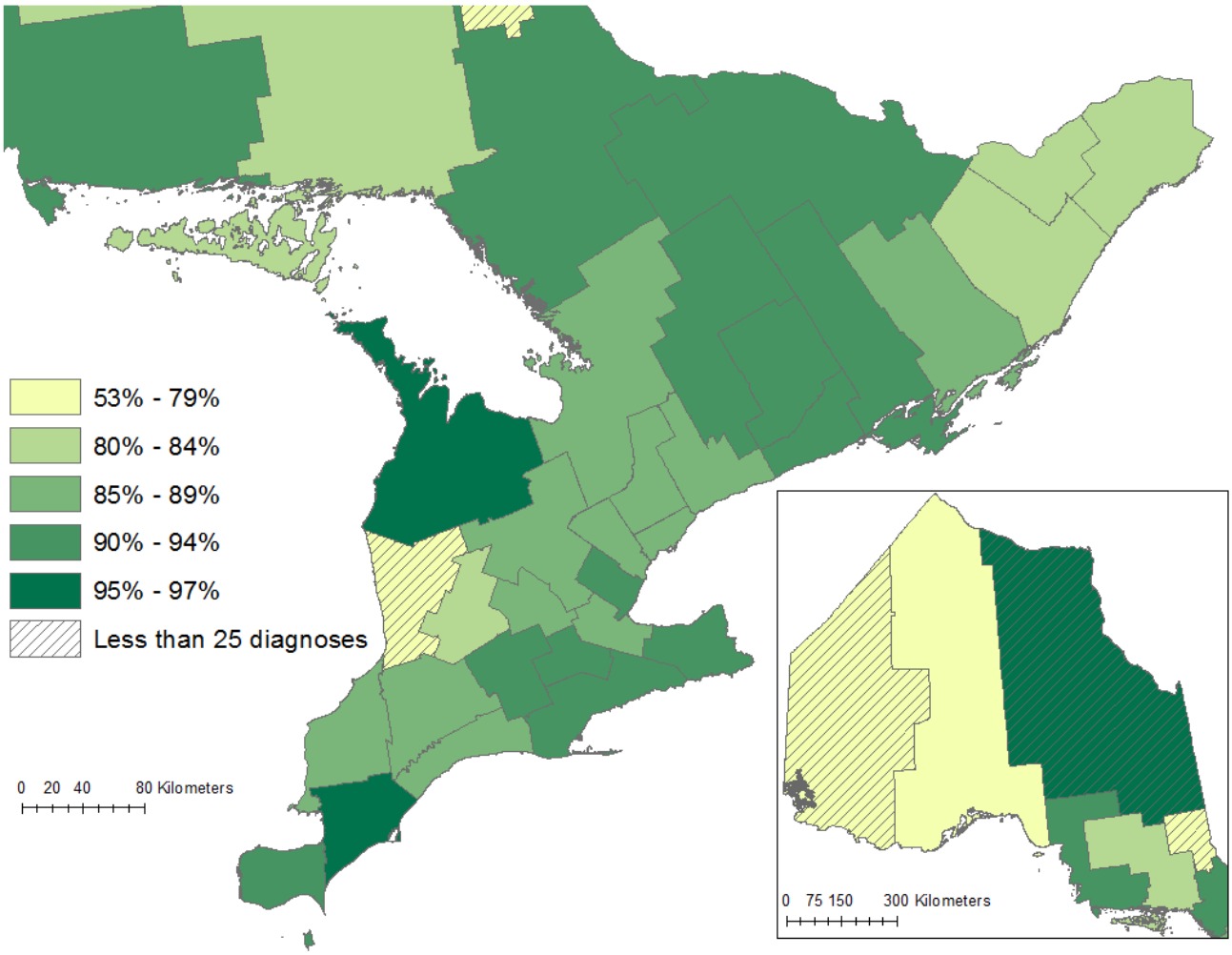


Snapshot

As of the end of 2015, the number of people living with diagnosed HIV was highest in Toronto (8,649), Ottawa (1,630), Peel (824) and Hamilton (599). Overall, the number of diagnosed people in Ontario in 2015 was 15,917.

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. Cross-hatching of PHUs with less than 25 diagnoses indicates percentages should be interpreted with caution. Excludes diagnosed individuals with unknown public health unit or known to be living out of province (0.9%). Individuals assigned to a public health unit based on their address of residence or, if unknown, the address of the ordering provider. See Table 4.1 for data.

Figure 5.2 Percent of people with diagnosed HIV living in Ontario who were in care by public health unit, **both sexes**, 2015

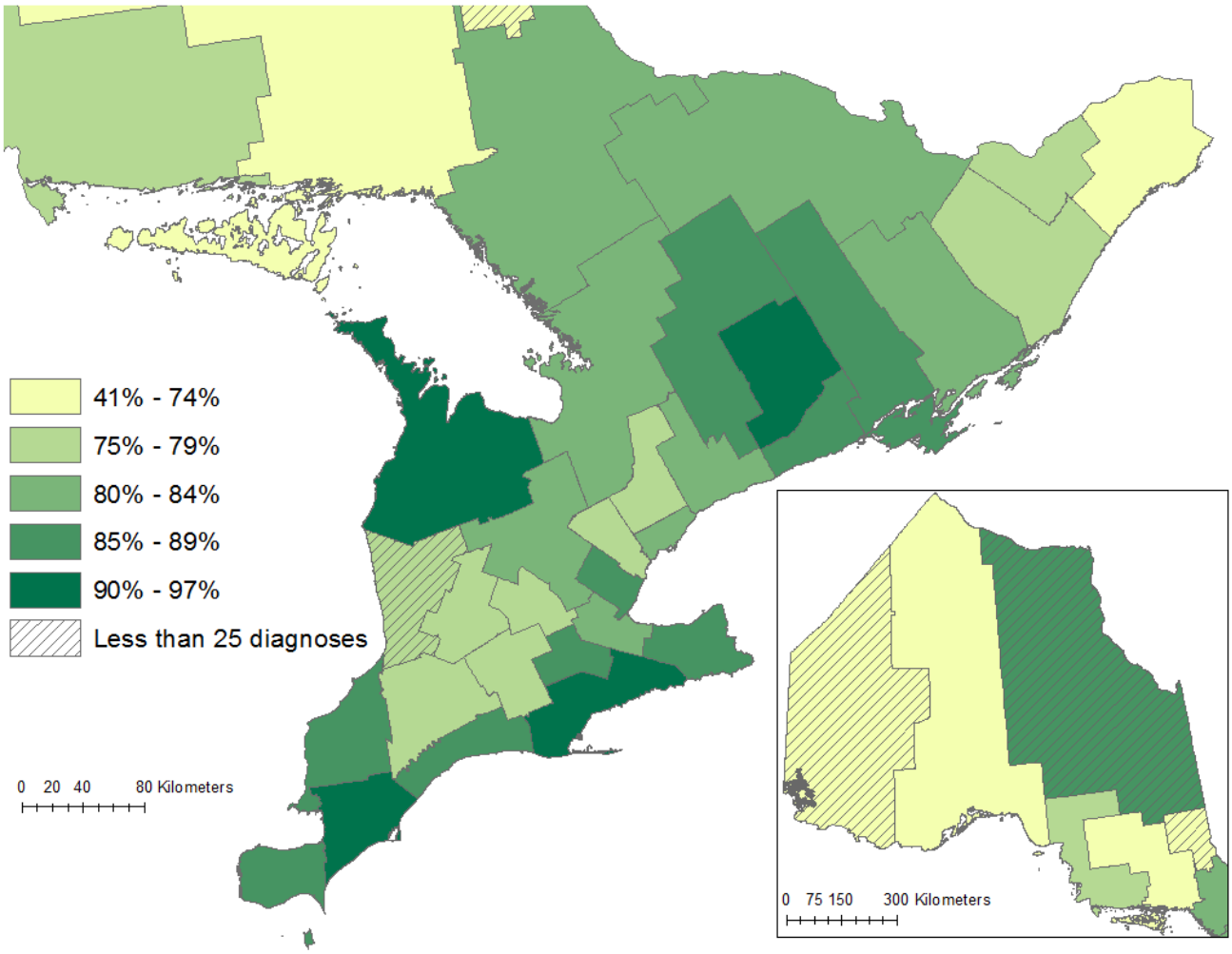


Snapshot

In 2015, the percent of diagnosed people who were in care was highest in Chatham-Kent (97.4%), Grey Bruce (96.4%) and Porcupine (94.7%; 19 diagnosed). The percent in care was lowest in Northwestern (52.9%; 17 diagnosed), Huron County (75.0%; 8 diagnosed), Thunder Bay (77.2%) and Timiskaming (78.6%; 14 diagnosed. Overall, the percent of diagnosed people in Ontario who were in care in 2015 was 87.5%.

