

HIV pre-exposure prophylaxis (PrEP) in Ontario, 2022

Ontario HIV Treatment Network

The Ontario HIV Treatment Network (OHTN) is a non-profit network funded by the HIV and Hepatitis C Programs of the Ontario Ministry of Health working with 1) testing programs and clinics, 2) AIDS service and other community-based organizations, and 3) policy and system leaders within and beyond the health sector. The mission of the OHTN is to improve the health and lives of people living with and at risk of HIV by using data and evidence to drive change.

Data was purchased from IQVIA (www.iqvia.com), a privately-owned company and a proprietary source of pharmaco-epidemiologic data. It provides market intelligence to the pharmaceutical and health care industries, and its data products are used by academics, pharmaceutical companies, drug plan administrators and government.

Additional non-identifiable data was provided by PurposeMed Inc, operating as Freddie (www.gofreddie.com): an online Canadian healthcare provider located in Alberta, British Columbia, Manitoba, Ontario and Saskatchewan, partnered with the Affirming Care Ontario pharmacy in Peel region, that provides sexual health through education, prevention and treatment with a focus on the LGBTQ2S+ community including online PrEP assessments, prescriptions and mail service delivery.

To assess efforts to improve access and identify implementation gaps, it is important to monitor PrEP uptake. However, no provincial-level monitoring system is currently in place in Ontario. In response to this need, the OHTN is pleased to bring you this report summarizing PrEP uptake in Ontario from 2018 to 2022.

Acknowledgements

OHTN

Maria Victoria Dreher Wentz

Maya A. Kesler

Abigail Kroch

St. Michael's Hospital

Darrell H.S. Tan

Suggested Citation

Ontario HIV Treatment Network. *HIV pre-exposure prophylaxis (PrEP) in Ontario, 2022*. Toronto, Ontario, March 6, 2024

Contact

info@ohntn.on.ca

EXECUTIVE SUMMARY

Overview

HIV pre-exposure prophylaxis (PrEP) is the use of antiretroviral medication by an HIV-negative person on an ongoing basis to reduce one's risk of acquiring HIV infection. When taken consistently and correctly, PrEP is a highly effective HIV-risk reduction strategy and a critical part of comprehensive HIV prevention. In February 2016, Health Canada granted regulatory approval to Truvada™ (tenofovir disoproxil fumarate-emtricitabine [TDF/FTC]; available in generic formulations) and in December 2020, approved Descovy™ (tenofovir alafenamide [TAF], also co-formulated with emtricitabine [FTC]) for the indication of PrEP.

PrEP is recommended for adults who are at risk for acquiring HIV infection through sexual activity or injection drug use. Generally, this includes 1) gay, bisexual and other men who have sex with men (GBMSM), and transgender women who report condomless sex and have at least one other risk factor such as a recent sexually transmitted infection, repeated use of post-exposure prophylaxis or a high (>10) score on the High-Incidence Risk Index risk score; 2) an HIV-negative partner in heterosexual serodifferent relationships reporting condomless sex where the HIV-positive partner is at substantial risk of transmitting HIV; or 3) people who use injection drugs if they are sharing injection drug use paraphernalia. Note: Clinical criteria for recommending PrEP in cisgender women in high income jurisdictions such as Ontario are less well developed, and more research is needed to guide its appropriate use. Women who face systemic and social inequities, who are more likely to be exposed to HIV through a sexual or drug using partner require an individualized approach to assess the need for PrEP. A recent OHTN Rapid Response on the topic of PrEP uptake and use among cisgender and transgender women can be found [here](#) or on the OHTN website.

As PrEP (and all health care in Canada) is delivered provincially rather than federally (with extremely limited exceptions such as the Interim Federal Health Program and the Non-Insured Health Benefits Program), public coverage for PrEP differs broadly by province. Currently, PrEP is available for no or low cost through provincial/territorial governments' publicly funded PrEP programs in British Columbia, Alberta, Saskatchewan, Prince Edward Island, the Northwest Territories, Nunavut and Yukon. Some of these provinces have no conditions or clinical criteria for PrEP coverage while others do. The two most populated provinces of Canada, Ontario and Quebec, do not have free universal PrEP programs. In Ontario in late 2017, the Ontario Drug Benefit (ODB) started covering the cost of TDF/FTC as PrEP and at the start of 2018, ODB coverage was expanded to all individuals under age 25 through OHIP+. OHIP+ was then modified in April 2019 to only cover individuals under age 25 without existing private insurance. Aiming to make PrEP more accessible, in-person and online PrEP clinics have opened across Canada, and some Ontario programs provide free three-month PrEP while helping to coordinate other PrEP coverage.

To assess progress in PrEP access and identify implementation gaps, it is important to monitor PrEP uptake. However, no provincial-level monitoring system is currently in place in Ontario. In response to this need, the Ontario HIV Treatment Network is pleased to bring you this report summarizing PrEP uptake in Ontario from 2018 to 2022. This report contains projected provincial-level estimates which are based on TDF/FTC and TAF/FTC dispensation data provided by IQVIA, a data source that contains data on 70% of prescriptions across Ontario. In this report, the estimated number, or proportion, or rate, of

individuals dispensed PrEP are described overall, by sex, age, prescriber specialty, payer type, region, and as a ratio relative to number of first-time HIV diagnoses (“PrEP-to-need ratio”).

Summary

PrEP uptake has been increasing in Ontario at a relatively linear rate since 2018, despite the impact of the COVID-19 pandemic. Although pharmacies never closed or stopped dispensing medications during peak COVID disruptions, a combination of factors – including changes in physician/clinic (prescriber) availability and changes in some individuals’ social and/or sexual mixing patterns – resulted in a slower increase in PrEP dispensation and usage in 2020, followed by a more rapid increase in 2021 and 2022, reaching its all time high of PrEP users to date in 2022.

By 2022, the total estimated number of individuals dispensed PrEP over the year was 14,650; a 10-fold increase from the estimated 1,451 individuals dispensed PrEP in 2016. Among the 14,650 PrEP dispensations overall, 14,176 dispensations were identified as males (97%) and 403 as females. Between 2018 and 2022, younger age groups (<30) for both males and females accounted for the greatest relative increases in the number of individuals dispensed PrEP; however, males and females aged 30-39 accounted for the largest proportions of dispensations. Where specialty is known, most PrEP dispensations are prescribed by family and general practitioners although this trend has decreased over time. The majority of PrEP dispensations in 2022 (76.0%) were for individuals who had private drug coverage.

For the first time in this updated report, we are able to report the rate of PrEP dispensations by Public Health Unit as well as larger Ontario regions. New methods are also applied to account for an online clinic dispensing PrEP through one pharmacy, and then mailing the prescriptions throughout the province. This allows for a more accurate description of PrEP dispensation by Ontario geographic region. From 2018 to 2022, all regions saw an increase in the number of PrEP dispensations. While well over half of the estimated individuals dispensed PrEP in 2022 received it from pharmacies in the Toronto region (63.4%); Eastern, Central East and ‘Toronto – not downtown’ regions had the greatest relative increases compared to 2018 (174.8%, 173.5% and 170.5% respectively).

Between 2018 and 2022, the “PrEP-to-need ratio¹” (a calculated measure of PrEP provision relative to HIV burden within a population, where larger numbers suggest a more optimal amount of PrEP use) increased for both sexes, but was consistently and substantially higher for males than females. In 2022, the PrEP-to-need ratio increased for males, but decreased for females compared to 2021. In 2022, the PrEP-to-need ratio was the highest in the Ottawa region followed by Toronto and South West region. Compared to 2021, Ottawa, Eastern, Toronto and Central West regions saw a decrease in the PrEP-to-need ratio, an anticipated decrease related to recovering HIV testing and catching up on subsequent HIV diagnoses, which were affected by the COVID-19 pandemic.

Inequities in access to PrEP persist in Ontario. PrEP uptake should be considered relative to those populations where PrEP is indicated. These data are not adequate to determine whether PrEP uptake has met the needs of those populations. It is difficult to assess successful PrEP uptake in women as women have lower HIV incidence and prevalence than men who have sex with men. More research is needed to guide appropriate use of PrEP in women. Furthermore, this analysis was not able to assess some key metrics of PrEP users such as race/ethnicity, gender identity, income and PrEP appropriateness because of lack of data.

¹ More information about the PrEP-to-need ratio can be found here: <https://pubmed.ncbi.nlm.nih.gov/29983236/>

TABLE OF CONTENTS

Executive Summary.....	3
Overview.....	3
Summary.....	4
Table of contents.....	5
List of figures	6
List of tables.....	7
Introduction.....	9
What is PrEP?.....	9
Who is PrEP recommended for?	9
Why look at trends in PrEP?.....	9
What’s in this report?	10
Where does the data come from?.....	11
What are some of the strengths of these data?	11
What are some of the limitations of these data?.....	11
Key Findings.....	12
Data and Figures	15
1. Overall	15
2. By sex.....	17
3. By age.....	22
4. By prescriber specialty.....	31
5. By payer type	33
6. By region	34
Technical Notes.....	43
Data sources:	43
Indication decision tree.....	46
Limitations.....	47
Geographic regions	48
Data tables.....	50

LIST OF FIGURES

1. Overall

Figure 1.1 Estimated number of individuals dispensed PrEP, Ontario, 2018 to 2022 (annual)15

Figure 1.2 Estimated number of individuals dispensed PrEP, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....16

2. by sex

Figure 2.1 Estimated number of individuals dispensed PrEP by sex, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly)17

Figure 2.2 Estimated proportion of individuals dispensed PrEP by sex (where known), Ontario, 2018 to 2022 (annual)18

Figure 2.3 Estimated number of individuals dispensed PrEP, males, Ontario, 2018 to 2022 (annual)18

Figure 2.4 Estimated number of individuals dispensed PrEP, females, Ontario, 2018 to 2022 (annual)19

Figure 2.5 Estimated number of individuals dispensed PrEP, females, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....19

Figure 2.6 Estimated ratio of individuals dispensed PrEP to first-time HIV diagnoses (“PrEP-to-need ratio”), by sex, Ontario, 2018 to 2022 (annual).....20

Figure 2.7 Estimated ratio of GBMSM dispensed PrEP to first-time HIV diagnoses among GBMSM (“PrEP-to-need ratio among GBMSM”), Ontario, 2018 to 2022 (annual).....21

3. by age

Figure 3.1 Estimated number of individuals dispensed PrEP by age, males, Ontario, 2018 to 2022 (annual).....23

Figure 3.2 Estimated number of individuals dispensed PrEP by age, males, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....24

Figure 3.3 Estimated proportion of individuals dispensed PrEP by age, males, Ontario, 2018 to 2022 (annual)25

Figure 3.4 Estimated proportion of individuals dispensed PrEP by age, males, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....26

Figure 3.5 Estimated number of individuals dispensed PrEP by age, females, Ontario, 2018 to 2022 (annual).....27

Figure 3.6 Estimated number of individuals dispensed PrEP by age, females, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....28

Figure 3.7 Estimated proportion of individuals dispensed PrEP by age, females, Ontario, 2018 to 2022 (annual).....29

Figure 3.8 Estimated proportion of individuals dispensed PrEP by age, females, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....30

4. by prescriber specialty

Figure 4.1 Estimated proportion of individuals dispensed PrEP by prescriber specialty, Ontario, 2018 to 2022 (annual)31

Figure 4.2 Estimated proportion of individuals dispensed PrEP by prescriber specialty, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....32

5. by payer type

Figure 5.1 Estimated proportion of individuals dispensed PrEP by payer type, Ontario, 2018 to 2022 (annual).....33

6. by region

Figure 6.1 Estimated number of individuals dispensed PrEP by region, Ontario, 2018 to 2022 (annual).....35

Figure 6.2 Estimated number of individuals dispensed PrEP by region, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....36

Figure 6.3 Estimated proportion of individuals dispensed PrEP by region, Ontario, 2018 to 2022 (annual).....37

Figure 6.4 Estimated rate of individuals dispensed PrEP per 100,000 people by region, Ontario, 2018 to 2022 (annual)38

Figure 6.5 Estimated ratio of individuals dispensed PrEP to first-time HIV diagnoses (“PrEP-to-need ratio”), by region, Ontario, 2018 to 2022 (annual).....39

Figure 6.6 Estimated rate of individuals dispensed PrEP per 100,000 people by PHU, Ontario 2022(annual).....40

Figure 6.7 Estimated rate of individuals dispensed PrEP per 100,000 people by PHU, Ontario.....41

LIST OF TABLES

1. Overall and by sex

Table 1.1 Estimated number and proportion of individuals dispensed PrEP, overall and by sex, Ontario, 2018 to 2022 (annual)50

Table 1.2 Estimated number of individuals dispensed PrEP, overall and by sex, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....50

Table 1.3 Estimated ratio of individuals dispensed PrEP to first-time HIV diagnoses (“PrEP-to-need ratio”), overall, by sex and by GBMSM key population, Ontario, 2018 to 2022 (annual)51

2. by age

Table 2.1 Estimated number and proportion of individuals dispensed PrEP by age, males, Ontario, 2018 to 2022 (annual)52

Table 2.2 Estimated number and proportion of individuals dispensed PrEP by age, males, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....52

Table 2.3 Estimated number and proportion of individuals dispensed PrEP by age, females, Ontario, 2018 to 2022 (annual)53

Table 2.4 Estimated number and proportion of individuals dispensed PrEP by age, females, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly)53

3. by prescriber specialty

Table 3.1 Estimated number and proportion (among known) of individuals dispensed PrEP by prescriber specialty, Ontario, 2018 to 2022 (annual).....54

Table 3.2 Estimated number and proportion (among known) of individuals dispensed PrEP by prescriber specialty, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly)	54
---	----

4. by payer type

Table 4.1 Estimated number and proportion of individuals dispensed PrEP by payer type, Ontario, 2018 to 2022 (annual)	55
--	----

5. by region

Table 5.1 Estimated number and proportion of individuals dispensed PrEP by region, Ontario, 2018 to 2022 (annual)..	56
--	----

Table 5.2 Estimated number of individuals dispensed PrEP by region, Ontario, Jan-Mar 2021 to Oct-Dec 2022 (quarterly)	57
--	----

Table 5.3 Estimated rate of individuals dispensed PrEP per 100,000 people by region, Ontario, 2018 to 2022 (annual) .	57
--	----

Table 5.4 Estimated ratio of individuals dispensed PrEP to first-time HIV diagnoses (“PrEP-to-need ratio”), by region, Ontario, 2018 to 2022 (annual).....	58
---	----

Table 5.5 Estimated rate of individuals dispensed PrEP per 100,000 people by Public Health Unit, Ontario, 2018 -2022 (annually).....	59
---	----

Table 5.6 Estimated rate of individuals dispensed PrEP per 100,000 people by Public Health Unit, Ontario, , Jan-Mar 2021 to Oct-Dec 2022 (quarterly).....	61
--	----

INTRODUCTION

What is PrEP?

HIV pre-exposure prophylaxis (PrEP) refers to the use of antiretroviral medications by HIV-negative individuals to reduce their risk of HIV infection. Tenofovir disoproxil fumarate (TDF) paired with Emtricitabine (FTC), (trade name Truvada™, generics also available in Canada) or tenofovir alafenamide (TAF) paired with FTC, (trade name Descovy™, generics not available in Canada) are the oral antiretroviral medications approved by Health Canada for use as PrEP. When used as PrEP, these medications are combined into a single pill (TDF/FTC or TAF/FTC) and, when taken daily, are highly effective at reducing the risk of acquiring HIV. On-demand (or intermittent) PrEP means taking PrEP medication only directly before and after a sexual exposure. On-demand PrEP is only dispensed as TDF/FTC and is only recommended under certain circumstances for gay, bisexual or other men who have sex with men. Go to www.OntarioPrEP.ca for more information.

Who is PrEP recommended for?

PrEP is recommended for adults who are at risk of acquiring HIV infection through sexual activity or injection drug use including:

- Men who have sex with men (MSM) and transgender women who report condomless sex within the last six months and who have any of the following:
 - Infectious syphilis or rectal bacterial sexually transmitted infection (STI), particularly if diagnosed in the preceding 12 months;
 - Recurrent use of nonoccupational post-exposure prophylaxis (nPEP) (more than once);
 - Ongoing sexual relationship with HIV-positive partner with substantial risk of transmissible HIV; or
 - High-incidence risk index (HIRI)-MSM risk score ≥ 11
- Heterosexual exposure: The HIV-negative partner in heterosexual serodiscordant relationships reporting condomless vaginal or anal sex where the HIV-positive partner has a substantial risk of transmissible HIV
- People who inject drugs (PWID) exposure: if injection drug use paraphernalia is being shared with a person with a non-negligible risk of HIV infection

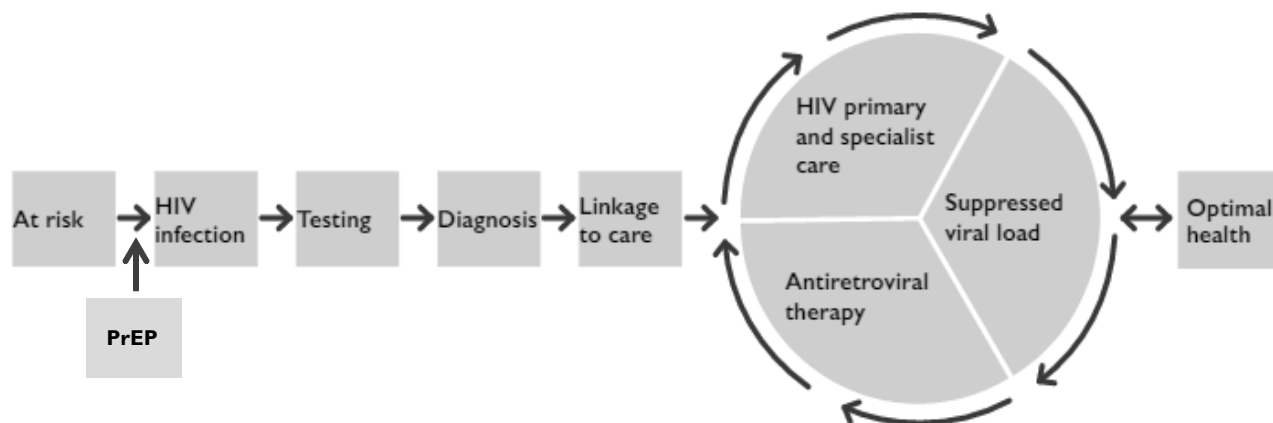
For more information on the 2017 Canadian guidelines on PrEP use, please see [here](#). Individuals not meeting these strict criteria may also be appropriate for PrEP use based on other considerations and these criteria are not intended to unduly restrict access to this important HIV prevention intervention. As with all health interventions, PrEP prescribing should be individualized and should incorporate health equity and patient preference considerations through joint decision-making with a provider.

Why look at trends in PrEP?

- PrEP is highly effective at reducing the risk of an HIV-negative individual acquiring HIV. Increasing the appropriate uptake of PrEP is a priority to improve HIV prevention (the earliest step in the HIV cascade, see Figure i) and the overall well-being of populations affected by HIV.