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. Cross-hatching of PHUs with less than 25 diagnoses indicates percentages should be interpreted with caution. In care defined as ≥1 VL test in 2015. Excludes diagnosed individuals with unknown public health unit or known to be living out of province (0.9%). Individuals assigned to a public health unit based on their address of residence or, if unknown, the address of the ordering provider. See Table 4.2 for data, including numerator and denominator used to calculate percentages.

Figure 5.3 Percent of people with diagnosed HIV living in Ontario who were on ART by public health unit, **both sexes**, 2015

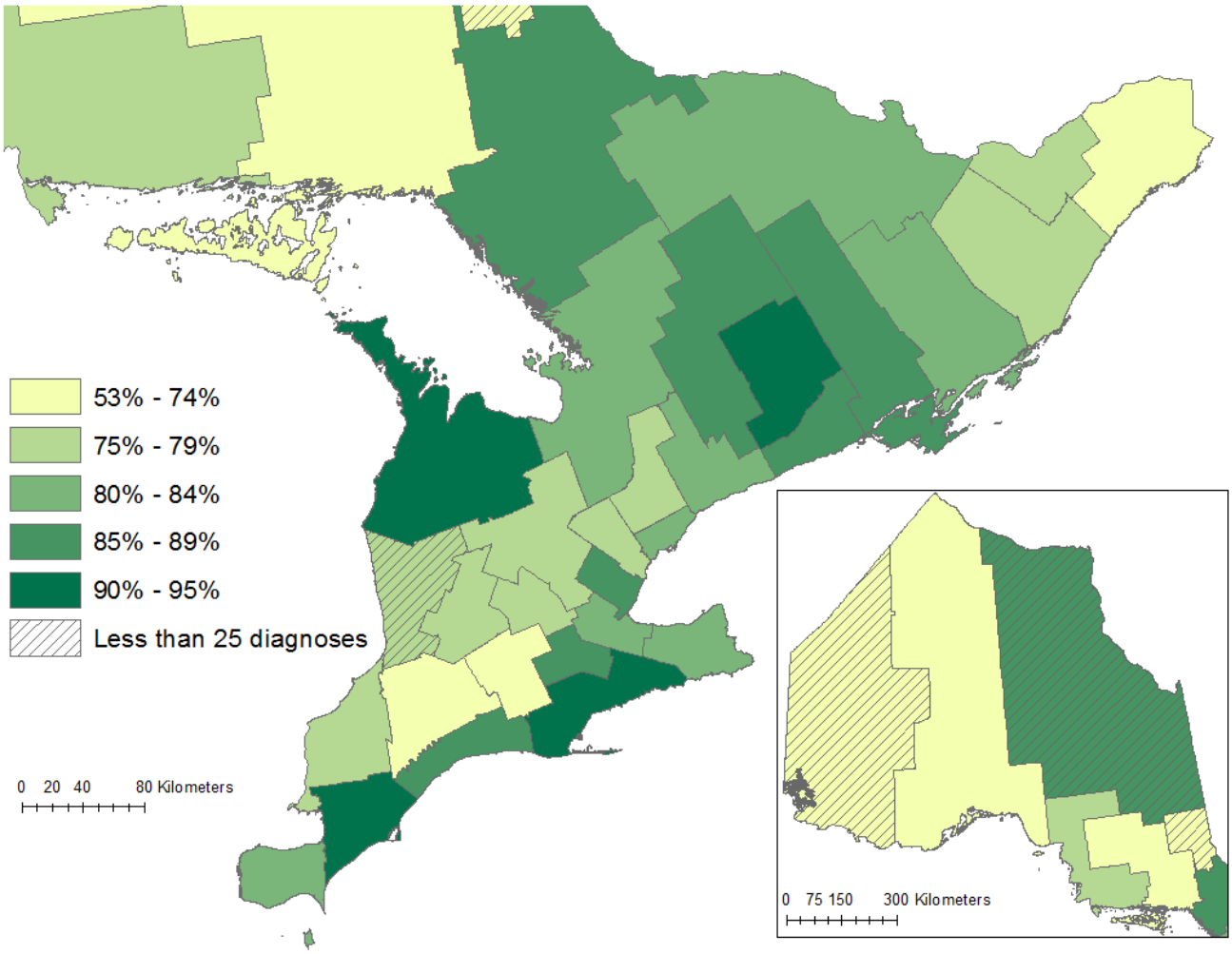


Snapshot

In 2015, the percent of people living with diagnosed HIV who were on ART was highest in Chatham-Kent (97.4%), Grey Bruce (94.5%) Haldimand-Norfolk (92.9%) and Peterborough (89.9%). The percent on ART was lowest in Northwestern (41.2%; 17 diagnosed), Timiskaming (64.3%; 14 diagnosed), Thunder Bay (67.3%), Sudbury (73.6%) and Eastern Ontario (73.9%). Overall, the percent of diagnosed people in Ontario who were on ART in 2015 was 81.2%.

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. Cross-hatching of PHUs with less than 25 diagnoses indicates percentages should be interpreted with caution. ART status documented on VL test requisition by ordering provider. ART data missing on 18% of requisitions. On ART defined as being documented on ART by ordering provider, or ART status missing and virally suppressed, on last VL test requisition in 2015. It is possible for the percent 'virally suppressed' to exceed the percent 'on ART' due to the inclusion individuals who are virally suppressed but documented as not 'on ART'. Excludes diagnosed individuals with unknown public health unit or known to be living out of province (0.9%). Individuals assigned to a public health unit based on their address of residence or, if unknown, the address of the ordering provider. See Table 4.2 for data, including numerator and denominator used to calculate percentages.

Figure 5.4 Percent of people with diagnosed HIV living in Ontario who were virally suppressed by public health unit, **both sexes**, 2015



Snapshot

In 2015, the percent of people living with diagnosed HIV who were virally suppressed was highest in Chatham-Kent (94.7%), Grey Bruce (92.7%), Haldimand-Norfolk (90.5%) and Peterborough (89.9%). The percent suppressed was lowest in Northwestern (52.9%; 17 diagnosed), Thunder Bay (62.4%), Timiskaming (64.3%; 14 diagnosed), Sudbury (69.2%), Middlesex-London (72.4%), Eastern Ontario (73.0%) and Oxford (73.7%). Overall, the percent of diagnosed people in Ontario who were virally suppressed in 2015 was 79.6%.

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. Cross-hatching of PHUs with less than 25 diagnoses indicates percentages should be interpreted with caution. Virally suppressed defined as having less than 200 copies/ml on last VL test requisition in 2015. It is possible for the percent 'virally suppressed' to exceed the percent 'on ART' due to the inclusion individuals who are virally suppressed but documented as not 'on ART'. Excludes diagnosed individuals with unknown public health unit or known to be living out of province (0.9%). Individuals assigned to a public health unit based on their address of residence or, if unknown, the address of the ordering provider. See Table 4.2 for data, including numerator and denominator used to calculate percentages.

Definitions

Administrative lost to follow-up

An individual in the Ontario HIV Laboratory Cohort is considered to be a person living with diagnosed HIV in Ontario until they are administratively lost to follow-up, defined as having had no viral load test for more than two consecutive years and no viral load test in later years. Individuals lost to follow-up are assumed to have died or migrated out of the province, and are removed from the cohort. Based on the constraints of this definition, a diagnosed individual who is actually living in Ontario would be removed from the cohort if they had not had a viral load test for more than two years. If this individual goes on to have a viral load test in the future, they are re-entered into the cohort.

Anonymous testing

An approach to diagnostic HIV testing where no identifying information on the individual getting tested is collected on the test requisition form (although a unique number is included on each requisition). Under the Health Protection and Promotion Act, designated anonymous testing sites are exempt from reporting identifying information on individuals testing HIV-positive to local public health authorities. Anonymous testing was introduced in Ontario in 1992 and expanded in 2006. There are currently 38 active anonymous testing site organizations in Ontario, all of which are provided with rapid/point-of-care tests.

Coded testing

An approach to diagnostic HIV testing where a code assigned by a health care provider, instead of the name of the individual getting tested, is included on the test requisition form.

HIV care cascade

The HIV care cascade refers to the continuum of steps that people living with HIV progress through to achieve viral suppression. These steps generally include testing and diagnosis, linkage to and retention in HIV care, and initiation of and adherence to antiretroviral treatment. Some cascades are more comprehensive and include non-linear components and/or prevention steps for people who are HIV-negative (e.g. see the HIV prevention, engagement and care cascade). In this report, the HIV care cascade specifically refers to the 'in care', 'on ART' and 'virally suppressed' indicators.

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). The Ontario HIV Laboratory Cohort is derived from this datamart.

Integrated Public Health Information System

iPHIS is an electronic, web-based system used by PHUs for case-management and reporting to the Ontario Ministry of Health and Long-term Care on diseases of public health significance, including HIV. It is the main source of data used by Public Health Ontario to produce reportable disease surveillance reports. iPHIS includes information elicited during public health follow up of HIV cases. iPHIS data are not used in this report.

In care

Individuals in the Ontario HIV Laboratory Cohort are considered to be 'in care' if they have at least one viral load test in a given year.

Laboratory Enhancement Program

When a person receives a new HIV diagnosis in Ontario, a Laboratory Enhancement Program (LEP) form is sent to the health care provider who conducted 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, both of which were not historically collected on the HIV test requisition form.

New HIV diagnosis

An individual receiving a first 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. Individuals with previous record of an HIV-positive test in Ontario are excluded to prevent double-counting. However, individuals who test HIV-positive in Ontario through both non-nominal (anonymous or coded) and nominal testing, or who test HIV-positive more than once through non-nominal testing, may be double-counted due to the lack of identifying information needed to link tests in the laboratory database. Data on new HIV diagnoses are used to calculate test positivity rates in this report.

Of note, individuals diagnosed with HIV for the first time outside of Ontario, but who subsequently moved to the province and tested again, are included as a new diagnosis. This means that migration can potentially influence trends in new diagnoses in Ontario.

Nominal test

An approach to diagnostic HIV testing in which the name of the person being tested is collected on the test requisition form.

Non-nominal test

An approach to diagnostic HIV testing in which the name of the person being tested is NOT collected on the test requisition form. This includes anonymous and coded testing.

On antiretroviral treatment

Individuals in the Ontario HIV Laboratory Cohort are considered to be 'on antiretroviral treatment' if their provider documented that they were taking antiretroviral medications on their last viral load test requisition in a given year. If this information is missing, an individual is assumed to be 'on antiretroviral treatment' if they were virally suppressed. Antiretroviral treatment information is missing from approximately 18% of viral load requisitions.

Ontario HIV Laboratory Cohort

A population-based, retrospective cohort of people with diagnosed HIV living in Ontario. This cohort was created using Public Health Ontario Laboratory's HIV datamart. It includes people in the datamart who have record of a nominal HIV-positive diagnostic test and/or at least one viral load test, and who have not been administratively lost to follow-up.

Positivity rate

The percent of HIV diagnostic tests with a confirmed HIV-positive result. Test positivity rates can provide insight into which sub-populations have a higher level of HIV risk. However, positivity rates should be interpreted with caution as they are influenced by both HIV risk as well as the number and types of people getting tested and it is difficult to disentangle these effects.

Public health unit

A health agency that provides health promotion and disease prevention programs in accordance with the Ontario Public Health Standards under the authority of the Health Protection and Promotion Act. There were 36 public health units in Ontario (up to 2017)[13] and each has its own unique geographical boundary.

Rapid/point-of-care 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 60 seconds (20 minutes with counselling). Rapid testing was first introduced in Ontario in 2007. Rapid tests are provided to all 38 currently active anonymous testing organizations as well as three other organizations that are not legislated to provide anonymous testing. If a rapid/point-of-care test is reactive (i.e. suggestive of an HIV-positive result), the result is not considered to be a final diagnosis. However, combined with a client risk assessment, it may be indicative of a positive result. To confirm the result, a blood sample must be taken and sent to the laboratory for additional testing.

Rate of testing/new diagnoses

Refers to the number of HIV tests per 1,000 people or number of new diagnoses per 100,000 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.

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

Test requisition forms

A form filled out by a health care provider along with each HIV diagnostic and viral load test. The diagnostic test requisition collects information on the age, sex and HIV risk factors of the person getting tested. As of 2018, the HIV test requisition form also collects information on race/ethnicity and country of birth (information which has been collected on the Laboratory Enhancement Program form since 2009). This report is based on data from the old test requisition form. The VL test requisition collects information on age, sex, most recent CD4 count and use of antiretroviral medications.

Test type

There are three main test types in Ontario 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.

[13] As of 2018, there were 35 PHUs (Oxford and Elgin-St.Thomas were recently combined). However, the data in this report preceed 2018 and therefore use the earlier configuration of 36 PHUs.

UNAIDS 90-90-90 targets

UNAIDS treatment targets to 2020 as described in '90-90-90 - An ambitious treatment target to help end the AIDS epidemic'. Each of these targets are a subset of the previous target: the first 90 is the percent of all people living with HIV who are diagnosed, the second target is the percent of people with diagnosed HIV who are on treatment and the third is the percent of people on treatment who are virally suppressed. This is in contrast to the HIV care cascade estimates presented in this report, in which all indicators are presented as a percentage of people living with diagnosed HIV. This report does not specifically focus on the UNAIDS 90-90-90 targets, as efforts to calculate the first 90 target are ongoing.

Virally suppressed

Individuals in the Ontario HIV Laboratory Cohort are considered to be virally suppressed if their last viral test in a given year was less than 200 copies/ml.

Abbreviations

ART = antiretroviral treatment

iPHIS = integrated Public Health Information System

LEP = Laboratory Enhancement Program

LTFU = administratively lost to follow-up

OHESI = Ontario HIV Epidemiology and Surveillance Initiative

PHU = public health unit

VL = viral load

Technical notes

Data sources

HIV datamart

All data in this report come from the HIV datamart at the Public Health Ontario Laboratory (PHOL). PHOL conducts centralized HIV diagnostic and VL testing for Ontario, and maintains databases that contain information on the vast majority of such testing in the province. These databases were integrated to form the HIV datamart. In the datamart, an individual's diagnostic and VL test records are linked together using personal identifiers. However, it is not possible to link non-nominal HIV-positive diagnostic tests (coded, anonymous) to other diagnostic or VL tests, as no identifying information is available to facilitate linkage.

Of note, PHOL data are collected for clinical purposes and completeness is reliant on clinicians and other providers completing the test requisitions and other surveillance forms. All information in the HIV datamart is confidential, and only de-identified aggregate data is shared with OHESI partners for inclusion in this report.

The HIV diagnostic and VL testing databases used to create the datamart are described in further detail below:

Diagnostic testing database (1985-present)

All HIV diagnostic testing conducted by health care providers in Ontario is performed by PHOL. This includes tests conducted in Canada as part of an immigration medical exam. Information on test results and forms completed as part of the testing process are compiled in databases at Public Health Ontario. Tests conducted for purposes of blood/tissue/organ donation and life insurance eligibility, and for testing the source individual in the case of needlestick or other occupational exposures, are conducted outside of the public health laboratory system and are not included in this report. Prenatal tests with HIV-negative results are also not included in this report as they are part of an HIV testing program that is offered to all pregnant individuals as part of their prenatal care. Of note, HIV-positive prenatal tests ARE included in this report for calculation of positivity rates, but the annual number of these tests is relatively low (five to 19 in recent years).

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 PHOL. 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. This is done in order for the sample to be tested using an HIV test with a shorter window period.

Viral load testing database (1996-present)

VL testing was implemented in 1996 and the database at PHOL contains records for all individuals who have had a VL test in Ontario. In addition to VL test results, the database contains information from the VL test requisition form (completed by the provider), including most recent CD4 count and whether the patient was on ART at the time of testing. Providers complete the information on ART on approximately 80% of VL test requisition forms. All VL tests in the database were conducted nominally as of the end of 2015.