- Demographic and regional trends in PrEP uptake can help inform planning efforts and can be influenced by programming and policy factors that affect awareness and access.

FIGURE I. THE HIV PREVENTION, ENGAGEMENT, AND CARE CASCADE



What's in this report?

- The estimated number of PrEP users is based on medication dispensations (branded or generic TDF/FTC or branded TAF/FTC) from a large sample of retail pharmacies across Ontario, which are then projected/extrapolated by IQVIA, a private company, to the Ontario-level. Dispensations refer to prescriptions which have been filled at a pharmacy.
- These antiretroviral medications can be used for a variety of purposes (i.e. indications) including HIV treatment, post-exposure prophylaxis (PEP), PrEP and hepatitis B virus treatment. A [decision tree](#) was used to assign individuals to these indications based on other criteria (see technical notes for details).
- The data are presented by calendar year (2018 to 2022) or quarter (Jan-Mar 2021 to Oct-Dec 2022). Each year/quarter includes an estimate of the number of unique individuals dispensed PrEP at least once over the year or three-month period. Methods for limiting double counting are in the technical notes [limitations section](#).
- Estimated PrEP uptake is stratified by sex (male/female), age (10-year categories), prescriber specialty, payer type (public/private) and public health units/larger geographic regions within Ontario. Details of how these covariates were captured and categorized are in the technical notes section.
- Data are reported as counts, proportions, rates per 100,000 people and the “PrEP-to-need ratio¹” (a calculated measure of PrEP provision relative to HIV burden [first-time HIV diagnoses] within a population in the same unit time, where larger numbers indicate a more optimal amount of PrEP use). More information on the PrEP-to-need ratio including background on first-time HIV diagnoses can be found in the technical notes.

¹ More information about the PrEP-to-need ratio can be found here: <https://pubmed.ncbi.nlm.nih.gov/29983236/>

Where does the data come from?

IQVIA

- The estimated number of unique individuals dispensed PrEP (generic TDF/FTC, or branded TAF/FTC) in Ontario was acquired from IQVIA, a private company which collects dispensation data from retail pharmacies across Canada and elsewhere. For more information on IQVIA please visit www.iqvia.com.
- Dispensation data were based on a representative sample which accounts for 70% of all PrEP dispensations across Ontario (excluding hospital dispensaries). Prior to sending aggregate-level data to the Ontario HIV Treatment Network, IQVIA projects and extrapolates these dispensations to the provincial level using a proprietary algorithm and weighting methods and then has its own validation methods. The weighting method considers the number of pharmacies in a given area, the distance between IQVIA-captured and uncaptured pharmacies, and the size of the pharmacies. More information on IQVIA can be found in our [technical notes](#).

Freddie/Affirming Care Pharmacy

- Beginning in November 2021, Freddie, an online PrEP dispensing clinic, began to offer online PrEP assessments, dispensation and free delivery of PrEP throughout Ontario and Canada through their partner pharmacy (Affirming Care Ontario) located in the Peel region. As most PrEP dispensations from the Affirming Care Ontario pharmacy do not remain in the Peel region, non-identifiable data was acquired from Freddie to inform where these dispensations were being sent, including all prescriptions dispensed between April 1st and July 31st 2023, drug name (TDF/FTC or TAF/FTC), quantity dispensed and FSA the prescriptions were being mailed to.
- The total number of dispensations from the FSA which encompasses the Affirming Care Ontario pharmacy (given by IQVIA) was then redistributed proportionally to locations according to the Freddie data. More detailed methods can be found in the [technical notes](#).

What are some of the strengths of these data?

- These data fill an important gap in our knowledge about PrEP uptake in Ontario as there are currently no other comprehensive province-wide data sources.
- There is no missing information on age and geography (location of dispensation or physician's primary work location), and only a small percent of the individuals are missing data on sex (<1%).
- Use of both more narrow (public health unit) and broader geographic regions to better describe geographic trends in PrEP use and uptake.
- The definition of PrEP has been updated to include both generic and branded TDF/FTC OR TAF/FTC (Truvada™ and Descovy™) antiretroviral medications as they have both been approved by Health Canada for this indication.
- This report has acquired new data from Freddie/Affirming Care Ontario pharmacy and includes updated methods to account for online dispensation of PrEP which is then mailed throughout the province and allows for a more accurate description of PrEP dispensation by Ontario geographic region.

What are some of the limitations of these data?

- While the data includes some demographic features recorded by the pharmacy, such as age, sex, payer type and geographic location of the pharmacy, there is no information recorded on some

very important characteristics (such as race/ethnicity, gender identity, HIV risk factors and other sociodemographic factors). In the IQVIA data, the sex field is at the discretion of the pharmacist and is limited to 'male', 'female' and 'unknown'.

- As PrEP uptake should be considered relative to those populations where PrEP is indicated, these data are not adequate to determine whether PrEP uptake has met the need of the key populations at risk for HIV. It is unclear how to best assess the success of PrEP uptake in women and more research is needed to guide its appropriate use. Women who face systemic and social inequities, who are more likely to be exposed to HIV through a sexual or drug using partner require focused outreach and an individual approach to assess PrEP appropriateness and uptake.
- The dispensation data does not cover all retail pharmacies in Ontario and are projected/extrapolated to the provincial level by IQVIA. The algorithm used to project dispensations to the provincial level is proprietary so it is not possible to carry out sensitivity analyses to understand the impact of the underlying assumptions of the model.
- Possible clinical indications for TDF/FTC or TAF/FTC medications include PrEP, the treatment of HIV, post-exposure prophylaxis (PEP) and hepatitis B virus treatment. IQVIA leveraged an [Indication decision tree](#) to assign an indication to each dispensation/individual/prescription. This indication decision tree may misclassify some dispensations/individuals/prescriptions and sensitivity analyses could not be carried out on the underlying assumptions.
- Dispensations from in-patient hospital pharmacies, clinical trials/other research and those provided at no cost (e.g. by a health unit) are not included in the dispensation data and are not counted in this report. Dispensations paid for out-of-pocket are included, but were not included in the Claims-data sample from which the indication analysis and ratios were derived. Therefore, specific counts of these dispensations are not available.
- Address of residence for individuals dispensed PrEP was not available. Geographic breakdowns of PrEP dispensations were based on the location of the dispensing pharmacy. Therefore, it is possible that the number of PrEP users is being overestimated in larger urban areas as geographic locations were assigned based on the location of the dispensing pharmacy and not where the individual resides. It is possible that individuals would travel to larger urban areas to find PrEP prescribers or PrEP clinics and would then also fill their prescription close by.
- Online PrEP clinics can provide easier access to PrEP; however, an online clinic can dispense PrEP from a single pharmacy and ship to anywhere in Canada. Without data adjustments, this impacts the analysis of PrEP usage by geographic location as IQVIA attributes all dispensations to the location of the pharmacy. This analysis has adjusted for the Freddie online clinic located in Peel, but as other online PrEP dispensing clinics emerge, more data adjustments will be necessary.
- Missingness on prescriber specialty has increased over time (13% in 2018 to 40.9% in 2022). The likely reason for this missingness is that IQVIA updated their methods and now assigns prescriber specialty from only their private (and not public) claims data. Non-MD specialties are not identified in the private claims data, so these groups are categorized as having an unknown specialty. In previous reports (using older IQVIA methods), nurse practitioners were included as a prescriber specialty and it was one of the fastest growing prescriber groups, as nurse practitioners are commonly responsible for online-pharmacy-run PrEP programs/dispensations. The change in methods (nurse practitioners being moved to unknown prescriber specialty) may be one of the main reasons for the increase in the unknown prescriber specialty category over time.

KEY FINDINGS

Overall

- 14,650 individuals were estimated to have been dispensed HIV pre-exposure prophylaxis (PrEP) at least once in 2022 in Ontario.
- The estimated number of PrEP users increased dramatically between 2018 and 2022. In 2022 the estimated number of individuals dispensed PrEP was more than 2.3 times what it was in 2018.

By sex

PrEP uptake should be considered relative to those populations where PrEP is indicated. These data are not adequate to determine whether PrEP uptake has met the needs of those populations. It is difficult to assess successful PrEP uptake in women as women have lower HIV incidence and prevalence than men who have sex with men. More research is needed to guide appropriate use of PrEP in women.

- In 2022, the vast majority 14,176 (97.2%) of PrEP users were identified as male and 403 (2.8%) were identified as female.
- PrEP dispensations increased for both sexes but the relative increase between 2018 and 2022 was greater among males (2.3 times) than females (2.05 times).
- The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to first-time HIV diagnoses among a population, where larger numbers indicate more optimal HIV prevention efforts²) increased for both sexes between 2018 and 2022, but was consistently substantially higher for males than for females (13.2 times higher in 2022).
- The relative increase in the PrEP-to-need ratio over 2018 to 2021 was similar among males (2.9 times) and females (2.8 times), but due to a decrease in the PrEP-to-need ratio among females in 2022, the rate of increase in PrEP-to-need ratio among males is now faster.

By age

- The estimated number of males dispensed PrEP increased across all age groups between 2018 and 2022. The proportion of males aged <30 dispensed PrEP increased over time to ~1 in 4 male dispensations in 2022; however, the 30-39 age category consistently made up the largest number of males dispensed PrEP across all years.
- The estimated number of females dispensed PrEP increased across all age groups between 2018 and 2022. The proportion of females aged <30 dispensed PrEP increased over time to over 1 in 3 female dispensations in 2022; however, the 30-39 age category consistently made up the largest number of females dispensed PrEP. Interpretation of these trends among females should consider the relatively small numbers on which they are based.

By prescriber specialty

- In 2022, 40.9% of the total estimated individuals dispensed PrEP were prescribed PrEP by an unknown prescriber specialty, 36.9% by family and general practitioners, 15.0% by infectious disease physicians, 4.8% by internal medicine physicians, 0.9% residents and 1.5% other physicians.
- Between 2018 and 2022, the largest relative increase in PrEP dispensations were from residents and infectious disease physicians. However, changes over time in prescriber specialty is being driven by the increase in the unknown prescriber specialty category, which increased from 13.0% in 2018 to 40.9% in 2022. This is due to changes to IQVIA’s methods of categorization specialty, including nurse practitioners being put in the ‘unknown’ category.

² More information about the PrEP-to-need ratio can be found here: <https://pubmed.ncbi.nlm.nih.gov/29983236/>

By payer type

- Between 2018 and 2022, a large majority (>75%) of estimated PrEP users covered the cost of their prescription through private drug insurance plans. The estimated proportion who covered the cost through publicly funded drug programs (e.g. Ontario Drug Benefit Plan, Trillium, Interim Federal Health) remained relatively stable from 2018 (22.7%) to 2022 (24%).

By region

- In 2022, the rate of individuals dispensed PrEP per 100,000 people was highest in Toronto (299.1) and Ottawa (159.3) regions, and lowest in the Central East (22.8) and Northern (23.8) regions.
- In 2022, the majority of estimated individuals dispensed PrEP (63.4%) were dispensed from pharmacies in Toronto (downtown and not-downtown), followed by Ottawa Region (12.0%). The remainder of PrEP dispensations came from pharmacies in the Central West (8.7%), Central East (7.3%), South West (5.2%), Eastern (2.1%) and Northern (1.4%) regions.
- Between 2018 and 2022, the relative increase in estimated PrEP users was greatest in the Central East, Toronto- Not Downtown and Eastern regions (2.7 times each), followed by Ottawa (2.3 times) and Toronto- Downtown (2.2 times).
- In 2022, the “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate a more optimal amount of PrEP use) was highest in Ottawa (37.9) and Toronto regions (31.2), followed by South West region (21.8), Eastern region (15.5), Central West region (13.6), Central East region (9.5) and Northern region (7.5).

DATA AND FIGURES

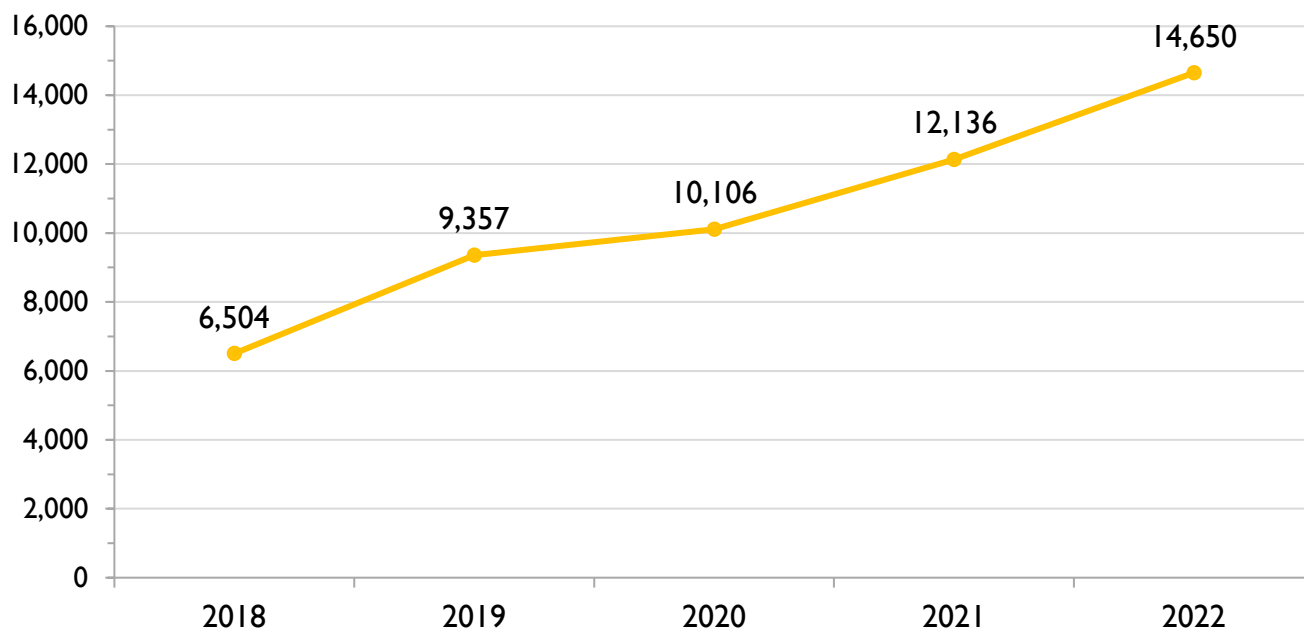
1. Overall

Summary & Interpretation

An estimated 14,650 individuals were dispensed PrEP at least once in Ontario over the full year of 2022, the highest dispensation happening in Oct-Dec 2022, with 10,131 PrEP dispensations. The total estimated number of PrEP users in Ontario increased overall between 2018 and 2022 with the largest relative increase between 2018 to 2019. There was a plateau in the number of PrEP users in 2020 compared to 2019 – likely due to the impact of the COVID-19 pandemic – followed by an increase in 2021 and again in 2022. The most significant increase was in Jul-Sep 2021.

Note: The data are presented by calendar year (2018 to 2022) or quarter (Jan-Mar 2021 to Oct-Dec 2022). Each year/quarter includes an estimate of the number of unique individuals dispensed PrEP at least once over the year or in the three-month period. Individuals who take PrEP may go on or off PrEP depending many factors including assessment of their risk over a period of time. Therefore, the estimated number of individuals on PrEP differs each quarter (new individuals starting PrEP, individuals continuing PrEP from the previous quarter and individuals not continuing with PrEP) within each year estimate.

FIGURE I.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PREP, ONTARIO, 2018 TO 2022 (ANNUAL)

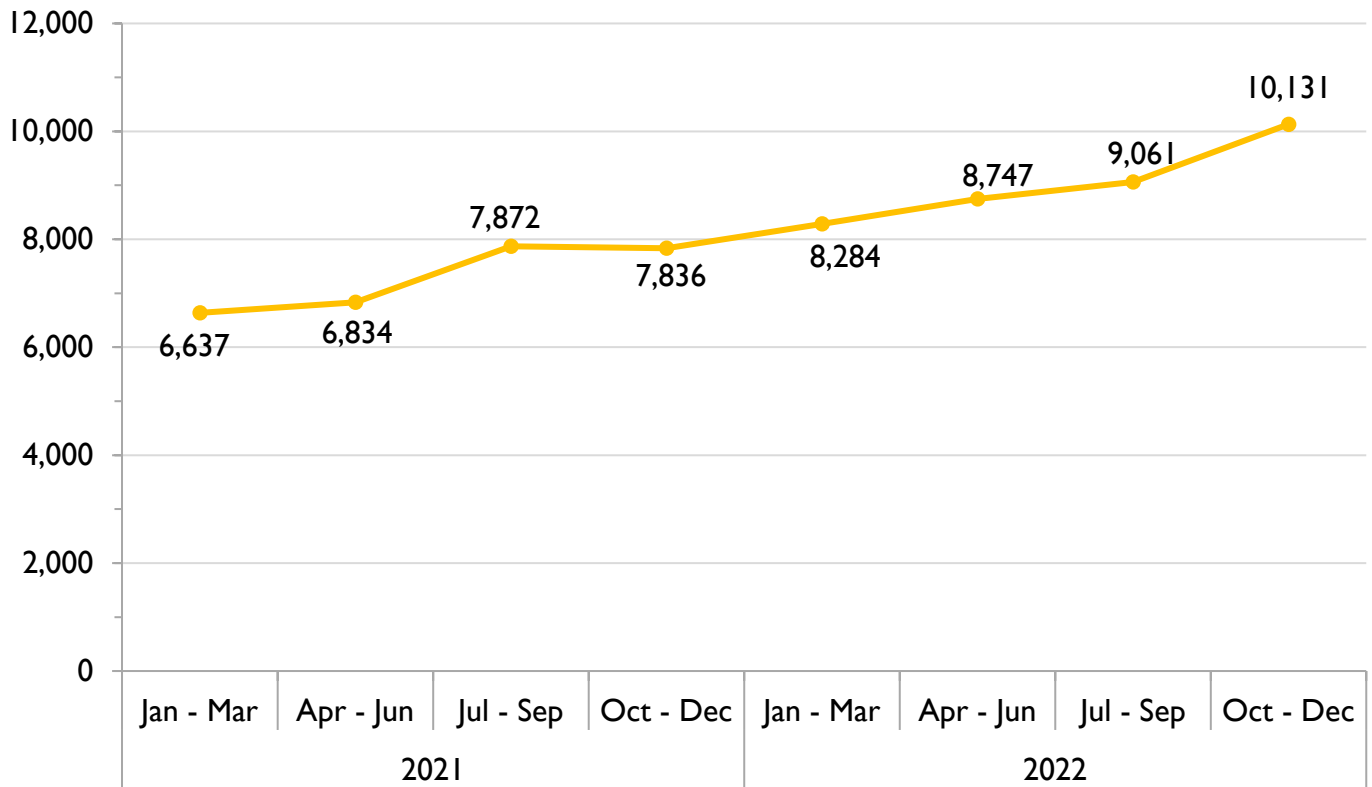


Trends

Between 2018 and 2022, the number of individuals dispensed PrEP increased overall, with a greater rate of increase between 2018 and 2019 and a plateau in 2020 coinciding with the beginning of the COVID-19 pandemic. In 2022 the number of individuals dispensed PrEP was 2.25 times higher than in 2018.