Ontario HIV Laboratory Cohort

A cohort of people with diagnosed HIV living in Ontario, referred to as the Ontario HIV Laboratory Cohort, was created using the integrated HIV datamart. Individuals are included in the cohort if they have either;

1. a nominal HIV-positive diagnostic test (1985 to 2015), **and/or**
2. at least one viral load test (1996 to 2015)

Non-nominal HIV-positive diagnostic tests (i.e., tests conducted anonymously or using coded identifiers) are **excluded** from the cohort. The lack of identifying information on non-nominal tests means that it is not possible to link these tests to subsequent VL tests and monitor engagement in HIV care. However, individuals diagnosed non-nominally are included in the cohort when they receive a nominal HIV diagnostic or VL test at entrance to care.

Individuals with record of a VL test only (no linked nominal HIV-positive diagnostic test) are included in the cohort, with one exception. Individuals with no nominal HIV-positive diagnostic test and all undetectable VL test results **do not** enter the cohort if they have evidence of being HIV-negative (i.e. record of a nominal HIV-negative diagnostic test after, on the same day as, or within 30 days before their last undetectable VL test); these individuals are likely HIV-negative people receiving a VL test for diagnostic purposes.

Overall (1985 to 2015), the HIV datamart includes 40,372 HIV-positive diagnostic test records and 23,851 individuals with record of at least one VL test. Of the HIV-positive diagnostic tests, 18,683 (46.3%) were non-nominal and excluded from the cohort (note: the proportion of HIV-positive diagnostic tests that are non-nominal has decreased over time, from 50% in 1996 to 15% in 2015). A further 947 individuals were excluded because they had no nominal HIV-positive diagnostic test, all undetectable VL tests, and evidence of being HIV-negative. A total of 29,587 people in the HIV datamart have record of a nominal HIV-positive diagnostic test **and/or** at least one VL test and were included in the cohort.

3. **and** have not been administratively lost to follow-up after two years.

After entering the cohort, individuals are removed if they have had no record of a VL test for more than two consecutive years, and no VL test at a later date (referred to as administratively LTFU). These individuals are removed to account for potential death or migration out of the province. If a LTFU individual has a subsequent VL test in later years, they re-enter the cohort and are counted as being a diagnosed person living in Ontario during the years in which they were in a gap in care. After application of the two-year LTFU criteria, there were 16,110 diagnosed people living with HIV in the cohort at the end of 2015.

For more information on the laboratory cohort and its limitations, see technical notes of the HIV cascade in Ontario OHESI report.

HIV indicators

HIV testing

All HIV tests performed by PHOL contribute to the test data in this report, with one exception. Prenatal tests with an HIV-negative result are not included, as they are part of an HIV testing program that is offered to all pregnant individuals. Since these individuals were not necessarily at-risk of HIV infection and did not specifically seek out HIV testing, their inclusion may bias testing indicators. Approximately 150,000 HIV-negative prenatal tests are conducted in Ontario each year.

This report includes information on the number of HIV tests, it does NOT include information on the number of unique individuals tested. This means that annual test numbers may include the same individual more than once.

New HIV diagnoses

Only individuals with a confirmed HIV-positive test result and no previous HIV-positive test in the PHOL database system are considered to be a new HIV diagnosis. Exclusion of those with a previous diagnosis occurs when that individual's previous positive result is identified by PHOL. Most excluded individuals are those who have had two or more HIV-positive tests conducted nominally or using the same code within Ontario, since these tests include identifying information that can be used to link tests.

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 also test HIV-positive 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). Since these two tests cannot be linked together, both are reported as a new diagnosis. However, the LEP questionnaire collects information on previous HIV-positive testing history which is also used to exclude duplicates, minimizing double counting of individuals.

The potential for double-counting may be higher in PHUs with more anonymous testing. The percent of diagnoses (2013-2017) identified through anonymous testing was about 13% for Ontario overall and ranged by PHU as follows: Toronto (19%); Windsor (11%); Peel, Elgin-St. Thomas, Ottawa and London (5-15%); Simcoe, Hamilton, Halton, Niagara (<5%); and all others (0%). Note: one of the 11 diagnoses in Elgin-St.Thomas were anonymous.

Of note, individuals diagnosed with HIV for the first time outside of Ontario, but who subsequently moved to the province and tested again, are included as a new diagnosis. This means that changes in migration can potentially influence trends in new diagnoses in Ontario.

While prenatal HIV-negative tests are excluded from this report, new diagnoses include prenatal HIV-positive tests. In recent years, the annual number of HIV-positive prenatal tests ranged from five to 19. As these individuals will require care and treatment in their respective jurisdictions, HIV-positive prenatal tests are included in this report.

Over the past five years, the positivity rate for prenatal testing was 0.004%, which is much lower than the overall diagnostic positivity rate of 0.17%. Also, the majority of prenatal HIV-positive tests were in large urban PHUs. However, the inclusion of HIV-positive prenatal tests in smaller PHUs, along with the exclusion of HIV-negative prenatal tests from the denominator in these regions, may result in inflated female test positivity rates.

HIV test positivity rate

The HIV test positivity rate refers to the percent of tests that are HIV-positive. The number of tests and new diagnoses (see above for definitions) are used to calculate these rates.

HIV care cascade (diagnosed person living with HIV, in care, on ART and virally suppressed)

The Ontario HIV Laboratory Cohort is used to estimate the number of people with diagnosed HIV living in Ontario and the percent who are in care, on ART and virally suppressed. Indicator definitions and their limitations are summarized in the table below.

Indicator	Definition	Limitations
Person with diagnosed HIV living in Ontario	Nominal HIV-positive diagnostic test **and/or** at least one HIV viral load test, **and not** administratively LTFU after two years	Some LTFU individuals may still be living in the province – leading to an underestimate of the number of diagnosed people.
In care	At least one VL test in a given calendar year	Individuals without a VL test in a given year are assumed to be not 'in care' in that year.
On ART	Documented on ART, or ART status missing and virally suppressed, on **last** VL test in a given calendar year	Use of ART documented by ordering provider on VL test requisitions and missing 18% of the time. Individuals without a VL test in a given year are assumed to be not 'on ART' in that year.
Virally suppressed	VL less than 200 copies/mL on **last** VL test in a given calendar year	Individuals without a VL test in a given year are assumed to be not 'virally suppressed' in that year.

It is possible for the percent 'virally suppressed' to exceed the percent 'on ART' due to the inclusion individuals who are virally suppressed but documented as not 'on ART'.

The percent of VL requisitions with missing ART data (2013-2017) was highest in Huron County (33.3%), followed by Wellington-Dufferin-Guelph, Timiskaming and Toronto (20-29%). Missing ART data was <20% for the remaining PHUs. Note: two of the six VL tests in Huron County were missing data and three of the 11 VL tests in Timiskaming were missing data.

iPHIS vs. PHOL data

For new HIV diagnoses, OHESI uses laboratory data on HIV-positive diagnostic tests from PHOL along with information documented by ordering providers on test requisition forms.

OHESI **does not** use information from the integrated Public Health Information System (iPHIS). iPHIS is an electronic, web-based system used by PHUs for case-management and reporting to the Ontario Ministry of Health and Long-term Care (MOHTLC) on diseases of public health significance, including HIV. It is the main source of data used by Public Health Ontario (PHO) to produce reportable disease surveillance reports. iPHIS includes information elicited during public health follow up of HIV cases.

The number of HIV diagnoses in iPHIS does not correspond to the number of new HIV diagnoses in PHOL HIV surveillance. Potential sources of discrepancy include:

- Additional exclusion within iPHIS of repeated HIV-positive tests based on information elicited during PHU follow-up, whereas this may not be possible in PHOL data due to lack of identifying information to link tests (e.g. when an HIV-positive individual initially tests anonymously and then nominally).
- iPHIS does not include HIV diagnoses that arise from testing non-Ontario residents (e.g., Quebec residents testing in Ontario are included in provincial totals in PHOL HIV surveillance).
- iPHIS includes diagnoses who have moved to Ontario, been reported to the local PHU as an HIV case, but who have not received a HIV diagnostic lab test in Ontario.
- iPHIS may include more complete information on an individual's address (obtained during public health follow up) than lab data (which is solely based on what is documented on the test requisition form), and this may influence the PHU to which an HIV case is assigned.
- Data entry errors within iPHIS that result in cases being misclassified and not captured in final counts.
- Cases may be assigned to different dates in PHOL and iPHIS data (e.g., date of confirmed diagnosis vs. date of report to PHU). Therefore, case counts based on calendar year may differ.