Notes: This is based on information licensed from IQVIA: GPM for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table I.1** for underlying data.

FIGURE I.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



Trends

Between Jan-Mar 2021 and Oct-Dec 2022, the number of individuals dispensed PrEP increased by 52.6%. PrEP dispensations increased steadily from Jan-Mar 2021 to Oct-Dec 2022, and hit its all time high in Oct-Dec 2022 (10,131).

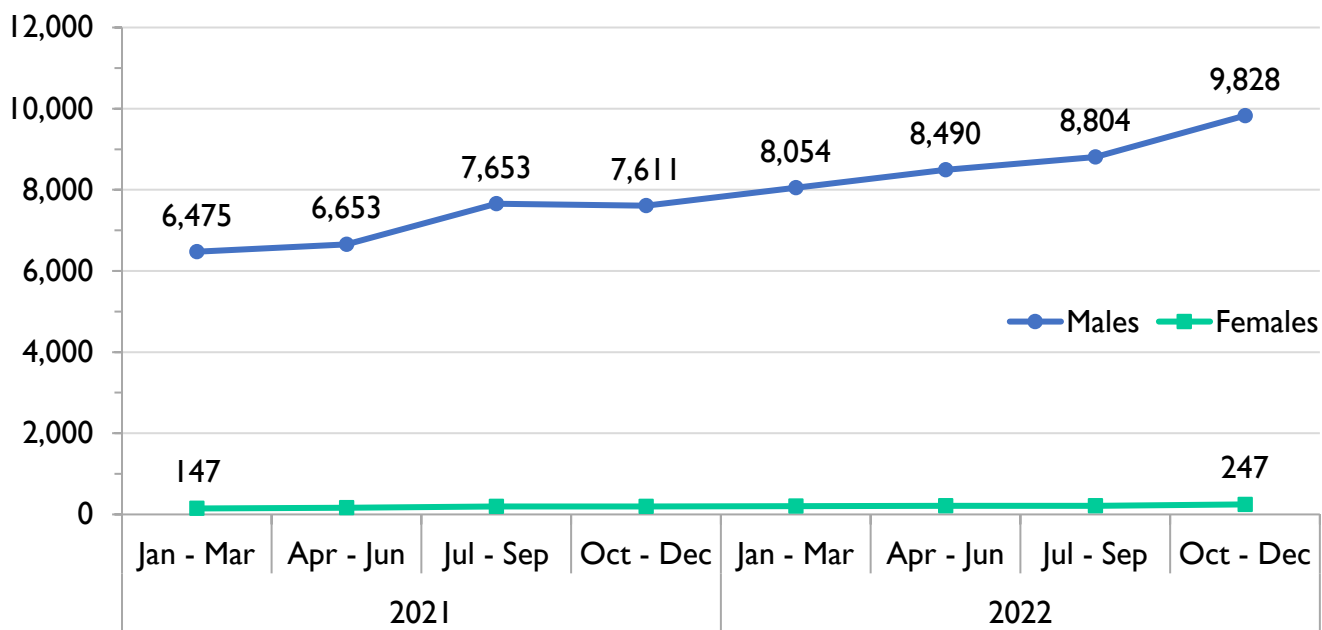
Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table I.2** for underlying data.

2. By sex

Summary & Interpretation

The number of males and females using PrEP in Ontario increased between 2018 and 2019, remained relatively stable in 2020, followed by the increase in 2021, reaching its highest number in 2022 (14,176 males and 403 females). The relative rate of increase in PrEP dispensations was slightly greater among males than females from 2018 to 2022. The proportion of estimated individuals dispensed PrEP by sex was 97.2% among males and 2.8% among females. The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden within a population, where larger numbers suggest more optimal amount of PrEP use) increased for both sexes, but was consistently and substantially higher for males than for females. The rate of increase of the PrEP-to-need ratio was similar among males and females between 2018 and 2021. The decrease in HIV testing and HIV diagnoses seen during the height of the COVID-19 pandemic were contributing factors to the faster increases of the PrEP-to-need ratio observed in 2020 and 2021 while a recovery in HIV testing and HIV diagnoses in 2022 contributed to a smaller increase in the PrEP-to-need ratios among males and a decrease among females relative to 2021. Uptake and use of PrEP in Ontario has been and continues to be dominated by males, even when considered in proportion to HIV burden.

FIGURE 2.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PREP BY SEX, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

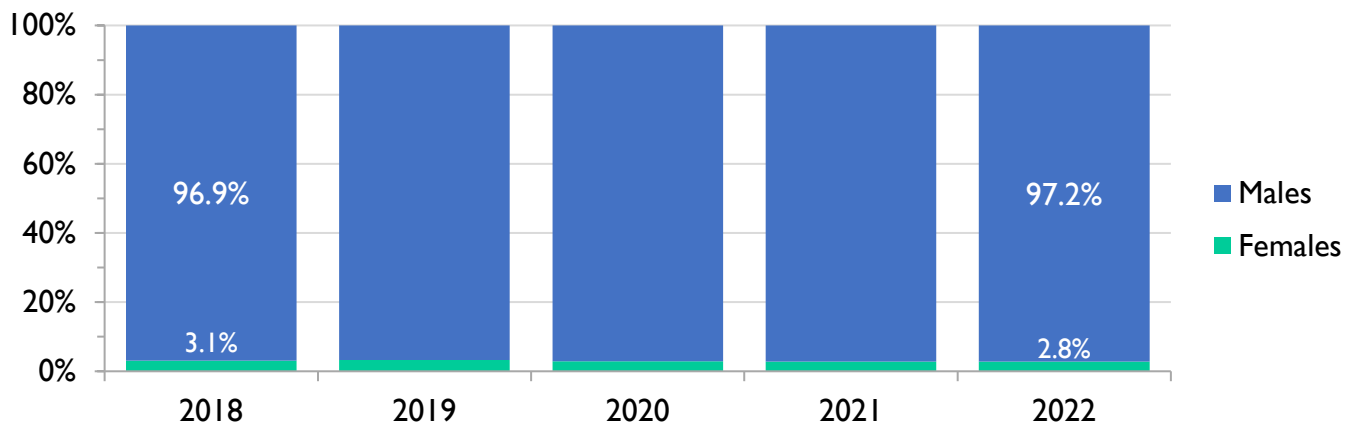


Trends

Between Jan-Mar 2021 and Oct-Dec 2022, the estimated number of PrEP users increased among males and remained stable among females. From Jan-Mar 2021 to Oct-Dec 2022, a 51.7% increase was seen in the estimated number of male PrEP users.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 1.2** for underlying data.

FIGURE 2.2 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY SEX (WHERE KNOWN), ONTARIO, 2018 TO 2022 (ANNUAL)

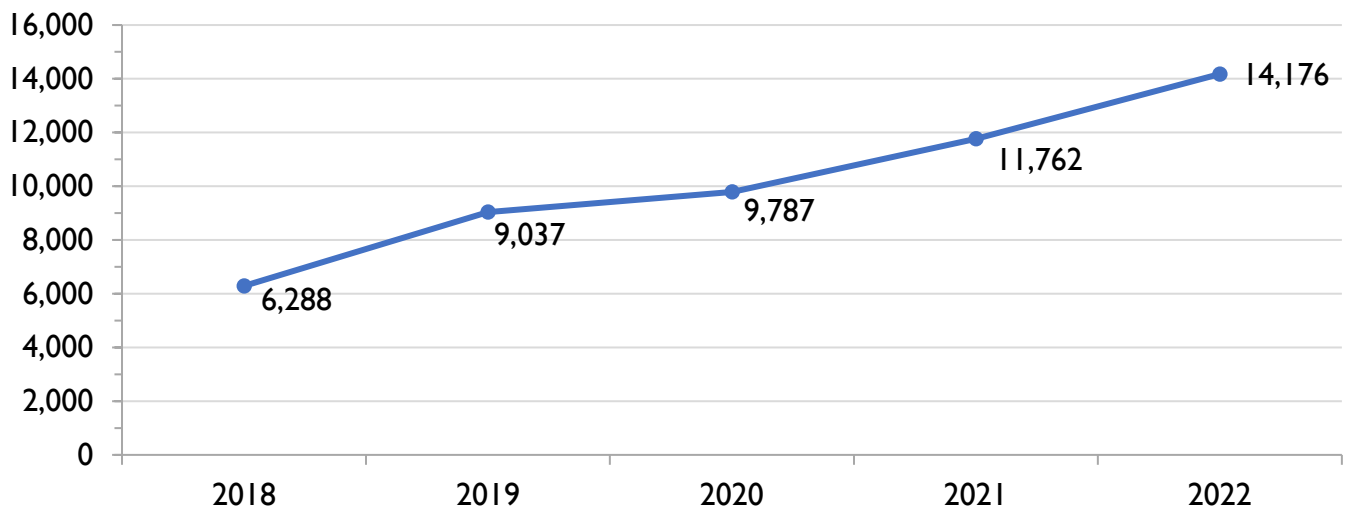


Trends

Between 2018 and 2022, the vast majority (96%-97.2%) of individuals dispensed PrEP were male and no changes were seen across the time period.

Note: PrEP uptake should be considered relative to those populations where PrEP is indicated. These data are not adequate to determine whether PrEP uptake has met the need of those populations. It is difficult to assess successful PrEP uptake in women as women have lower HIV incidence and prevalence than men who have sex with men. More research is needed to guide appropriate use of PrEP in women.

FIGURE 2.3 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, MALES, ONTARIO, 2018 TO 2022 (ANNUAL)

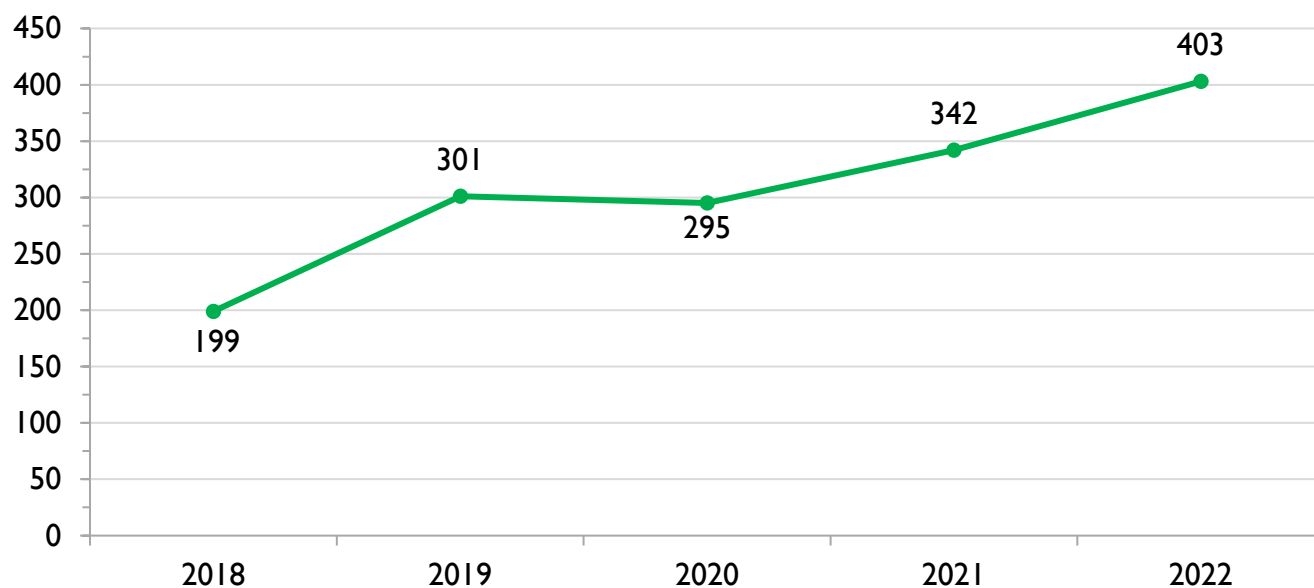


Trends

Between 2018 and 2022, the number of male individuals dispensed PrEP increased from 6,288 to 14,176 with the sharpest single year increase between 2018 to 2019, and a 44.8% increase between 2020 and 2022.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table I.1** for underlying data.

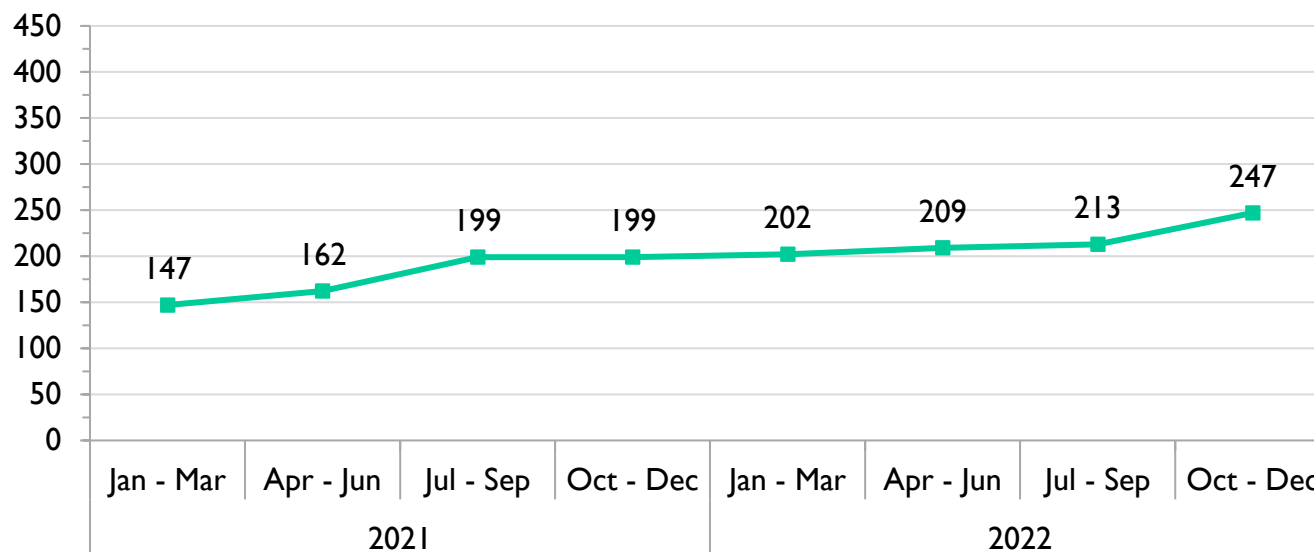
FIGURE 2.4 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, FEMALES, ONTARIO, 2018 TO 2022 (ANNUAL)



Trends

Between 2018 and 2022, the number of female individuals dispensed PrEP increased from 199 to 403 with the sharpest increase between 2018 to 2019.

FIGURE 2.5 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, FEMALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

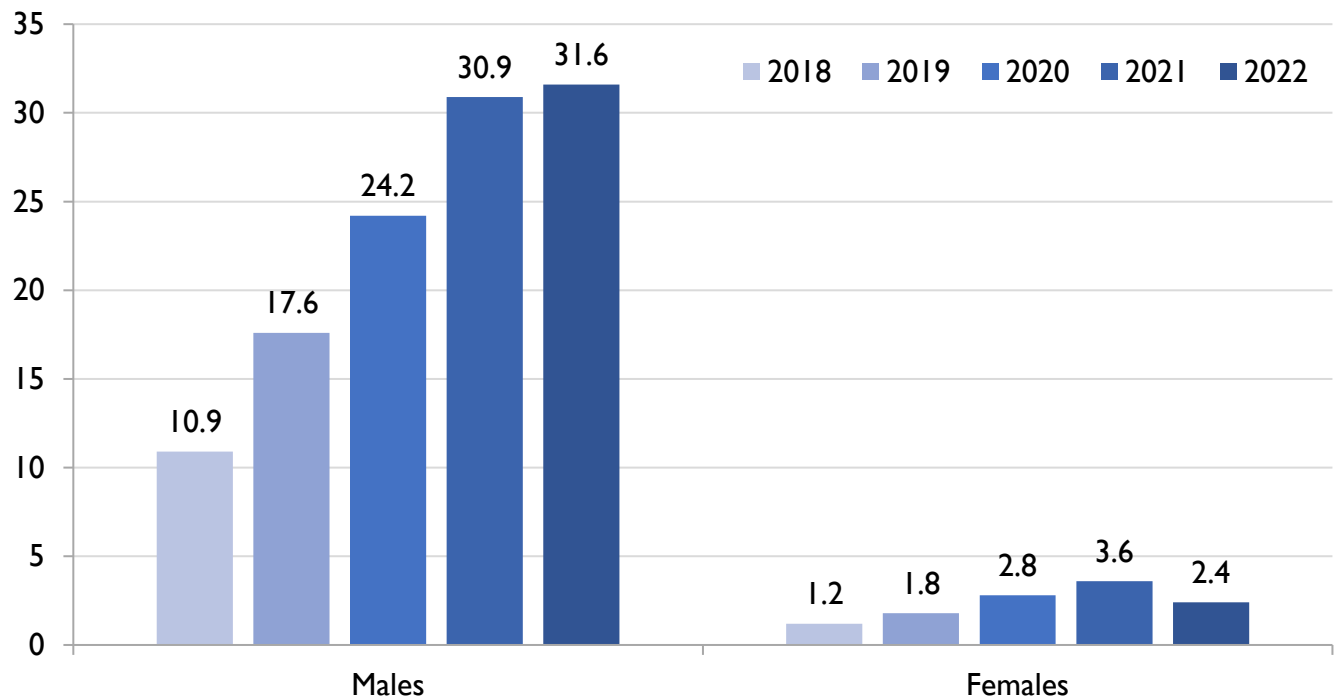


Trends

Between Jan-Mar 2021 and Oct-Dec 2022, the number of female individuals dispensed PrEP increased from 147 to 247 (68.0% relative increase)

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 1.1** and **Table 1.2** for underlying data.

FIGURE 2.6 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), BY SEX, ONTARIO, 2018 TO 2022 (ANNUAL)



Trends

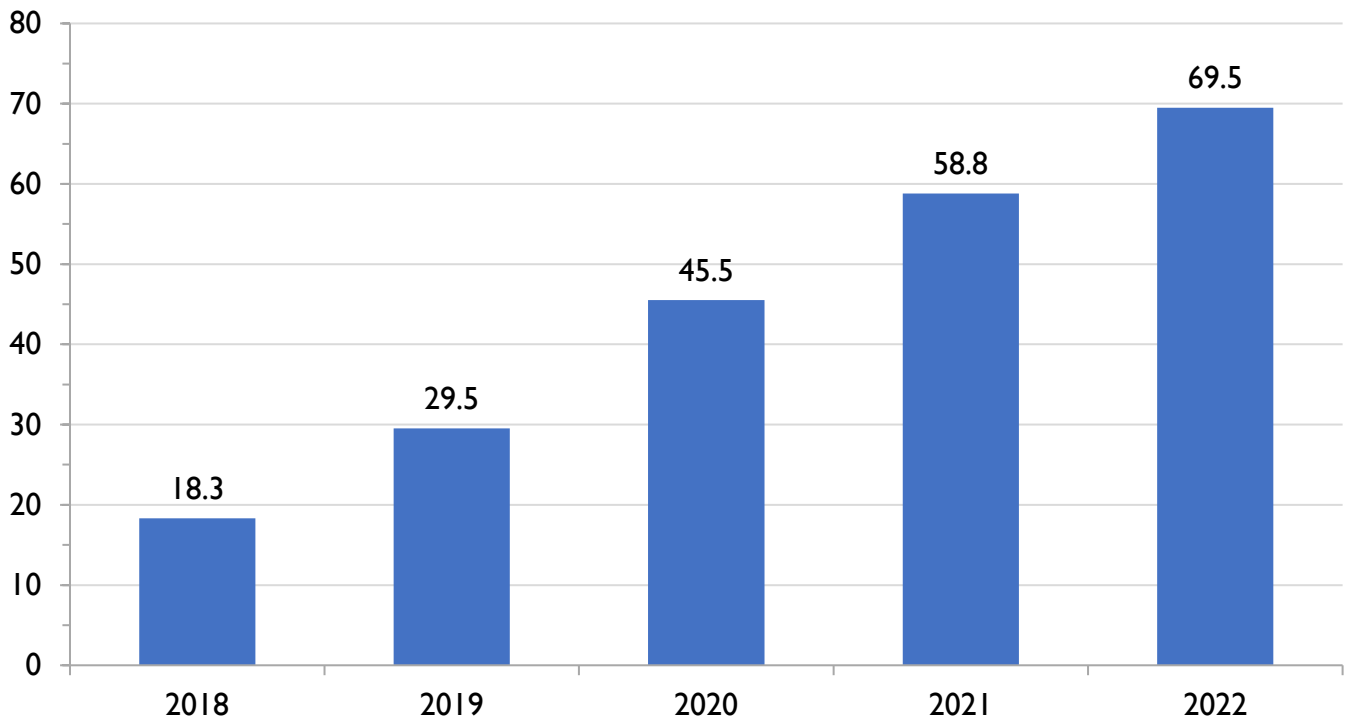
The “PrEP-to-need ratio” is a calculated ratio of individuals dispensed PrEP to first-time HIV diagnoses as an attempt to quantify PrEP provision relative to HIV burden among a population. Therefore, higher numbers suggest more optimal amount of PrEP use.

Between 2018 and 2022, the “PrEP-to-need ratio” increased for both males and females and was consistently and substantially larger for males. The relative increase in the PrEP-to-need ratios between 2018 to 2022 was larger among males (2.9 times) than females (2.0 times), but similar among males (2.6 times) and females (2.7 times) comparing 2021 to 2018, indicating a sustained increase in the PrEP-to-need ratio in 2022 among males. In 2022, the PrEP-to-need ratio was over 13 times higher for males than it was for females.

Note: PrEP-to-need ratios are affected by both the number of HIV diagnoses and the number of PrEP users. The decrease in HIV testing and HIV diagnoses seen during the height of the COVID-19 pandemic contributed to the faster increases in the PrEP-to-need ratio observed in 2020 and 2021 while a recovery in HIV testing and HIV diagnoses in 2022 contributed to a smaller increase in the PrEP-to-need ratios among males and a decrease among females compared to 2021. PrEP uptake should be considered relative to those populations where PrEP is indicated. These data are not adequate to determine whether PrEP uptake has met the need of the key populations at risk for HIV. It is difficult to assess successful PrEP uptake in women and more research is needed to guide its appropriate use. Women who face systemic and social inequities, who are more likely to be exposed to HIV through a sexual or drug using partner require more direct and focused outreach to assess both whether PrEP is appropriate for them and whether there is appropriate uptake of PrEP. A recent OHTN Rapid Response on the topic of PrEP uptake and use among cisgender and transgender women can be found [here](#).

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Counts of first-time HIV diagnoses acquired from Public Health Ontario (PHO). See [First-time HIV diagnoses](#) for more information. PrEP = pre-exposure prophylaxis. See **Table 1.3** for underlying data.

FIGURE 2.7 ESTIMATED RATIO OF GBMSM DISPENSED PrEP TO FIRST-TIME HIV DIAGNOSES AMONG GBMSM (“PrEP-TO-NEED RATIO AMONG GBMSM”), ONTARIO, 2018 TO 2022 (ANNUAL)



Trends

Based on the input from PrEP prescribers and the community that male PrEP users are overwhelmingly GBMSM, we used the estimated number of males dispensed PrEP as a proxy for the estimated number of GBMSM dispensed PrEP. First-time HIV diagnoses were specific to GBMSM (where known).

Between 2018 and 2022, the PrEP-to-need ratio among GBMSM increased substantially. The relative increase year over year was greatest in 2019 compared to 2018 (1.6 times), however all years had a steady relative increase over time. In 2022, the estimated PrEP-to-need ratio was over 3.8 times higher than in 2018.

Notes: GBMSM – Gay, bisexual and other men who have sex with men. This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Counts of first-time HIV diagnoses acquired from Public Health Ontario (PHO). See [First-time HIV diagnoses](#) for more information. PrEP = pre-exposure prophylaxis. See **Table 1.3** for underlying data.

3. By age

Summary & Interpretation

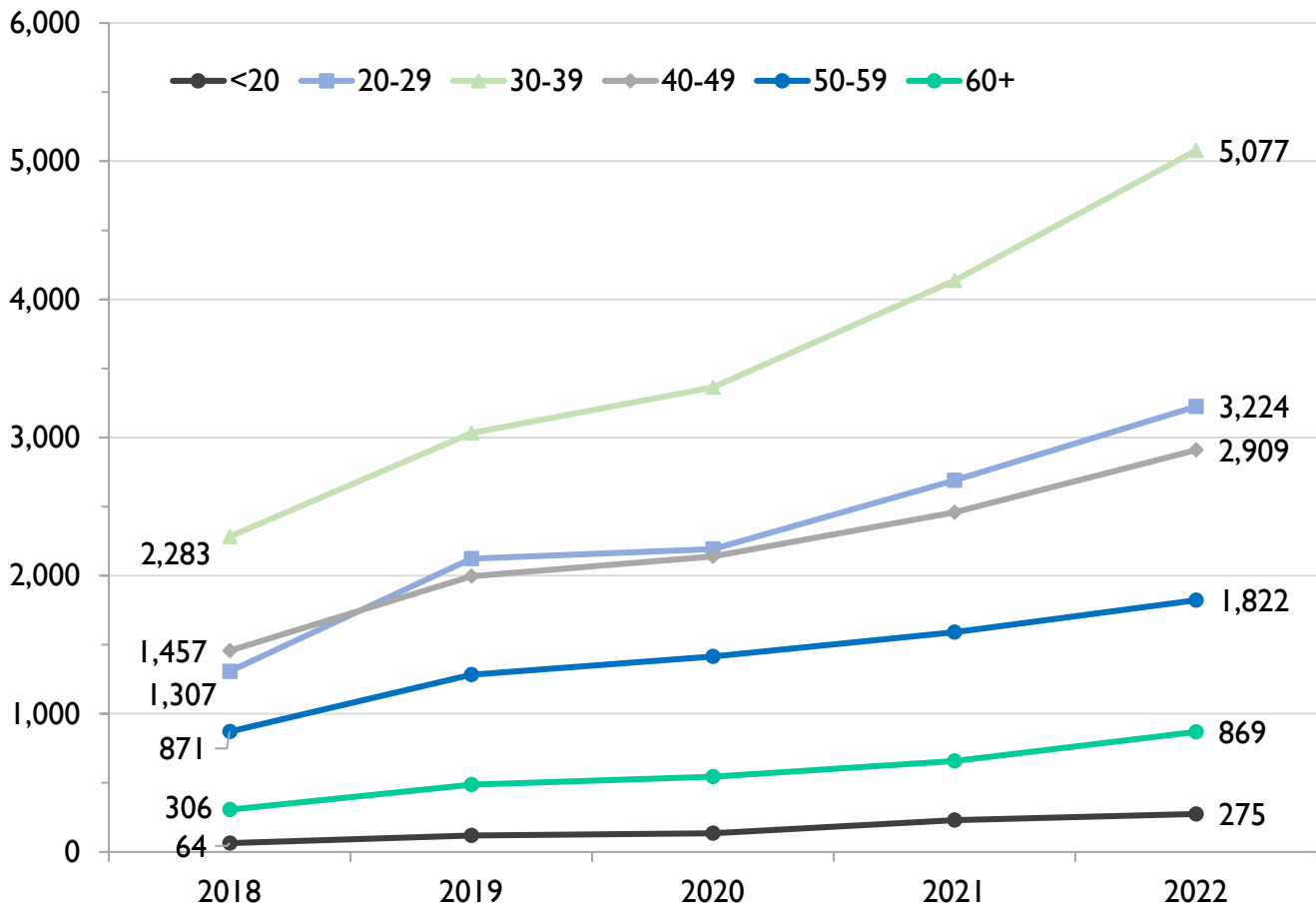
Males and females had slightly different trends over time in the number of individuals dispensed PrEP by age categories. Among males, PrEP use increased among all age groups between 2018 and 2019, with a plateau in the numbers in 2020, followed by an increase in 2021 and 2022. Among females, PrEP dispensations increased among all age groups in 2019, with variations per region in subsequent years. In 2022, those aged 30-39 comprised the largest proportion of individuals on PrEP for both sexes, followed by those aged 20-29 and then 40-49.

Among males, more individuals aged 20-29 used PrEP than those aged 40-49 years over the full years 2021 and 2022; however, when the data are examined quarterly, these numbers of 40-49 were higher. Possible explanations for this include males aged 40-49 being more likely to use PrEP consistently over time or younger males being more likely to use on-demand PrEP, and therefore dispensations would be less frequent.

Among females, the largest increases in PrEP users were among those under age 30 and those aged 30-39 years.

Males by age

FIGURE 3.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, 2018 TO 2022 (ANNUAL)



Age	2018	2022
<20	64	275
20-29	1,307	3,224
30-39	2,283	5,077
40-49	1,457	2,909
50-59	871	1,822
60+	306	869

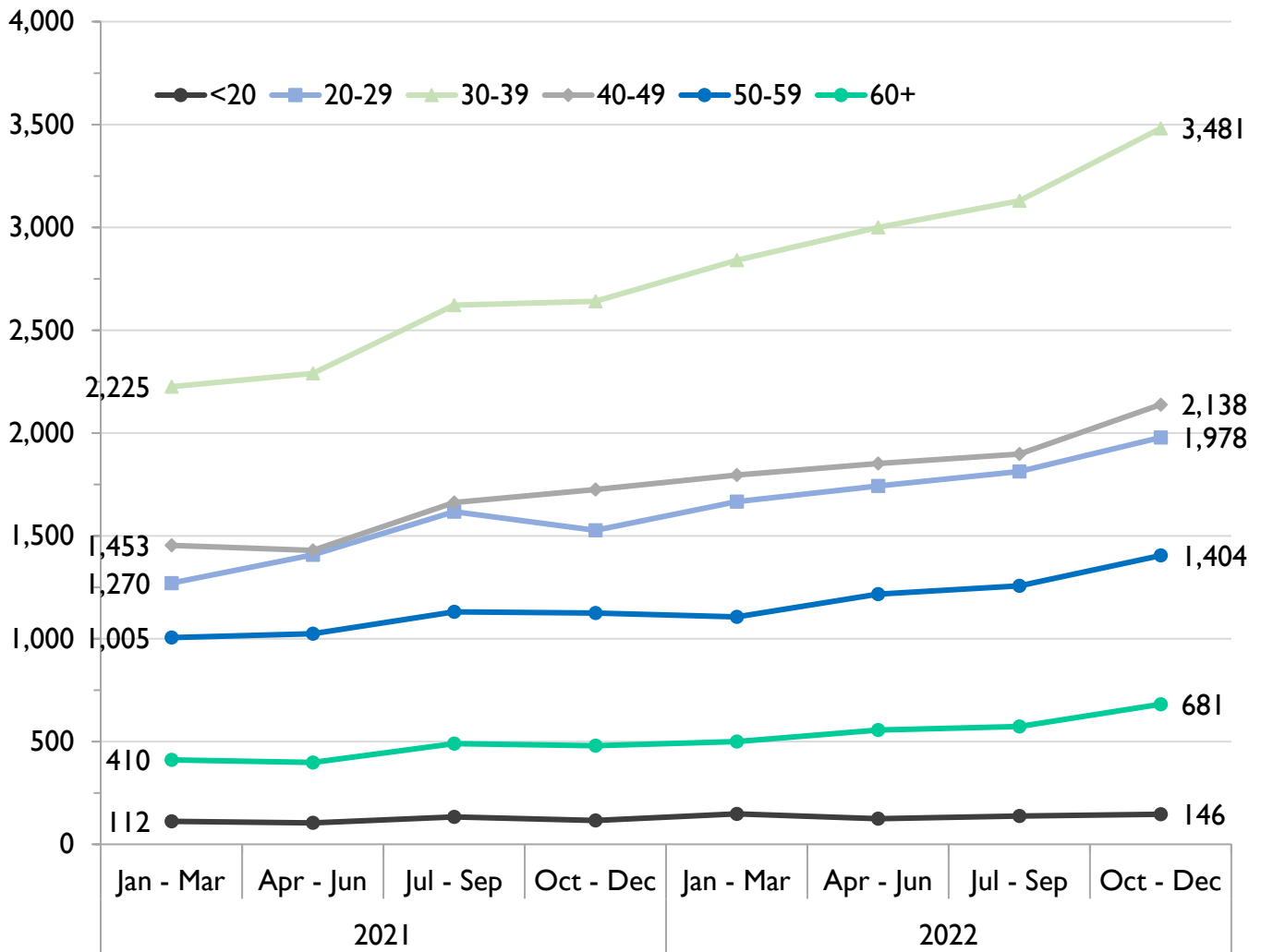
Trends

Between 2018 and 2022, the number of males dispensed PrEP increased each year in all age categories, with the least significant increase being reported in 2020 (coinciding with the beginning of the COVID-19 pandemic). The yearly relative increase was greatest in 2019 compared to 2018 among those under age 20 (1.8 times), followed by those aged 20-29 (1.6 times). The 30-39 age category had the greatest number of unique individuals dispensed PrEP in each year since 2018. Between 2018 and 2022 the greatest relative increase was seen in those under 20 (4.3 times)

Notes: This is based on information licensed from IQVIA: GPM with

Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 2.1** for underlying data.

FIGURE 3.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



Age	Jan-Mar 2021	Oct-Dec 2022
<20	112	146
20-29	1,270	1,978
30-39	2,225	3,481
40-49	1,453	2,138
50-59	1,005	1,404
60+	410	681

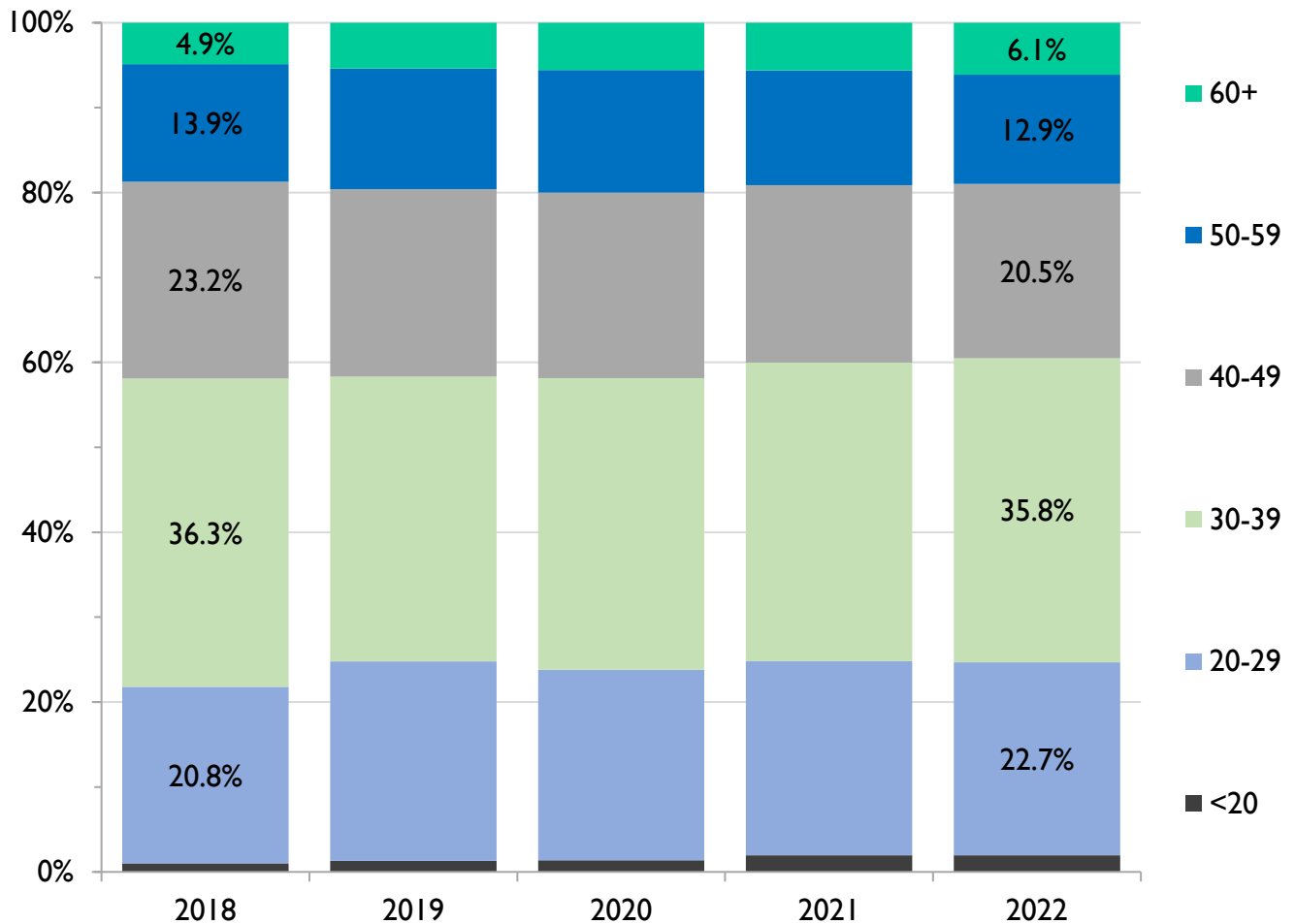
Trends

Between Jan 2021 and Dec 2022, the number of males dispensed PrEP increased most substantially in the quarter Jul-Sep 2021, reaching its all time high in Oct-Dec 2022. The 30-39 age category had the largest number of unique individuals dispensed PrEP in each quarter of this time period. While a larger number of males aged 20-29 than those aged 40-49 were dispensed PrEP over the full years of 2021 and 2022 (Figure 3.1), for most quarters in 2021 and 2022, males aged 40-49

outnumbered those aged 20-29. This could suggest that males aged 40-49 were more likely to use PrEP consistently over time or that younger males were more likely to use on-demand PrEP and therefore would have fewer dispensations per year.