Public health units

Maps with public health unit locations and population sizes can be found in Figures 1.1 and 1.2 above.

Individuals who receive an HIV diagnostic test are assigned to a PHU based on their residence or, if unknown, the address of the ordering provider. About 23% of tests in the province (2013-2017) were missing information on address of residence and assigned based on provider address. The percent missing residence address was highest in Middlesex-London (45.3%) and Waterloo (40.4%), followed by Hamilton, Niagara, Elgin-St.Thomas, Sudbury, Chatham-Kent and Windsor-Essex (30 to 39%). Missing address information was <30% for all other PHUs.

New HIV diagnoses are assigned to a PHU based on their residence or, if unknown, the address of the ordering provider. About 34% of diagnoses in the province (2013-2017) were missing information on address of residence and assigned based on provider address. The percent missing residence address was highest in Hamilton (59.1%) and Elgin-St. Thomas (54.5%), followed by Niagara, Middlesex-London, Sudbury, Hastings-Prince Edward and Wellington-Dufferin-Guelph (40 to 49%). Missing address information was <40% for all other PHUs.

For individuals who travelled outside their PHU in order to test for HIV (for example, to an urban center where testing is more available), missing residence data would mean that these tests and diagnoses would be attributed to the PHU where testing occurred. This would lower testing/diagnosis rates for the PHU where the individual lives, and increase rates for the PHU where the individual tested.

Individuals in the Ontario HIV Laboratory Cohort are assigned based on the individual's residence at time of viral load testing or, if unknown, the address of the ordering provider. In 2015, residence address was missing for approximately 7% of individuals. For individuals with no record of a VL test, address at the time of diagnosis is used to assign a PHU. The percent of individuals missing residence address was highest in Wellington-Dufferin-Guelph (22.8%), Northwestern (11.8%) and Middlesex-London (10.6%), followed by Windsor-Essex, Ottawa, Hamilton, Kingston-Frontenac-Lennox-Addington and Toronto (5 to 9%).

Limitations

Limitations are summarized in the Background and above sections of the Technical notes.

Data tables

1. HIV testing

Table 1.1 Cumulative number of HIV tests by public health unit and sex, Ontario, 2013 to 2017

	Total	Males	Females	Female (%)		Total	Males	Females	Female (%)
Algoma	15,922	7,667	7,890	50.7%	**Northwestern**	14,006	5,757	7,643	57.0%
Brant	13,582	5,874	6,686	53.2%	**Ottawa**	210,517	102,480	104,935	50.6%
Chatham-Kent	8,991	3,903	4,667	54.5%	**Oxford**	8,210	3,512	4,130	54.0%
Durham	89,742	39,630	45,735	53.6%	**Peel**	253,397	119,432	126,759	51.5%
Eastern Ontario	18,592	7,755	10,349	57.2%	**Perth**	5,739	2,700	2,822	51.1%
Elgin-St. Thomas	8,554	3,700	4,554	55.2%	**Peterborough**	15,916	7,526	7,492	49.9%
Grey Bruce	11,943	4,959	6,086	55.1%	**Porcupine**	7,122	3,110	3,972	56.1%
Haldimand-Norfolk	7,565	3,387	3,668	52.0%	**Renfrew**	10,656	5,097	5,042	49.7%
Haliburton-Kawartha-Pine-Ridge	15,749	7,904	7,208	47.7%	**Simcoe-Muskoka**	60,632	28,353	28,846	50.4%
Halton	74,338	33,514	37,186	52.6%	**Sudbury**	29,188	13,620	14,802	52.1%
Hamilton	91,804	43,158	43,640	50.3%	**Thunder Bay**	25,790	12,048	13,199	52.3%
Hastings-Prince Edward	15,965	7,876	7,588	49.1%	**Timiskaming**	2,598	1,130	1,397	55.3%
Huron County	3,651	1,593	1,902	54.4%	**Toronto**	871,179	433,052	412,585	48.8%
Kingston-Frontenac-Lennox-Addington	42,959	25,113	17,409	40.9%	**Waterloo**	82,871	39,224	39,573	50.2%
Lambton	12,964	5,950	6,602	52.6%	**Wellington-Dufferin-Guelph**	33,808	14,701	16,898	53.5%
Leeds-Grenville-Lanark	16,962	7,976	8,282	50.9%	**Windsor-Essex**	61,449	28,364	32,043	53.0%
Middlesex-London	88,104	41,932	43,393	50.9%	**York**	174,537	79,781	85,246	51.7%
Niagara	48,389	22,274	23,114	50.9%					
North Bay-Parry Sound	15,004	6,834	7,679	52.9%	**Ontario**	2,468,395	1,180,886	1,201,022	50.4%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Individuals living out of province or with an unknown public health unit were excluded. 'Total' includes unknown sex.

Table 1.2 Annual number of HIV tests by public health unit and year, Ontario, 2013 to 2017

	2013	2014	2015	2016	2017
Algoma	2,864	2,749	3,328	3,374	3,607
Brant	2,361	3,200	2,532	2,606	2,883
Chatham-Kent	1,845	1,658	1,722	1,776	1,990
Durham	16,884	16,812	17,762	18,750	19,534
Eastern Ontario	3,556	3,604	3,709	3,851	3,872
Elgin-St. Thomas	1,520	1,488	1,771	1,864	1,911
Grey Bruce	2,038	2,099	2,399	2,575	2,832
Haldimand-Norfolk	1,362	1,437	1,430	1,619	1,717
Haliburton-Kawartha-Pine-Ridge	2,758	2,909	3,196	3,304	3,582
Halton	12,769	13,156	13,792	15,691	18,930
Hamilton	16,297	17,042	17,688	19,103	21,674
Hastings-Prince Edward	3,177	2,944	3,054	3,288	3,502
Huron County	623	617	723	830	858
Kingston-Frontenac-Lennox-Addington	7,817	7,996	8,485	8,879	9,782
Lambton	2,347	2,491	2,607	2,588	2,931
Leeds-Grenville-Lanark	3,142	3,256	3,170	3,587	3,807
Middlesex-London	15,309	15,775	17,543	18,829	20,648
Niagara	8,995	8,222	8,961	10,444	11,767
North Bay-Parry Sound	3,008	2,910	2,771	2,966	3,349
Northwestern	2,460	2,608	2,632	2,879	3,427
Ottawa	38,944	39,584	42,279	43,820	45,890
Oxford	1,492	1,543	1,622	1,716	1,837
Peel	43,915	45,563	48,295	54,435	61,189
Perth	958	1,008	1,119	1,178	1,476
Peterborough	2,887	2,972	3,189	3,331	3,537
Porcupine	1,372	1,311	1,317	1,522	1,600
Renfrew	2,009	2,063	2,114	2,254	2,216
Simcoe-Muskoka	10,894	11,290	11,737	12,998	13,713
Sudbury	5,202	5,611	5,646	5,975	6,754
Thunder Bay	4,412	4,864	5,070	5,570	5,874
Timiskaming	570	468	545	530	485
Toronto	151,923	161,119	171,459	186,055	200,623

	2013	2014	2015	2016	2017
Waterloo	14,718	15,278	16,631	17,389	18,855
Wellington-Dufferin-Guelph	5,136	5,390	6,079	7,555	9,648
Windsor-Essex	12,136	11,536	11,510	12,758	13,509
York	31,003	32,127	33,899	37,384	40,124
Ontario	438,703	454,700	481,786	523,273	569,933

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Individuals living out of province or with an unknown public health unit were excluded.