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 2.2** for underlying data.

FIGURE 3.3 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, 2018 TO 2022 (ANNUAL)



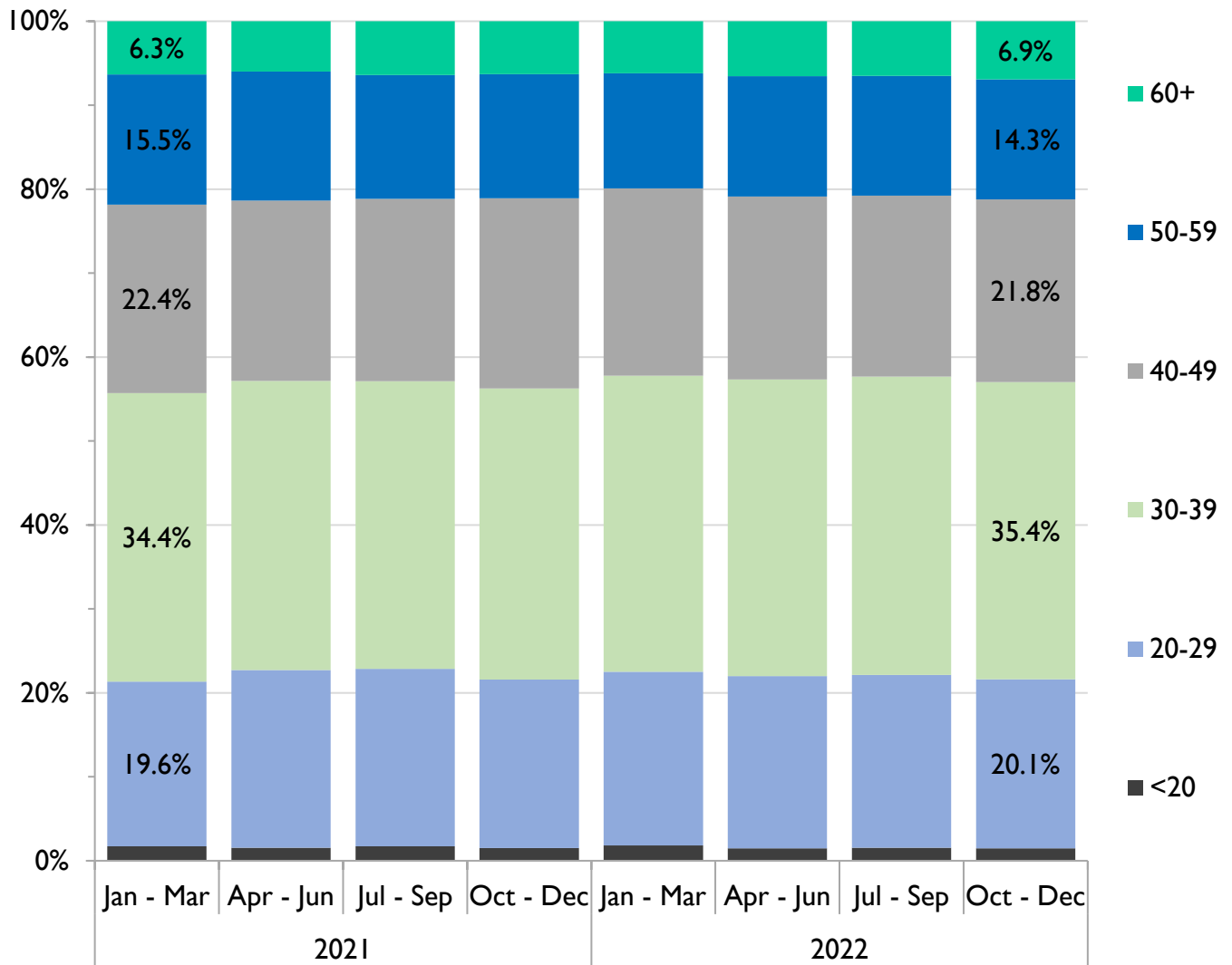
Age	2018	2022
<20	1.0%	1.9%
20-29	20.8%	22.7%
30-39	36.3%	35.8%
40-49	23.2%	20.5%
50-59	13.9%	12.9%
60+	4.9%	6.1%

Trends

Between 2018 and 2022, most of the males dispensed PrEP were between 20 and 40 years old (~58%). Despite an increase in counts, the proportion of males dispensed PrEP aged 30-39, 40-49, and 50-59 dropped while the proportion aged <20, 20-29 and aged 60+ increased. Males under 30 accounted for ~1 in 5 of the estimated males dispensed PrEP in 2018 and ~1 in 4 in 2022.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 2.1** for underlying data.

FIGURE 3.4 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



Age	Jan-Mar 2021	Oct-Dec 2022
<20	1.7 %	1.5%
20-29	19.6%	20.1%
30-39	34.4%	35.4%
40-49	22.4%	21.8%
50-59	15.4%	14.3%
60+	6.0%	6.9%

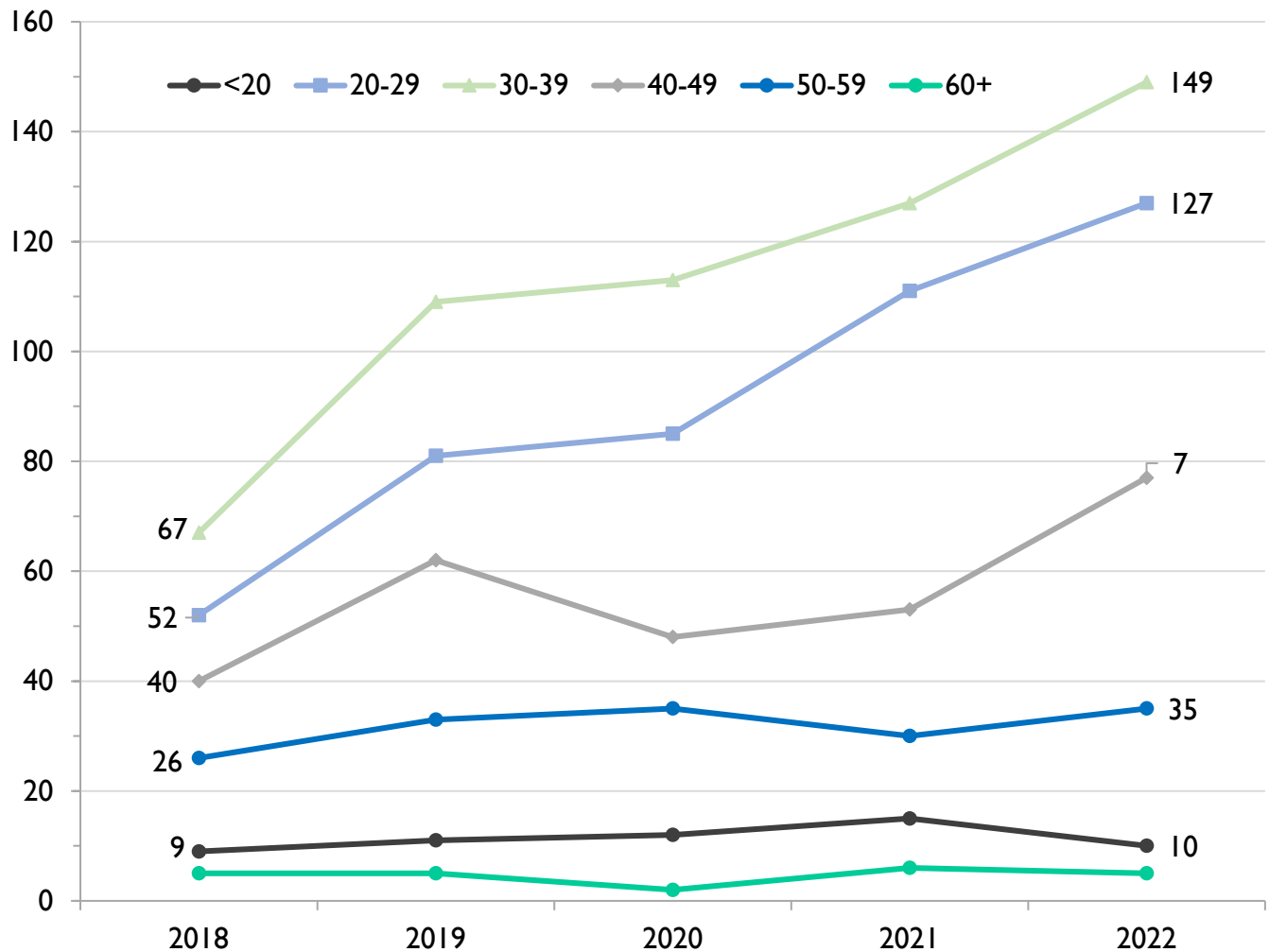
Trends

Between Jan 2021 and Dec 2022, most males dispensed PrEP were under age 40 (57%) and the proportion by age group remained stable. While males over 40 made up a smaller proportion of males dispensed PrEP over the full 2022 year (Figure 3.3), they made up a higher proportion in each quarter of 2022 compared to under 30, suggesting that they could be more consistent PrEP users or that younger males were more likely to be using on-demand PrEP and therefore have less frequent dispensations.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 2.2** for underlying data.

Females by age

FIGURE 3.5 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, 2018 TO 2022 (ANNUAL)

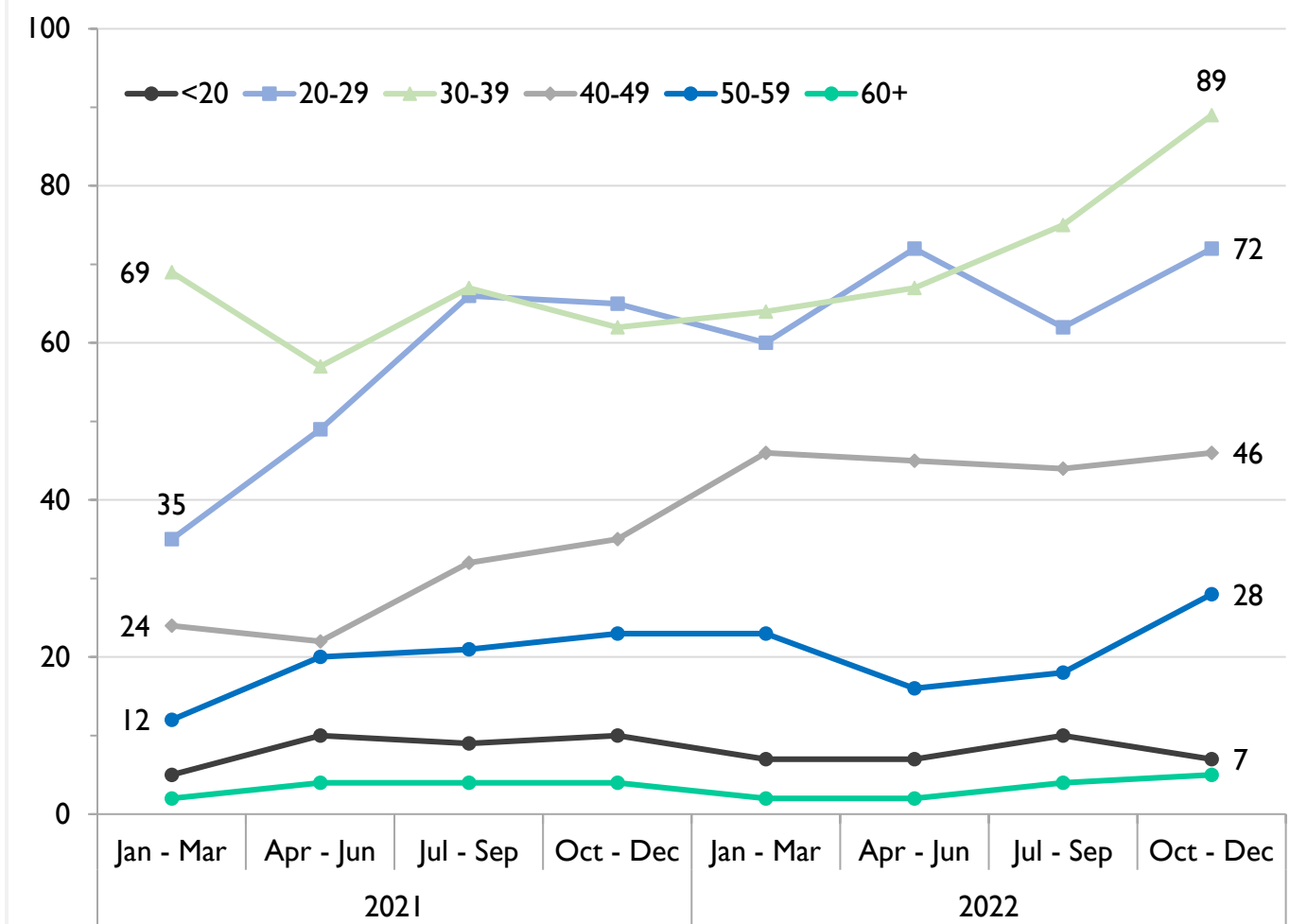


Trends

Between 2018 and 2022, the number of females dispensed PrEP increased in most age categories year over year except in 2020 (coinciding with the beginning of the COVID-19 pandemic) and in 2021 among females age 50-59, where a decrease was seen. An increase in PrEP use was seen in all age categories in 2022 compared to 2021, except in the <20 and 60+ category (small counts). The relative annual increase in PrEP dispensations in females was greatest in 2019 among those aged 30-39 (1.63 times), followed by those aged 20-29 (1.56 times). From 2020 to 2022, the greatest relative annual increase was seen in those aged 60+ (2.5 times, small counts), 40-49 (1.6 times) and 20-29 (1.5 times). The 30-39 age category had the largest number of unique females dispensed PrEP in each year and increased 1.3 times between 2020 and 2022. Interpretation of these trends should consider the relatively small numbers on which they are based.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Counts ≤ 5 are not labelled on the figure. PrEP = pre-exposure prophylaxis. See **Table 2.3** for underlying data.

FIGURE 3.6 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

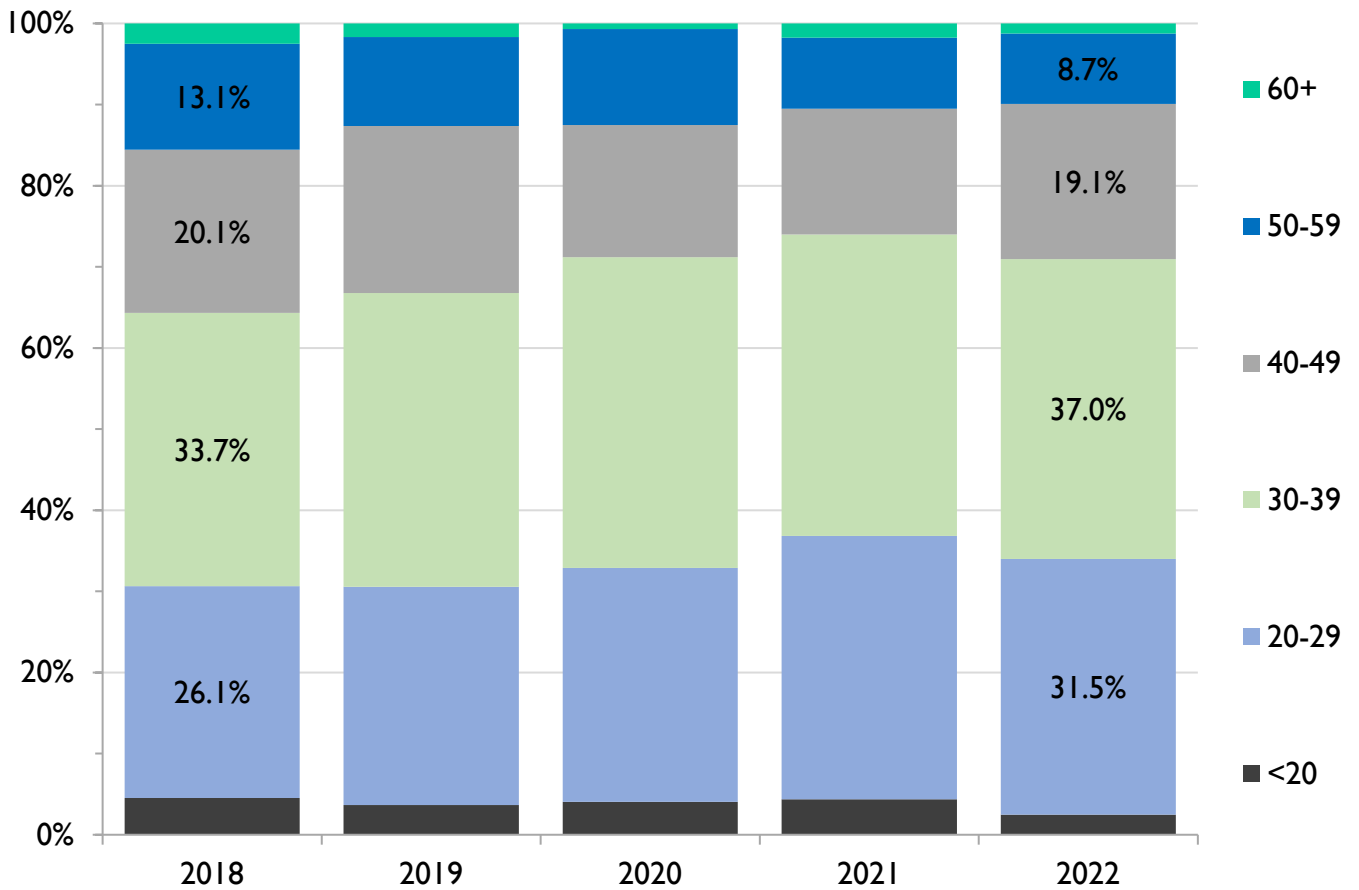


Trends

Between Jan 2021 and Dec 2022, the number of females dispensed PrEP increased in all age categories, with the larger relative increases being within those aged 60+ (2.5 times small numbers), 50-59 (2.3 times) and 20-29 (2.1 times). Fluctuations in the numbers of females dispensed PrEP were seen, but overall, all age groups saw increased PrEP dispensations. There were some fluctuations in the number of females dispensed PrEP, especially among females aged 30-39 and 20-29. For females aged <20 and 60+, there has been little change, however this is based on very small numbers and should be interpreted with caution.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. Counts ≤5 are not labelled on the figure. See **Table 2.4** for underlying data.

FIGURE 3.7 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, 2018 TO 2022 (ANNUAL)



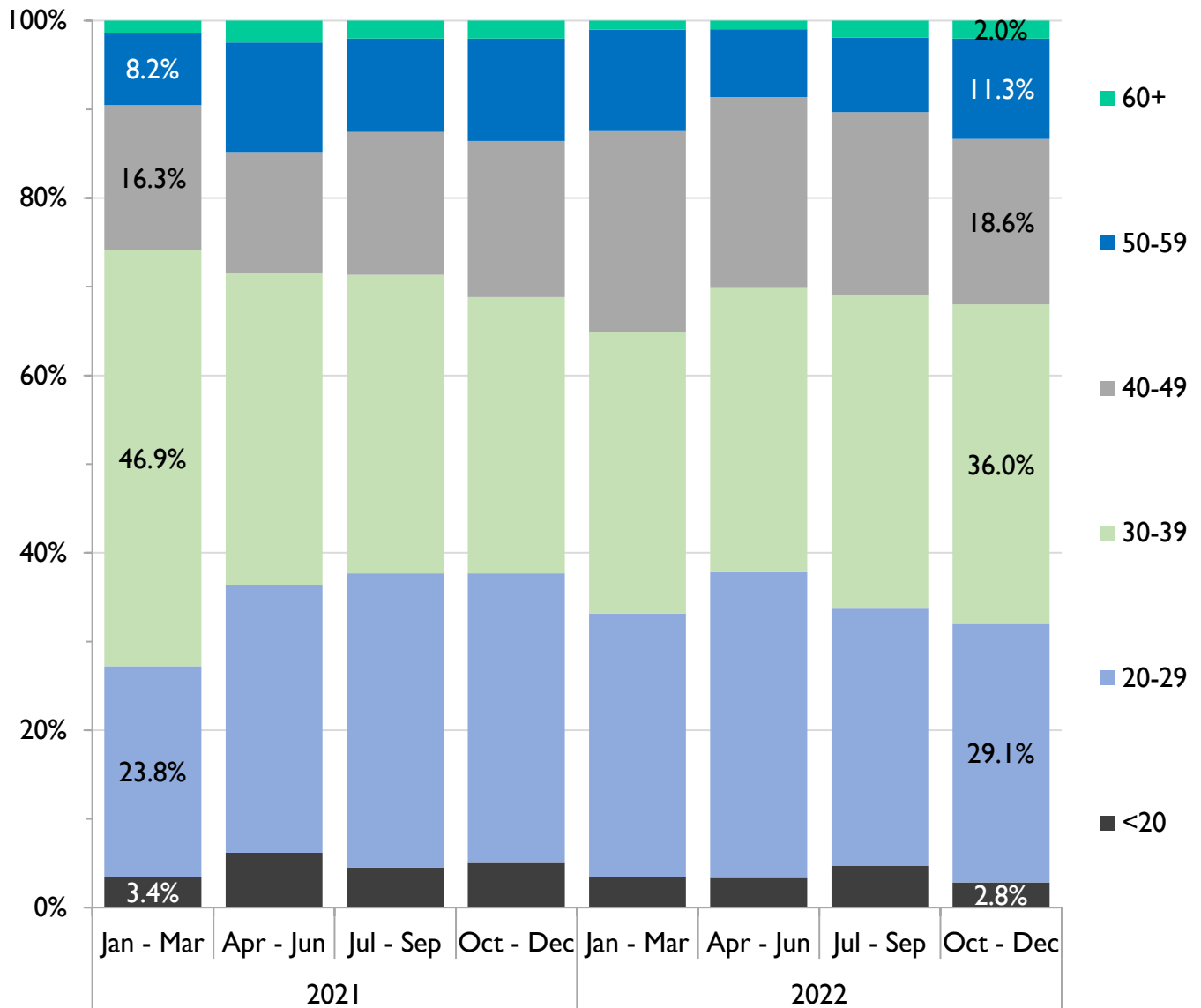
Age	2018	2022
<20	4.5%	2.5%
20-29	26.1%	31.5%
30-39	33.7%	37.0%
40-49	20.1%	19.1%
50-59	13.1%	8.7%
60+	2.5%	1.2%

Trends

Between 2018 and 2022, despite an increase in counts (Figure 3.5), the proportion of females aged 40-49 and 50-59 dispensed PrEP decreased while the proportions of females aged 20-29 and 30-39 increased indicating a faster increase in PrEP dispensations in the 20-40 age categories. Both the number and proportion of females aged <20 and 60+ dispensed PrEP decreased. Over the past 5 years, females aged 30-39 years accounted for the largest proportion of those dispensed PrEP (37.0% in 2022), followed by females aged 20-29 (31.5%). Interpretation of these proportions should consider the relatively small numbers on which they are based.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. See **Table 2.3** for underlying data.

FIGURE 3.8 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



Age	Jan-Mar 2021	Oct-Dec 2022
<20	3.4%	2.8%
20-29	23.8%	29.1%
30-39	46.9%	36.0%
40-49	16.3%	18.6%
50-59	8.2%	11.3%
60+	1.4%	2.0%

Trends

Between Jan 2021 and Dec 2022, ~68%-74% of the females dispensed PrEP were under age 40. As the number of females aged 20-29 and 40-49 dispensed PrEP increased (Figure 3.5), they made up a growing proportion of all females dispensed PrEP, whereas the proportion of females aged 30-39 dispensed decreased over time despite an increase in numbers. Interpretation of these proportions should consider the relatively small numbers on which they are based.

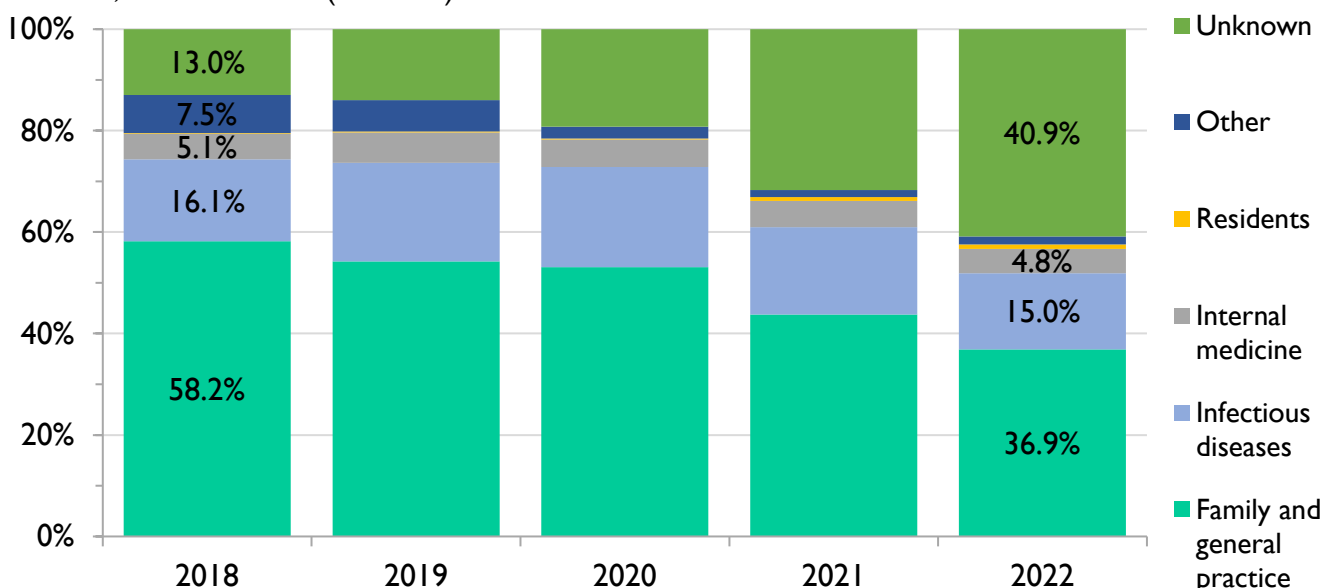
Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. See **Table 2.4** for underlying data.

4. By prescriber specialty

Summary & Interpretation

In 2022, family and general practitioners prescribed the most PrEP, where prescriber specialty was known, although this has decreased over time. Infectious disease and internal medicine specialties were the next most common PrEP prescribers. The highest relative increase between 2018 and 2022 was within Residents (16.8 times). The increase in unknown prescriber specialty is due to a change in methods by IQVIA and is driven by nurse practitioners being categorized as unknown prescriber specialty.

FIGURE 4.1 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PRESCRIBER SPECIALTY, ONTARIO, 2018 TO 2022 (ANNUAL)



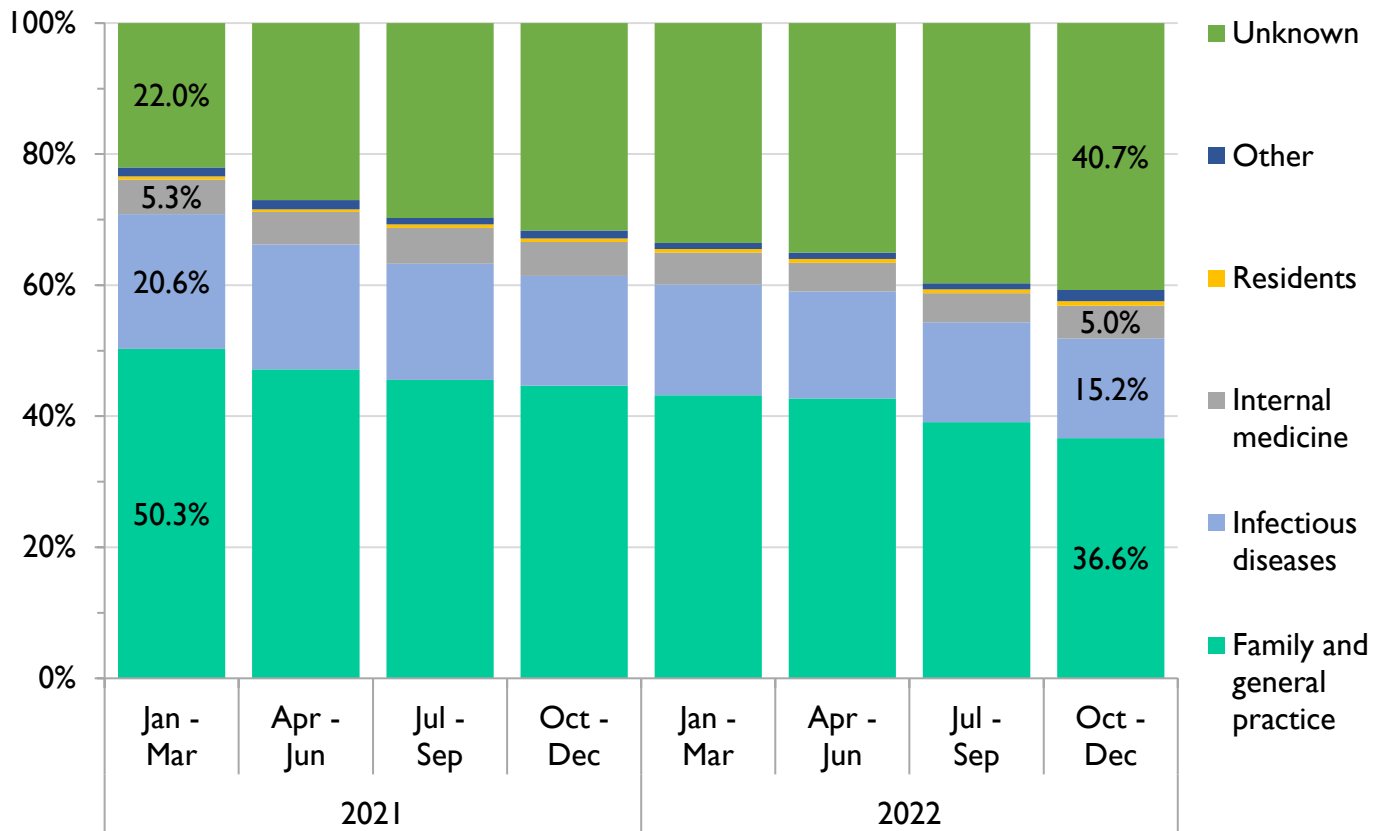
Prescriber Specialty	2018	2022
Family / GP	58.2%	36.9%
Infectious diseases	16.1%	15.0%
Internal medicine	5.1%	4.8%
Residents	0.1%	0.9%
Other	7.5%	1.5%
Unknown	13.0%	40.9%

Trends

Between 2018 and 2022, most individuals dispensed PrEP were prescribed PrEP by family and general practitioners; however, this proportion decreased over time (58.2% in 2018 to 36.9% in 2022). The estimated proportion of individuals prescribed PrEP by infectious diseases practitioners increased and, by 2022, they accounted for ~1 in 7 PrEP dispensations. The highest relative increase between 2018 and 2022 was seen in the Residents category (16.8 times). The increase in unknown from 13.0% in 2018 to 40.9% in 2022 is highly driven by changes to IQVIA's categorization of specialty, including now categorizing nurse practitioners (commonly responsible for online pharmacy-run PrEP programs/dispensations) in the unknown category.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. GP = general practice.. See **Table 3.1** for underlying data.

FIGURE 4.2 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PRESCRIBER SPECIALTY, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



Prescriber Specialty	Jan-Mar 2021	Oct-Dec 2022
Family / GP	50.3%	36.6%
Infectious diseases	20.6%	15.2%
Internal medicine	5.3%	5.0%
Residents	0.5%	0.7%
Other	1.4%	1.7%
Unknown	22.0%	40.7%

Trends

Between Jan 2021 and Dec 2022, there was a shift in the prescriber specialty trends: the unknown category increased from 22.0% to 40.7%, related to changes to IQVIA’s categorization of specialty, including now categorizing nurse practitioners (commonly responsible for online pharmacy-run PrEP programs/dispensations) in the unknown category. Family and general practitioners prescribed 50.3% of the PrEP dispensed in Jan-Mar 2021 and 36.6% in Oct-Dec 2022. While residents accounted for a small proportion of the prescribed PrEP, this group represented the largest relative increase (2.03 times more PrEP prescriptions from Jan 2021 to Dec 2022)

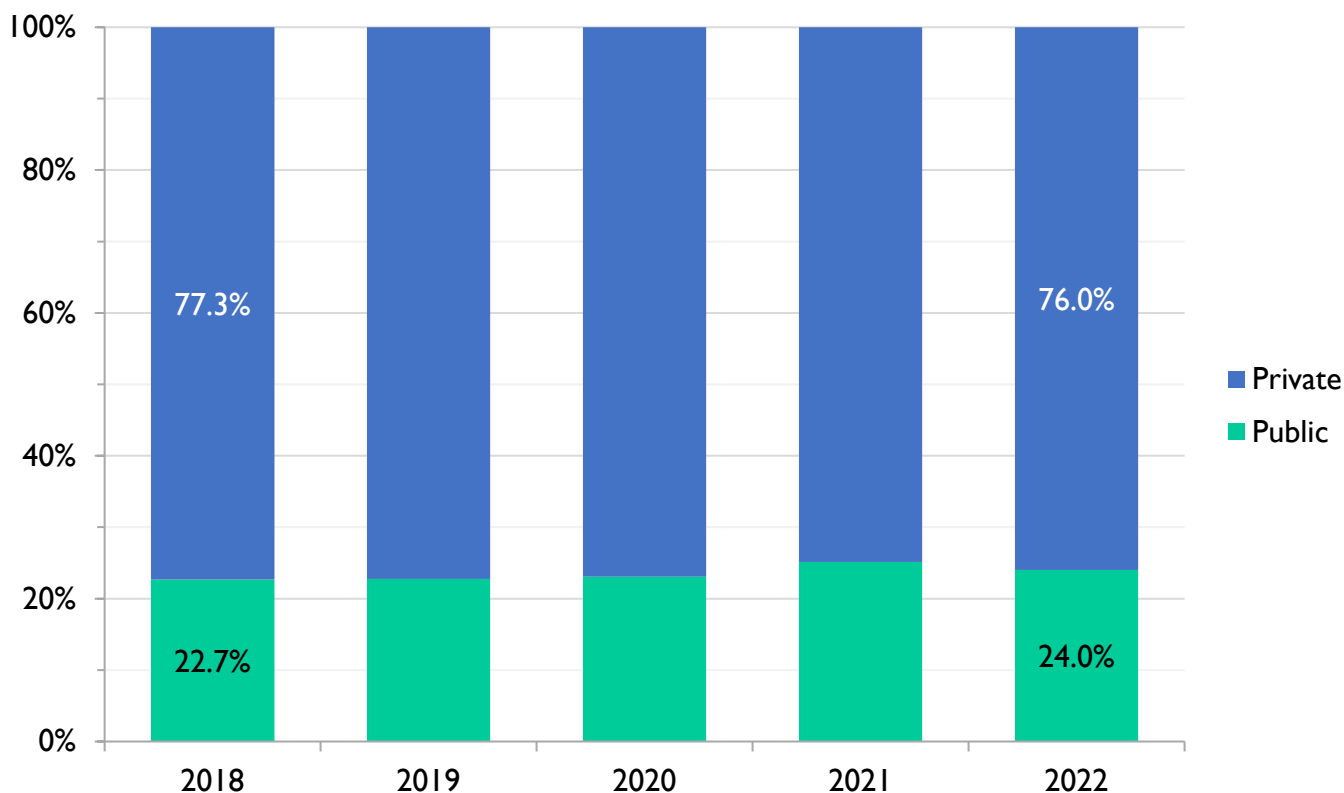
Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. GP = general practice. See **Table 3.2** for underlying data.

5. By payer type

Summary & Interpretation

Between 2018 and 2022, a large majority of the number of individuals who were dispensed PrEP covered the cost through private drug insurance and the proportion who covered the cost through publicly funded programs remained relatively stable. TDF/FTC as PrEP was added to the list of drugs covered through the Ontario Drug Benefit (ODB) program in September 2017 and an expansion of PrEP coverage through this program to those under age 25 (OHIP+) occurred in January 2018. Smaller programs are now in place (such as PrEPStart), helping facilitate the bridge between private and public coverage, providing PrEP for free or at lower cost for a limited period of time. As private drug insurance continues to be the predominant means of payment for PrEP, and this necessitates individuals having employment with private health insurance coverage and/or other means of paying out-of-pocket, economic barriers to accessing PrEP still exist.

FIGURE 5.1 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PAYER TYPE, ONTARIO, 2018 TO 2022 (ANNUAL)



Trends

Between 2018 and 2022, most individuals dispensed PrEP covered the cost of the prescription through private drug insurance. The proportion who covered the cost through publicly funded programs reached its highest point of 25.1% in 2021, and was 24.0% in 2022.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. Dispensations paid for out-of-pocket not included. PrEP = pre-exposure prophylaxis. See **Table 4.1** for underlying data.

6. By region

Summary & Interpretation

The Toronto region (Downtown and not Downtown) had by far the largest number of PrEP dispensations between 2018 and 2022, accounting for most (61.0%-63.4%) PrEP dispensations in each of those years. The number of PrEP dispensations in Toronto continued to increase substantially each year, reaching 9,050 PrEP dispensations in 2022. The majority of the Toronto dispensations came from pharmacies located in the Downtown area (73.4%), while 26.6% were from “Toronto – Not downtown”. From 2021 to 2022, the greatest relative increase in PrEP dispensations was in the Eastern region (70.9%), followed by Northern (39.4%), Central East (28.5%), and South West (26.0%) regions.