Table 1.3 Average rate of HIV tests per 1,000 by public health unit and sex, Ontario, 2013 to 2017

	Total	Males	Females		Total	Males	Females
Algoma	27.51	27.11	26.66	**Northwestern**	32.38	26.48	35.53
Brant	18.65	16.45	18.02	**Ottawa**	43.98	43.78	42.90
Chatham-Kent	17.03	15.10	17.32	**Oxford**	14.72	12.69	14.69
Durham	27.17	24.42	27.21	**Peel**	35.25	33.61	34.87
Eastern Ontario	18.11	15.30	19.91	**Perth**	14.64	13.98	14.19
Elgin-St. Thomas	18.86	16.47	19.90	**Peterborough**	22.65	22.11	20.67
Grey Bruce	14.57	12.20	14.73	**Porcupine**	16.78	14.62	18.75
Haldimand-Norfolk	13.65	12.18	13.28	**Renfrew**	20.06	19.04	19.13
Haliburton-Kawartha-Pine-Ridge	17.48	17.71	15.86	**Simcoe-Muskoka**	22.13	20.86	20.89
Halton	26.67	24.57	26.12	**Sudbury**	29.23	27.53	29.38
Hamilton	33.09	31.54	31.03	**Thunder Bay**	34.30	32.30	34.84
Hastings-Prince Edward	19.51	19.58	18.24	**Timiskaming**	15.38	13.47	16.44
Huron County	12.32	10.80	12.77	**Toronto**	61.50	62.94	56.64
Kingston-Frontenac-Lennox-Addington	42.57	50.24	34.18	**Waterloo**	30.56	29.15	28.96
Lambton	19.94	18.65	19.93	**Wellington-Dufferin-Guelph**	23.70	20.80	23.48
Leeds-Grenville-Lanark	20.05	19.21	19.22	**Windsor-Essex**	30.34	28.26	31.36
Middlesex-London	37.52	36.55	36.14	**York**	30.71	28.56	29.50
Niagara	21.49	20.32	20.01				
North Bay-Parry Sound	23.40	21.52	23.73	**Ontario**	36.03	35.08	34.48

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Individuals living out of province or with an unknown public health unit were excluded. 'Total' includes unknown sex.

Table 1.4 Annual rate of HIV tests per 1,000 population by public health unit and year, Ontario, 2013 to 2017

	2013	2014	2015	2016	2017
Algoma	24.5	23.7	28.8	29.3	31.3
Brant	16.5	22.1	17.4	17.7	19.6
Chatham-Kent	17.4	15.7	16.3	16.9	18.9
Durham	26.2	25.7	26.8	27.9	29.1
Eastern Ontario	17.4	17.6	18.1	18.7	18.8
Elgin-St. Thomas	16.9	16.5	19.5	20.4	21.0
Grey Bruce	12.5	12.8	14.6	15.7	17.2
Haldimand-Norfolk	12.3	13.0	12.9	14.6	15.4
Haliburton-Kawartha-Pine-Ridge	15.5	16.3	17.7	18.2	19.7
Halton	23.6	23.9	24.7	27.6	33.2
Hamilton	29.8	30.9	31.9	34.1	38.6
Hastings-Prince Edward	19.4	18.0	18.7	20.1	21.4
Huron County	10.5	10.4	12.2	14.0	14.5
Kingston-Frontenac-Lennox-Addington	39.2	39.9	42.1	43.6	48.1
Lambton	18.0	19.1	20.1	20.0	22.6
Leeds-Grenville-Lanark	18.6	19.3	18.7	21.2	22.5
Middlesex-London	33.2	33.9	37.4	39.6	43.4
Niagara	20.2	18.4	19.9	23.0	25.9
North Bay-Parry Sound	23.4	22.7	21.6	23.2	26.1
Northwestern	28.5	30.2	30.5	33.2	39.6
Ottawa	41.6	41.8	44.2	45.0	47.1
Oxford	13.5	13.9	14.5	15.3	16.4
Peel	31.6	32.2	33.6	37.0	41.6
Perth	12.3	12.9	14.3	15.0	18.8
Peterborough	20.7	21.2	22.7	23.6	25.0
Porcupine	15.9	15.3	15.5	18.1	19.0
Renfrew	19.0	19.4	19.9	21.2	20.8
Simcoe-Muskoka	20.4	20.8	21.4	23.3	24.6
Sudbury	26.0	28.1	28.3	30.0	33.9
Thunder Bay	29.1	32.2	33.8	37.2	39.3
Timiskaming	16.6	13.7	16.2	15.9	14.5
Toronto	54.7	57.4	60.7	64.7	69.8

	2013	2014	2015	2016	2017
Waterloo	27.6	28.4	30.7	31.7	34.4
Wellington-Dufferin-Guelph	18.4	19.1	21.3	26.0	33.2
Windsor-Essex	30.2	28.6	28.5	31.3	33.1
York	28.1	28.6	29.8	32.3	34.7
Ontario	32.6	33.5	35.2	37.7	41.1

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Individuals living out of province or with an unknown public health unit were excluded.

2. New HIV diagnoses

Table 2.1 Cumulative number of new HIV diagnoses by public health unit and sex, Ontario, 2013 to 2017

	Total	Males	Females	Female (%)		Total	Males	Females	Female (%)
Algoma	11	7	4	36.4%	**Northwestern**	13	7	6	46.2%
Brant	17	11	5	31.3%	**Ottawa**	383	269	111	29.2%
Chatham-Kent	10	8	2	20.0%	**Oxford**	12	10	2	16.7%
Durham	73	60	13	17.8%	**Peel**	254	179	73	29.0%
Eastern Ontario	17	14	3	17.6%	**Perth**	8	8	0	0.0%
Elgin-St. Thomas	11	9	2	18.2%	**Peterborough**	13	13	0	0.0%
Grey Bruce	5	4	1	20.0%	**Porcupine**	3	3	0	0.0%
Haldimand-Norfolk	13	11	2	15.4%	**Renfrew**	10	6	4	40.0%
Haliburton-Kawartha-Pine-Ridge	3	3	0	0.0%	**Simcoe-Muskoka**	40	34	6	15.0%
Halton	62	51	11	17.7%	**Sudbury**	41	26	15	36.6%
Hamilton	164	116	47	28.8%	**Thunder Bay**	26	18	8	30.8%
Hastings-Prince Edward	17	16	1	5.9%	**Timiskaming**	3	1	2	66.7%
Huron County	0	0	0	--	**Toronto**	2,220	1,887	321	14.5%
Kingston-Frontenac-Lennox-Addington	37	29	8	21.6%	**Waterloo**	95	67	27	28.7%
Lambton	11	9	2	18.2%	**Wellington-Dufferin-Guelph**	20	13	7	35.0%
Leeds-Grenville-Lanark	14	13	1	7.1%	**Windsor-Essex**	116	99	17	14.7%
Middlesex-London	235	166	68	29.1%	**York**	131	98	30	23.4%
Niagara	58	45	12	21.1%					
North Bay-Parry Sound	12	10	2	16.7%	**Ontario**	4,158	3,320	813	19.7%

Notes: Data provided by Public Health Ontario Laboratory. Individuals living out of province or with an unknown public health unit were excluded. 'Total' includes unknown sex.

Table 2.2 Annual number of new HIV diagnoses by public health unit and year, Ontario, 2013 to 2017

	2013	2014	2015	2016	2017
Algoma	3	2	2	2	2
Brant	3	4	0	5	5
Chatham-Kent	5	1	0	3	1
Durham	16	15	16	11	15
Eastern Ontario	2	7	2	2	4
Elgin-St. Thomas	4	5	1	1	0
Grey Bruce	1	1	2	0	1
Haldimand-Norfolk	2	3	3	4	1
Haliburton-Kawartha-Pine-Ridge	1	0	1	0	1
Halton	12	17	9	10	14
Hamilton	34	29	28	36	37
Hastings-Prince Edward	1	1	5	6	4
Huron County	0	0	0	0	0
Kingston-Frontenac-Lennox-Addington	8	10	3	11	5
Lambton	4	0	2	4	1
Leeds-Grenville-Lanark	6	1	0	3	4
Middlesex-London	36	38	50	70	41
Niagara	10	10	12	15	11
North Bay-Parry Sound	1	3	1	3	4
Northwestern	3	1	1	4	4
Ottawa	75	88	58	85	77
Oxford	0	3	0	2	7
Peel	48	51	54	37	64
Perth	3	1	1	1	2
Peterborough	1	4	4	2	2
Porcupine	1	0	2	0	0
Renfrew	0	2	2	4	2
Simcoe-Muskoka	5	13	5	10	7
Sudbury	4	11	13	7	6
Thunder Bay	2	7	7	5	5
Timiskaming	0	0	3	0	0
Toronto	418	426	453	427	496

	2013	2014	2015	2016	2017
Waterloo	16	8	23	32	16
Wellington-Dufferin-Guelph	3	6	3	5	3
Windsor-Essex	26	16	22	19	33
York	16	24	23	37	31
Ontario	770	808	811	863	906

Notes: Data provided by Public Health Ontario Laboratory. Individuals living out of province or with an unknown public health unit were excluded.