The estimated rate of PrEP dispensations per 100,000 people by public health unit (PHU) was highest in City of Toronto Health Unit (299.1 per 100,000) and City of Ottawa Health Unit (159.3). Both Toronto and Ottawa regions also recorded the highest rate of PrEP dispensations when grouped by larger region, followed by Central West region (41.9) and South West region (41.7)

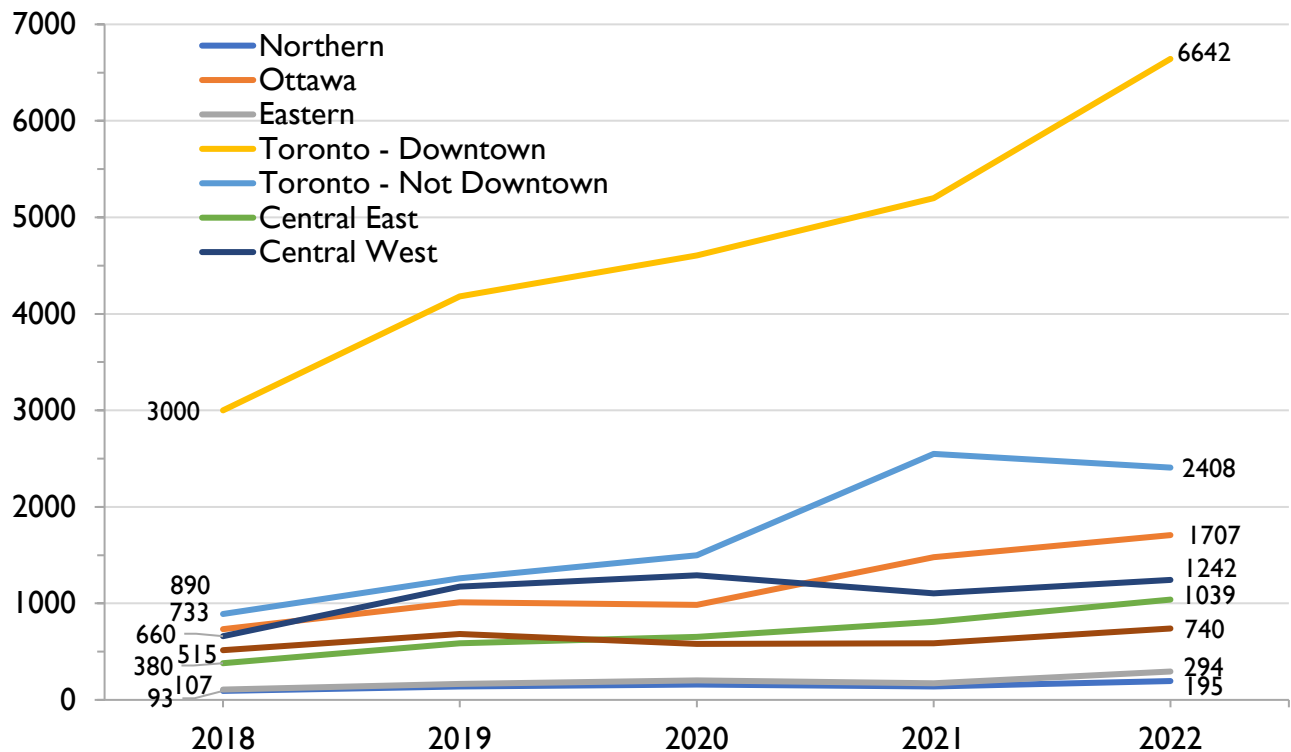
The estimated “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden within a population, where higher numbers indicate more optimal HIV prevention) presented variations in all regions between 2018-2022. The highest “PrEP-to-need ratio” in 2022 was in Ottawa region (37.9), followed by Toronto region (31.2), South West region (21.8) and Eastern region (15.5). Larger urban areas such as Toronto and Ottawa may have more individuals who are eligible to take PrEP and/or clinicians who are comfortable prescribing PrEP, as well as a higher rate of HIV testing and diagnoses, all which can affect the PrEP-to-need ratios.

Note: This section refers to PrEP dispensations rather than PrEP users to emphasize that reported information on the geographic location is the location of the pharmacy where the prescription was dispensed and not necessarily where the individual lives. Beginning in November 2021, a virtual PrEP clinic began to offer PrEP online assessments and care, financial assistance program help, dispensation through their partner pharmacy (Affirming Care Ontario) located in Peel (Central East Region), and free delivery of medications within and outside of Ontario. Using information provided by the virtual clinic, we were able to redistribute those mailed dispensations based on the postal codes of the people who received the PrEP, and that information is reflected in the figures and counts. A more detailed explanation of the methods can be found in the [technical notes](#).

The Toronto PHU is broken down into Toronto-Downtown and Toronto-Not Downtown in some analyses. Toronto-Downtown included the loose geographic boundary of the Don Valley Parkway to the East, Lake Ontario to the South, Bathurst St. to the West and Dupont St. to the North. Toronto-Not Downtown included all other postal codes beginning with “M” not listed in the Toronto-Downtown geographic region.

A map and more detailed description of the geographic regions are available [here](#).

FIGURE 6.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)



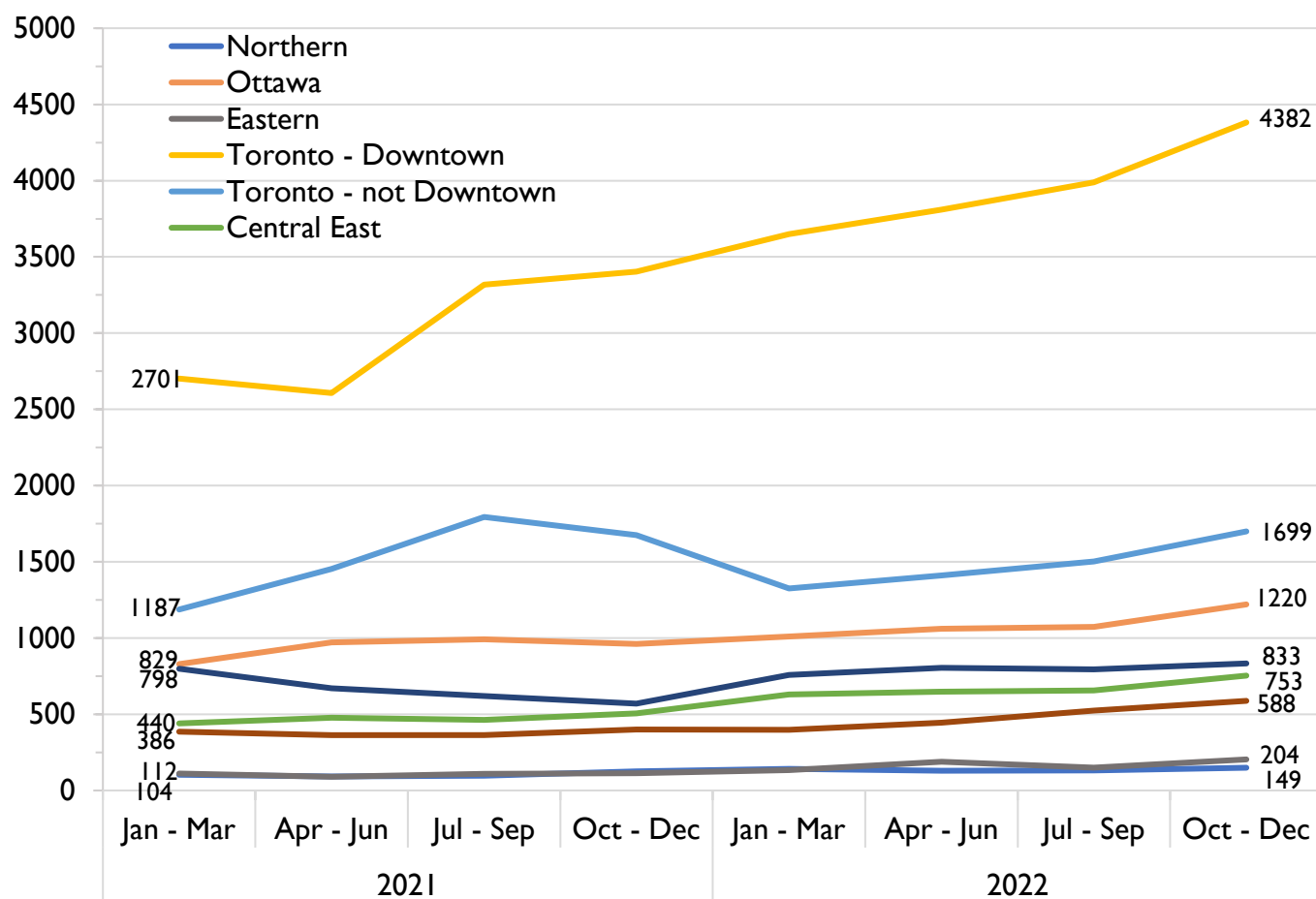
Region	2018	2022
Toronto - Downtown	3,000	6,642
Toronto – Not Downtown	890	2,408
Ottawa	733	1,707
Eastern Region	107	294
Northern Region	93	195
Central East	380	1,039
Central West	660	1,242
South West	515	740

Trends

Between 2018 and 2022, the number of PrEP dispensations increased in all regions. Across all five years, the largest number of PrEP dispensations were from pharmacies in the Toronto region, primarily from pharmacies in downtown Toronto. An increase was seen in most regions from 2021 to 2022, with the greatest relative increase being in the Eastern Region (70.9%), followed by Northern (39.4%), Central East (28.5%), Toronto – Downtown (27.7%), South West (26.0%), Ottawa (15.4%) and Central West (12.6%). A decrease of 5.5% was seen in Toronto-not downtown.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. See technical notes for detailed information on the [Geographic regions](#). See **Table 5.1** for underlying data.

FIGURE 6.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)



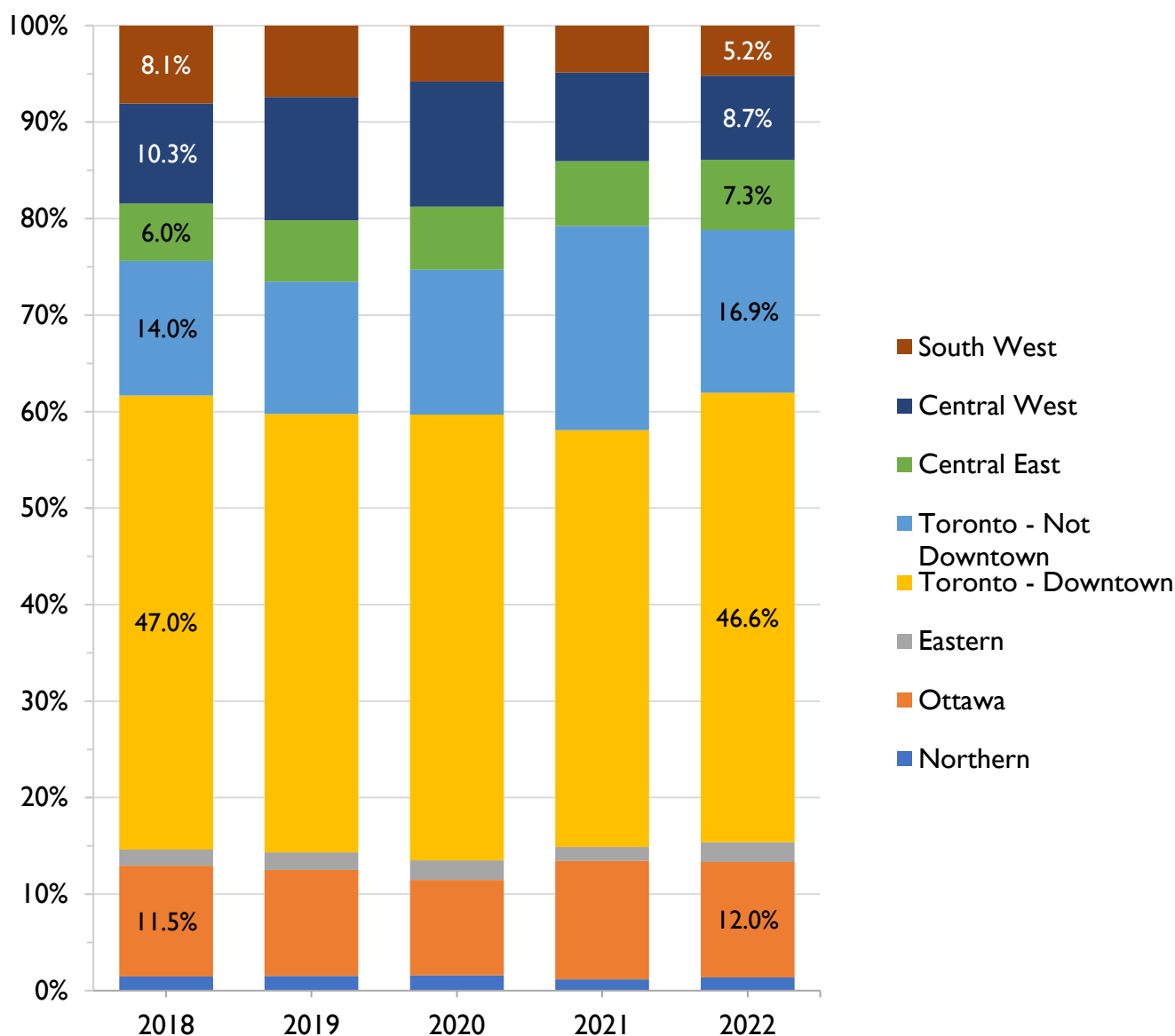
Region	Jan-Mar 2021	Oct-Dec 2022
Toronto – Downtown	2,701	4,382
Toronto – Not Downtown	1,187	1,699
Ottawa	829	1,220
Eastern Region	115	204
Northern	104	149
Central East	440	753
Central West	798	833
South West	386	588

Trends

Between Jan 2021 and Dec 2022, the number of PrEP dispensations increased in all regions. In all quarters over those two years, the largest number of PrEP dispensations were from pharmacies in the Toronto - Downtown region. The greatest relative increase in PrEP dispensations in the province was seen in the Eastern region (81.9%), followed by Central East (71.2%), Toronto – Downtown (62.2%), South West (52.3%), Ottawa (47.2%) and Northern (43.5%), Toronto – not Downtown (43.1%) regions.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. See technical notes for detailed information on the [Geographic regions](#). See **Table 5.2** for underlying data.

FIGURE 6.3 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)

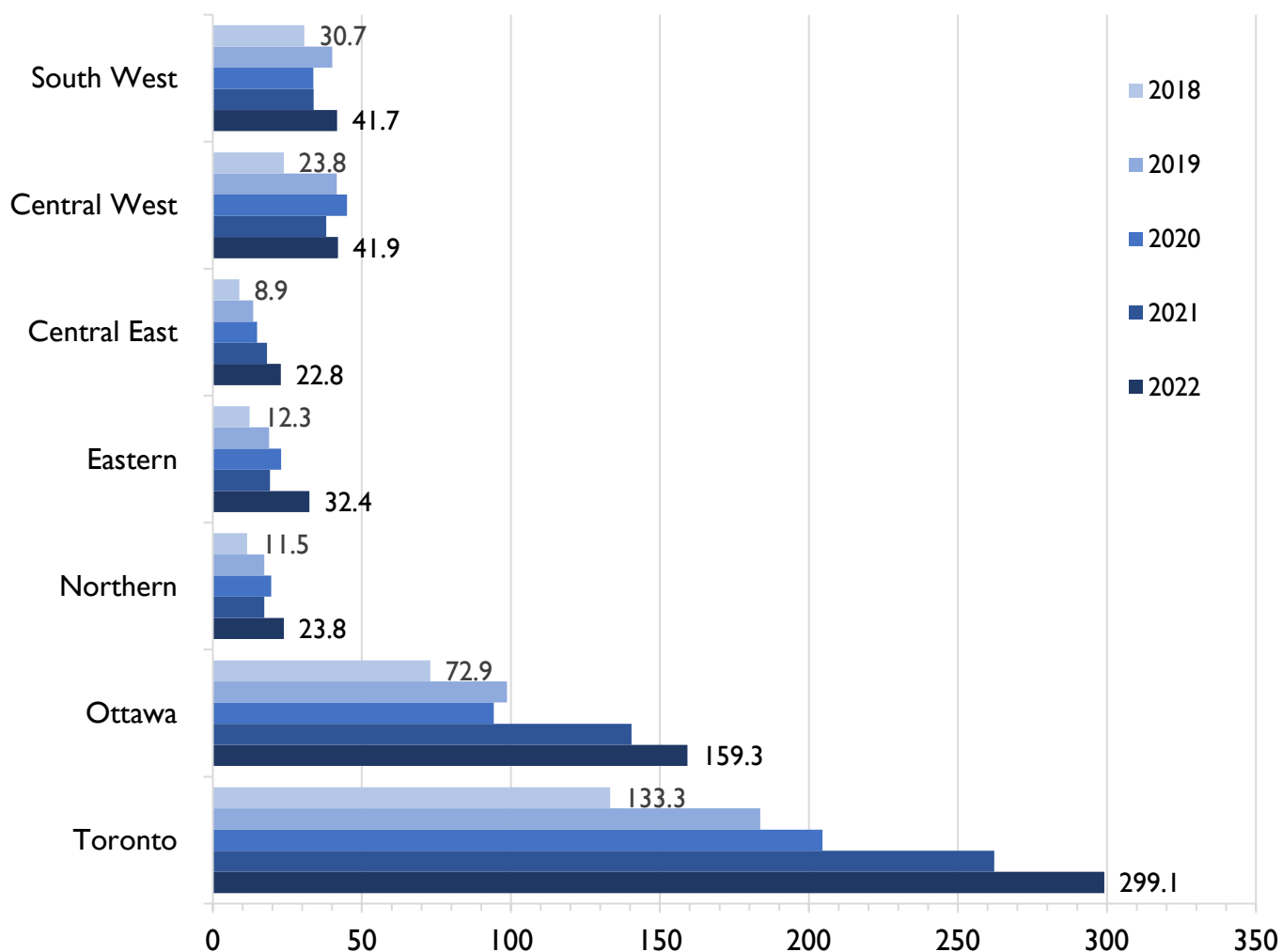


Trends

Between 2018 and 2022, most PrEP dispensations were from pharmacies in the Toronto-Downtown region also accounting for the highest proportion of dispensation over this time (47.0% in 2018 to 46.6% in 2022). From 2018 to 2022, the proportion of PrEP dispensations remained stable in Toronto (Downtown and Not downtown), Ottawa and Northern regions; decreased in Central West and South West regions, and increased in the Eastern and Central East regions.

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Quarterly data represents the estimated number of unique individuals dispensed PrEP at least once during the three-month period. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. See technical notes for detailed information on the [Geographic regions](#). See **Table 5.1** for underlying data.