Table 2.3 Average rate of new HIV diagnoses per 100,000 by public health unit and sex Ontario, 2013 to 2017

	Total	Males	Females		Total	Males	Females
Algoma	1.90	2.47	1.35	**Northwestern**	3.01	3.22	2.79
Brant	2.33	3.08	1.35	**Ottawa**	8.00	11.49	4.54
Chatham-Kent	1.89	3.10	0.74	**Oxford**	2.15	3.61	0.71
Durham	2.21	3.70	0.77	**Peel**	3.53	5.04	2.01
Eastern Ontario	1.66	2.76	0.58	**Perth**	2.04	4.14	0.00
Elgin-St. Thomas	2.43	4.01	0.87	**Peterborough**	1.85	3.82	0.00
Grey Bruce	0.61	0.98	0.24	**Porcupine**	0.71	1.41	0.00
Haldimand-Norfolk	2.35	3.96	0.72	**Renfrew**	1.88	2.24	1.52
Haliburton-Kawartha-Pine-Ridge	0.33	0.67	0.00	**Simcoe-Muskoka**	1.46	2.50	0.43
Halton	2.22	3.74	0.77	**Sudbury**	4.11	5.26	2.98
Hamilton	5.91	8.48	3.34	**Thunder Bay**	3.46	4.83	2.11
Hastings-Prince Edward	2.08	3.98	0.24	**Timiskaming**	1.78	1.19	2.35
Huron County	0.00	0.00	0.00	**Toronto**	15.67	27.42	4.41
Kingston-Frontenac-Lennox-Addington	3.67	5.80	1.57	**Waterloo**	3.50	4.98	1.98
Lambton	1.69	2.82	0.60	**Wellington-Dufferin-Guelph**	1.40	1.84	0.97
Leeds-Grenville-Lanark	1.65	3.13	0.23	**Windsor-Essex**	5.73	9.87	1.66
Middlesex-London	10.01	14.47	5.66	**York**	2.31	3.51	1.04
Niagara	2.58	4.10	1.04				
North Bay-Parry Sound	1.87	3.15	0.62	**Ontario**	6.11	9.92	2.36

Notes: Data provided by Public Health Ontario Laboratory. Individuals living out of province or with an unknown public health unit were excluded. 'Total' includes unknown sex.

Table 2.4 Annual rate of new HIV diagnoses per 100,000 population by public health unit and year, Ontario, 2013 to 2017

	2013	2014	2015	2016	2017
Algoma	2.6	1.7	1.7	1.7	1.7
Brant	2.1	2.8	0.0	3.4	3.4
Chatham-Kent	4.7	0.9	0.0	2.9	1.0
Durham	2.5	2.3	2.4	1.6	2.2
Eastern Ontario	1.0	3.4	1.0	1.0	1.9
Elgin-St. Thomas	4.4	5.5	1.1	1.1	0.0
Grey Bruce	0.6	0.6	1.2	0.0	0.6
Haldimand-Norfolk	1.8	2.7	2.7	3.6	0.9
Haliburton-Kawartha-Pine-Ridge	0.6	0.0	0.6	0.0	0.6
Halton	2.2	3.1	1.6	1.8	2.5
Hamilton	6.2	5.3	5.1	6.4	6.6
Hastings-Prince Edward	0.6	0.6	3.1	3.7	2.4
Huron County	0.0	0.0	0.0	0.0	0.0
Kingston-Frontenac-Lennox-Addington	4.0	5.0	1.5	5.4	2.5
Lambton	3.1	0.0	1.5	3.1	0.8
Leeds-Grenville-Lanark	3.6	0.6	0.0	1.8	2.4
Middlesex-London	7.8	8.2	10.7	14.7	8.6
Niagara	2.2	2.2	2.7	3.3	2.4
North Bay-Parry Sound	0.8	2.3	0.8	2.3	3.1
Northwestern	3.5	1.2	1.2	4.6	4.6
Ottawa	8.0	9.3	6.1	8.7	7.9
Oxford	0.0	2.7	0.0	1.8	6.2
Peel	3.5	3.6	3.8	2.5	4.4
Perth	3.9	1.3	1.3	1.3	2.5
Peterborough	0.7	2.9	2.9	1.4	1.4
Porcupine	1.2	0.0	2.4	0.0	0.0
Renfrew	0.0	1.9	1.9	3.8	1.9
Simcoe-Muskoka	0.9	2.4	0.9	1.8	1.3
Sudbury	2.0	5.5	6.5	3.5	3.0
Thunder Bay	1.3	4.6	4.7	3.3	3.3
Timiskaming	0.0	0.0	8.9	0.0	0.0
Toronto	15.0	15.2	16.0	14.9	17.3

	2013	2014	2015	2016	2017
Waterloo	3.0	1.5	4.2	5.8	2.9
Wellington-Dufferin-Guelph	1.1	2.1	1.1	1.7	1.0
Windsor-Essex	6.5	4.0	5.4	4.7	8.1
York	1.5	2.1	2.0	3.2	2.7
Ontario	5.8	6.0	6.0	6.3	6.6

Notes: Data provided by Public Health Ontario Laboratory. Individuals living out of province or with an unknown public health unit were excluded.

3. HIV test positivity rate

Table 3.1 Average HIV positivity rate by public health unit and sex, Ontario, 2013 to 2017

	Total	Males	Females		Total	Males	Females
Algoma	0.07%	0.09%	0.05%	**Northwestern**	0.09%	0.12%	0.08%
Brant	0.13%	0.19%	0.07%	**Ottawa**	0.18%	0.26%	0.11%
Chatham-Kent	0.11%	0.20%	0.04%	**Oxford**	0.15%	0.28%	0.05%
Durham	0.08%	0.15%	0.03%	**Peel**	0.10%	0.15%	0.06%
Eastern Ontario	0.09%	0.18%	0.03%	**Perth**	0.14%	0.30%	0.00%
Elgin-St. Thomas	0.13%	0.24%	0.04%	**Peterborough**	0.08%	0.17%	0.00%
Grey Bruce	0.04%	0.08%	0.02%	**Porcupine**	0.04%	0.10%	0.00%
Haldimand-Norfolk	0.17%	0.32%	0.05%	**Renfrew**	0.09%	0.12%	0.08%
Haliburton-Kawartha-Pine-Ridge	0.02%	0.04%	0.00%	**Simcoe-Muskoka**	0.07%	0.12%	0.02%
Halton	0.08%	0.15%	0.03%	**Sudbury**	0.14%	0.19%	0.10%
Hamilton	0.18%	0.27%	0.11%	**Thunder Bay**	0.10%	0.15%	0.06%
Hastings-Prince Edward	0.11%	0.20%	0.01%	**Timiskaming**	0.12%	0.09%	0.14%
Huron County	0.00%	0.00%	0.00%	**Toronto**	0.25%	0.44%	0.08%
Kingston-Frontenac-Lennox-Addington	0.09%	0.12%	0.05%	**Waterloo**	0.11%	0.17%	0.07%
Lambton	0.08%	0.15%	0.03%	**Wellington-Dufferin-Guelph**	0.06%	0.09%	0.04%
Leeds-Grenville-Lanark	0.08%	0.16%	0.01%	**Windsor-Essex**	0.19%	0.35%	0.05%
Middlesex-London	0.27%	0.40%	0.16%	**York**	0.08%	0.12%	0.04%
Niagara	0.12%	0.20%	0.05%				
North Bay-Parry Sound	0.08%	0.15%	0.03%	**Ontario**	0.17%	0.28%	0.07%

Notes: Data provided by Public Health Ontario Laboratory. HIV-negative prenatal tests not included. Testers living out of province or with an unknown public health unit were excluded. 'Total' includes unknown sex.

Table 3.2 Annual HIV test positivity rate by public health unit and year, Ontario, 2013 to 2017

	2013	2014	2015	2016	2017
Algoma	0.10%	0.07%	0.06%	0.06%	0.06%
Brant	0.13%	0.13%	0.00%	0.19%	0.17%
Chatham-Kent	0.27%	0.06%	0.00%	0.17%	0.05%
Durham	0.09%	0.09%	0.09%	0.06%	0.08%
Eastern Ontario	0.06%	0.19%	0.05%	0.05%	0.10%
Elgin-St. Thomas	0.26%	0.34%	0.06%	0.05%	0.00%
Grey Bruce	0.05%	0.05%	0.08%	0.00%	0.04%
Haldimand-Norfolk	0.15%	0.21%	0.21%	0.25%	0.06%
Haliburton-Kawartha-Pine-Ridge	0.04%	0.00%	0.03%	0.00%	0.03%
Halton	0.09%	0.13%	0.07%	0.06%	0.07%
Hamilton	0.21%	0.17%	0.16%	0.19%	0.17%
Hastings-Prince Edward	0.03%	0.03%	0.16%	0.18%	0.11%
Huron County	0.00%	0.00%	0.00%	0.00%	0.00%
Kingston-Frontenac-Lennox-Addington	0.10%	0.13%	0.04%	0.12%	0.05%
Lambton	0.17%	0.00%	0.08%	0.15%	0.03%
Leeds-Grenville-Lanark	0.19%	0.03%	0.00%	0.08%	0.11%
Middlesex-London	0.24%	0.24%	0.29%	0.37%	0.20%
Niagara	0.11%	0.12%	0.13%	0.14%	0.09%
North Bay-Parry Sound	0.03%	0.10%	0.04%	0.10%	0.12%
Northwestern	0.12%	0.04%	0.04%	0.14%	0.12%
Ottawa	0.19%	0.22%	0.14%	0.19%	0.17%
Oxford	0.00%	0.19%	0.00%	0.12%	0.38%
Peel	0.11%	0.11%	0.11%	0.07%	0.10%
Perth	0.31%	0.10%	0.09%	0.08%	0.14%
Peterborough	0.03%	0.13%	0.13%	0.06%	0.06%
Porcupine	0.07%	0.00%	0.15%	0.00%	0.00%
Renfrew	0.00%	0.10%	0.09%	0.18%	0.09%
Simcoe-Muskoka	0.05%	0.12%	0.04%	0.08%	0.05%
Sudbury	0.08%	0.20%	0.23%	0.12%	0.09%
Thunder Bay	0.05%	0.14%	0.14%	0.09%	0.09%
Timiskaming	0.00%	0.00%	0.55%	0.00%	0.00%
Toronto	0.28%	0.26%	0.26%	0.23%	0.25%

	2013	2014	2015	2016	2017
Waterloo	0.11%	0.05%	0.14%	0.18%	0.08%
Wellington-Dufferin-Guelph	0.06%	0.11%	0.05%	0.07%	0.03%
Windsor-Essex	0.21%	0.14%	0.19%	0.15%	0.24%
York	0.05%	0.07%	0.07%	0.10%	0.08%
Ontario	0.18%	0.18%	0.17%	0.16%	0.16%

Notes: Data provided by Public Health Ontario Laboratory. Individuals living out of province or with an unknown public health unit were excluded.

4. HIV care cascade (diagnosed, in care, on ART and virally suppressed)

Table 4.1 Number of people living with diagnosed HIV by care cascade step and public health unit, 2015

	Diagnosed	In care	On ART	Suppressed		Diagnosed	In care	On ART	Suppressed
Algoma	51	46	40	40	**Northwestern**	17	9	7	9
Brant	64	58	55	54	**Ottawa**	1,630	1,354	1,280	1,247
Chatham-Kent	38	37	37	36	**Oxford**	38	35	30	28
Durham	363	322	300	296	**Peel**	824	715	649	635
Eastern Ontario	111	88	82	81	**Perth**	28	23	22	22
Elgin-St. Thomas	34	30	30	29	**Peterborough**	69	64	62	62
Grey Bruce	55	53	52	51	**Porcupine**	19	18	16	16
Haldimand-Norfolk	42	39	39	38	**Renfrew**	41	37	33	33
Haliburton-Kawartha-Pine-Ridge	103	94	89	89	**Simcoe-Muskoka**	242	208	201	196
Halton	235	214	198	198	**Sudbury**	182	152	134	126
Hamilton	599	530	492	479	**Thunder Bay**	101	78	68	63
Hastings-Prince Edward	108	98	93	92	**Timiskaming**	14	11	9	9
Huron County	8	6	6	6	**Toronto**	8,649	7,633	7,082	6,976
Kingston-Frontenac-Lennox-Addington	168	149	140	134	**Waterloo**	280	238	220	218
Lambton	41	36	35	32	**Wellington-Dufferin-Guelph**	167	144	133	131
Leeds-Grenville-Lanark	99	79	76	76	**Windsor-Essex**	344	309	297	289
Middlesex-London	490	429	377	355	**York**	318	273	249	244
Niagara	290	262	249	239					
North Bay-Parry Sound	55	49	44	47	**Ontario**	15,917	13,920	12,926	12,676

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. The number 'virally suppressed' can exceed the number 'on ART' due to the inclusion individuals who were virally suppressed but documented as not 'on ART'. Individuals living out of province or with an unknown public health unit were excluded.

Table 4.2 Percent of people living with diagnosed HIV by care cascade step and public health unit, 2015

	In care	On ART	Suppressed		In care	On ART	Suppressed
Algoma	90.2%	78.4%	78.4%	**Northwestern**	52.9%	41.2%	52.9%
Brant	90.6%	85.9%	84.4%	**Ottawa**	83.1%	78.5%	76.5%
Chatham-Kent	97.4%	97.4%	94.7%	**Oxford**	92.1%	78.9%	73.7%
Durham	88.7%	82.6%	81.5%	**Peel**	86.8%	78.8%	77.1%
Eastern Ontario	79.3%	73.9%	73.0%	**Perth**	82.1%	78.6%	78.6%
Elgin-St. Thomas	88.2%	88.2%	85.3%	**Peterborough**	92.8%	89.9%	89.9%
Grey Bruce	96.4%	94.5%	92.7%	**Porcupine**	94.7%	84.2%	84.2%
Haldimand-Norfolk	92.9%	92.9%	90.5%	**Renfrew**	90.2%	80.5%	80.5%
Haliburton-Kawartha-Pine-Ridge	91.3%	86.4%	86.4%	**Simcoe-Muskoka**	86.0%	83.1%	81.0%
Halton	91.1%	84.3%	84.3%	**Sudbury**	83.5%	73.6%	69.2%
Hamilton	88.5%	82.1%	80.0%	**Thunder Bay**	77.2%	67.3%	62.4%
Hastings-Prince Edward	90.7%	86.1%	85.2%	**Timiskaming**	78.6%	64.3%	64.3%
Huron County	75.0%	75.0%	75.0%	**Toronto**	88.3%	81.9%	80.7%
Kingston-Frontenac-Lennox-Addington	88.7%	83.3%	79.8%	**Waterloo**	85.0%	78.6%	77.9%
Lambton	87.8%	85.4%	78.0%	**Wellington-Dufferin-Guelph**	86.2%	79.6%	78.4%
Leeds-Grenville-Lanark	79.8%	76.8%	76.8%	**Windsor-Essex**	89.8%	86.3%	84.0%
Middlesex-London	87.6%	76.9%	72.4%	**York**	85.8%	78.3%	76.7%
Niagara	90.3%	85.9%	82.4%				
North Bay-Parry Sound	89.1%	80.0%	85.5%	**Ontario**	87.5%	81.2%	79.6%

Notes: Data provided by Public Health Ontario Laboratory using the Ontario HIV Laboratory Cohort. The percent 'virally suppressed' can exceed the percent 'on ART' due to the inclusion individuals who are virally suppressed but documented as not 'on ART'. Individuals living out of province or with an unknown public health unit were excluded.