FIGURE 6.4 ESTIMATED RATE OF INDIVIDUALS DISPENSED PrEP PER 100,000 PEOPLE BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)



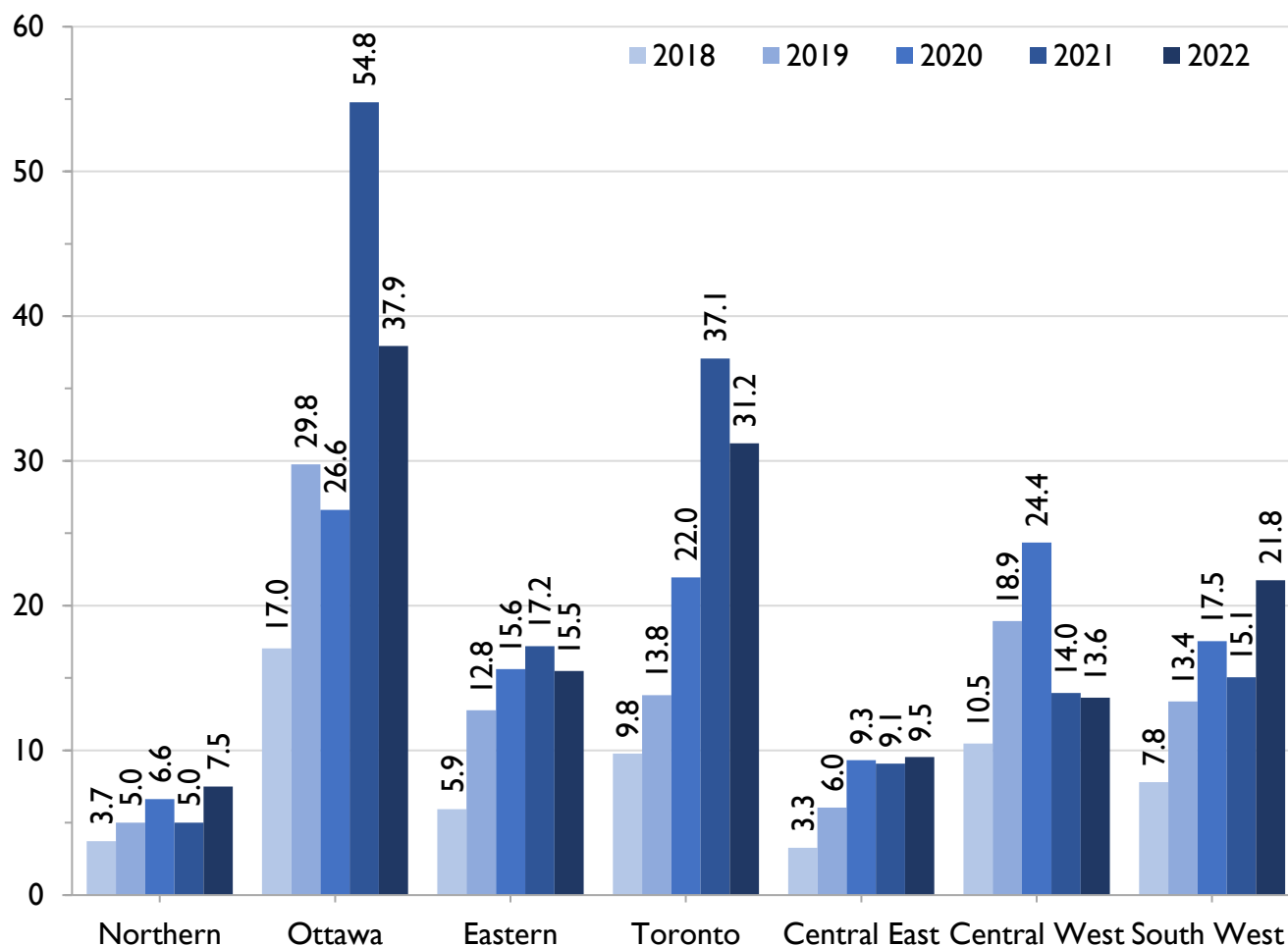
Trends

Between 2018 and 2022, the highest estimated rate of PrEP dispensations per 100,000 people was consistently in the Toronto region, ranging from 133.3 per 100,000 people to 299.1 per 100,000 people. During this time, the rate of PrEP dispensations per 100,000 people increased in all regions. From 2018 to 2022, the Eastern region saw the greatest relative increase (2.6 times), followed by Central East (2.6), Toronto (2.2 times) and Ottawa (2.2 times) regions. From 2021 to 2022, PrEP dispensations increased in all regions, with the greatest relative increase being in the Eastern region (68.5%).

Province-wide, the overall rate of PrEP dispensations per 100,000 people increased from 44.6 in 2018 to 94.4 in 2022 (2.1 times increase).

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Population estimates for all ages retrieved from Statistics Canada. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. “Toronto – Downtown” and “Toronto – Not Downtown” aggregated in this figure. See technical notes for detailed information on the [Geographic regions](#). See **Table 5.3** for underlying data.

FIGURE 6.5 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)



Trends

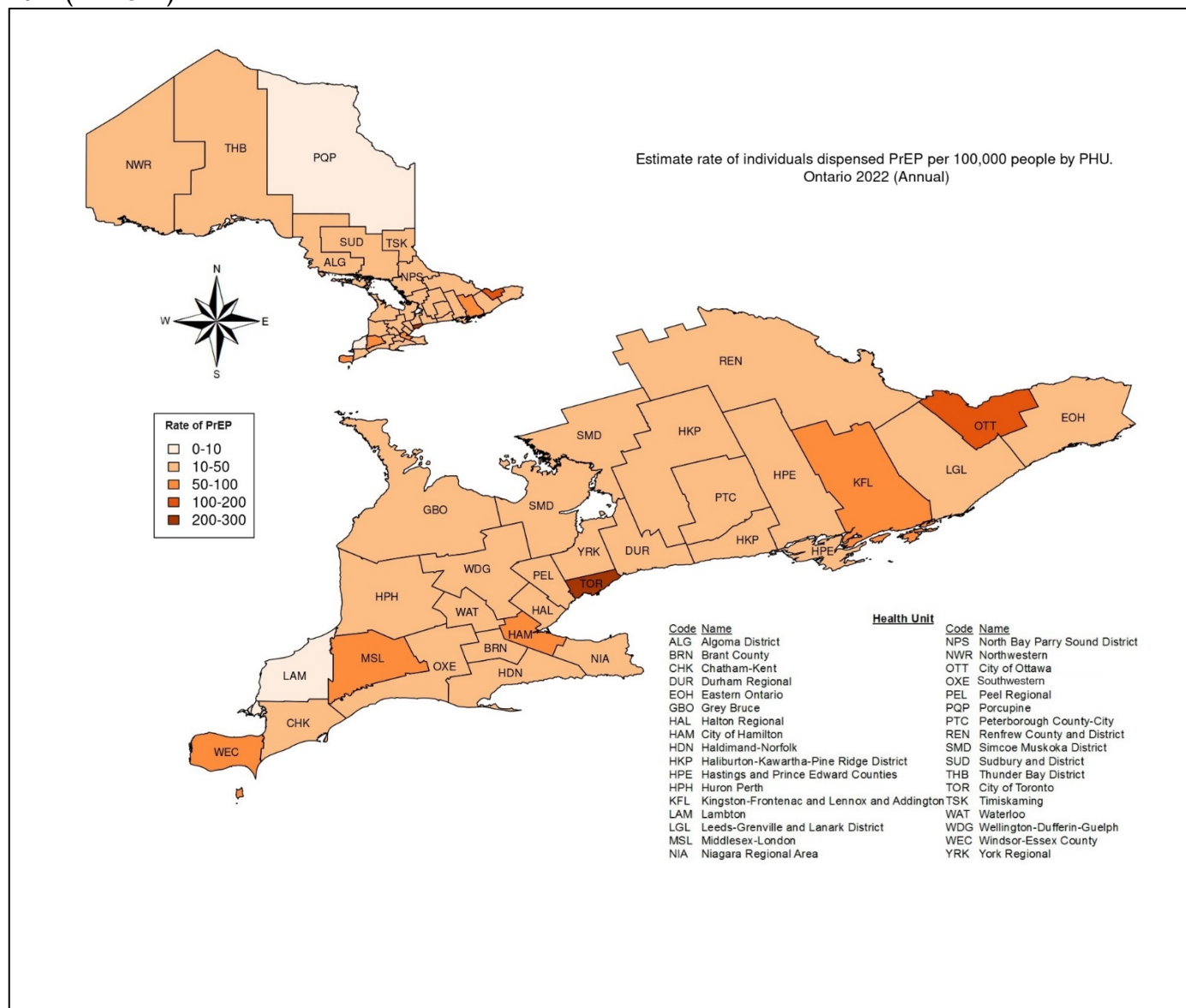
The “PrEP-to-need ratio” is a calculated ratio of PrEP dispensations to first-time HIV diagnoses as an attempt to quantify PrEP provision relative to HIV burden (first-time HIV diagnoses) within a population. Therefore, higher numbers indicate more optimal HIV prevention efforts.

Between 2018 and 2022, the “PrEP-to-need ratio” differed across all regions. This ratio was highest in Ottawa region all years, reaching 54.8 in 2021, its all time high. From 2018 to 2022, the greatest relative increase was in the Toronto region (3.2 times) and Central East (2.9 times). Whereas from 2021 to 2022, the greatest relative increase was in the Northern (1.50 times) and South West (1.45 times) regions.

Province-wide, the overall estimated ratio of PrEP dispensations to first-time HIV diagnoses increased from 8.7 in 2018 to 23.2 in 2022, with the highest being in 2021 at 25.0.

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Regions based on address of dispensing pharmacy and are broader aggregations of previous smaller regions. First-time HIV diagnoses data provided by Public Health Ontario (PHO). PrEP = pre-exposure prophylaxis. See technical notes for information on the [Geographic regions](#) and [First-time HIV diagnoses](#). See **Table 5.4** for underlying data.

FIGURE 6.6 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY PHU, ONTARIO 2022(ANNUAL)



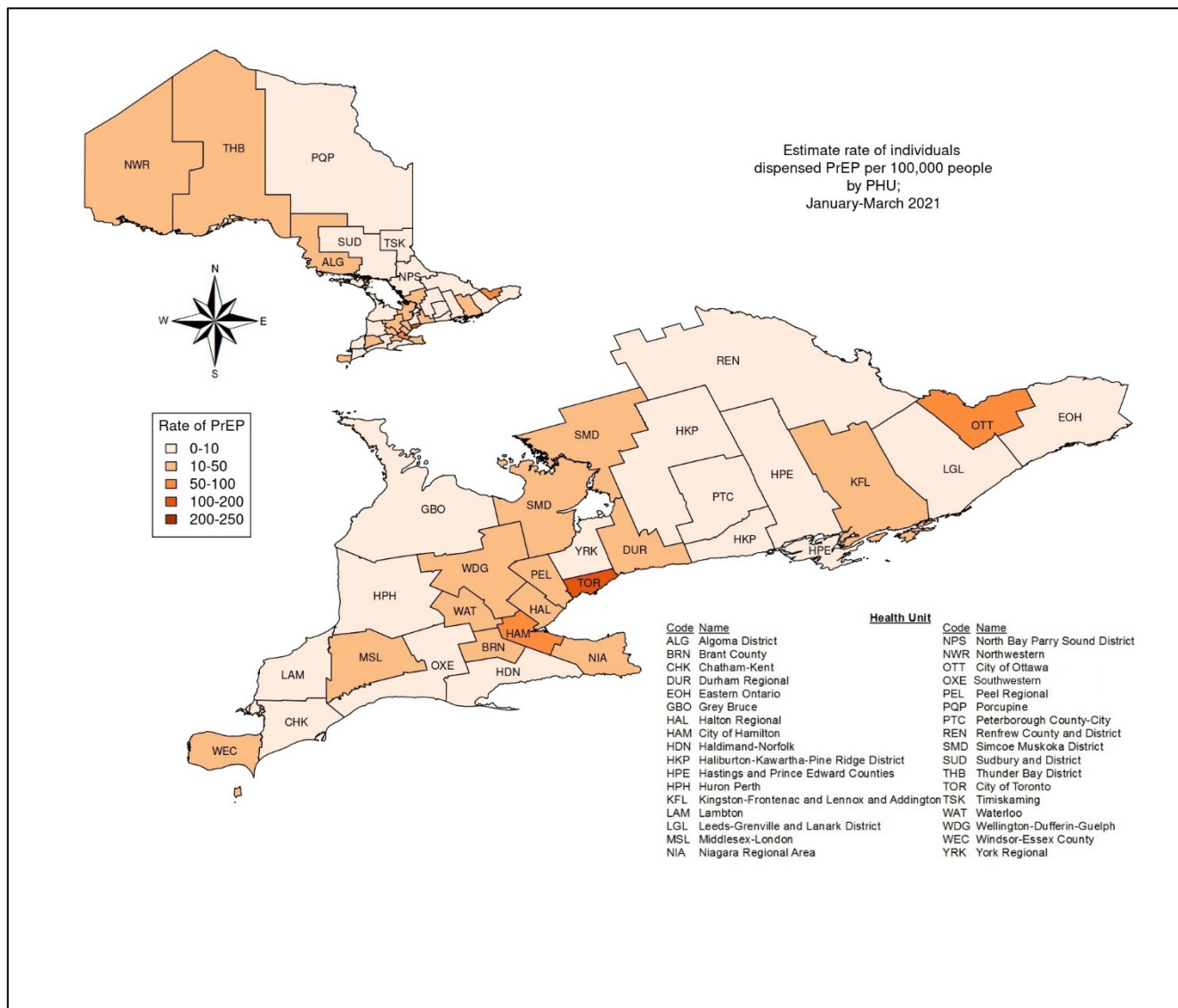
Trends

In 2022, the city of Toronto Health Unit accounted for the highest PrEP dispensation rate in Ontario, (299.1 PrEP dispensed per 100,000 people), followed by the city of Ottawa (159.3), the city of Hamilton Health Unit (84.1) and Middlesex-London Health Unit (65.3). The lowest PrEP dispensation rate per 100,000 people was recorded in the Lambton Health Unit (8.1) and Porcupine Health Unit (8.0).

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. See technical notes for detailed information on the [Geographic regions](#). See [Table 5.5](#) for underlying data.

FIGURE 6.7 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY PHU, ONTARIO
 A) JAN-MAR 2021 B) OCT-DEC 2022

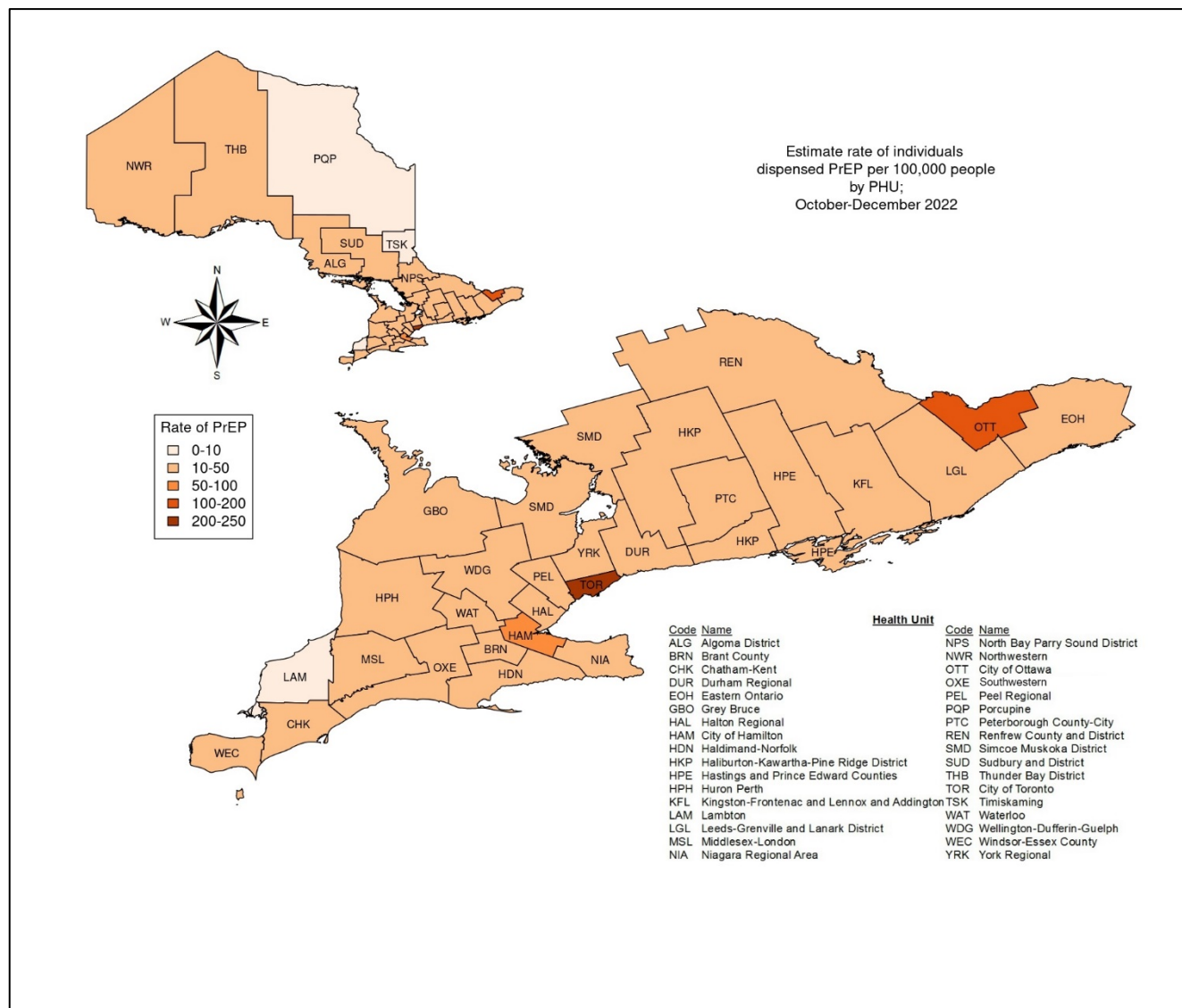
A) Jan-Mar 2021



Trends

In Jan-Mar 2021, the city of Toronto Health Unit accounted for the highest dispensation rate in Ontario: 131.5 PrEP dispensed per 100,000 people, followed by the city of Hamilton Health unit (79.8) and the city of Ottawa Health Unit (78.8). The lowest dispensation rates per 100,000 people were recorded in Porcupine Health Unit (1.2), Timiskaming Health Unit (2.9) and Haldimand-Norfolk Health Unit (3.3).

B) Oct-Dec 2022



Trends

In Oct-Dec 2022, the city of Toronto Health Unit accounted for the highest dispensation rate in Ontario, at a rate of 201.0 PrEP dispensed per 100,000 people, followed by city of Ottawa Health Unit (113) and the city of Hamilton Health Unit (50.8), which had a relative decrease of 36.3% compared to Jan-Mar 2021. An increase in dispensation rates per 100,000 was seen in most PHUs from Jan-Mar 2021 to Oct-Dec 2022, with the greatest relative increase being recorded in Renfrew County & District Health Unit (5.5 times), followed by Porcupine Health Unit (5.2 times, small numbers), Eastern Ontario Health Unit (3.7 times) and Chatham-Kent Health Unit (3.6 times). The city of Hamilton Health Unit and Middlesex-London Health Unit were the only PHUs with a decrease in PrEP dispensation rates from Jan-Mar 2021 to Oct-Dec 2022.

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2021-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the estimated number of unique individuals dispensed PrEP at least once during the year. Region based on address of dispensing pharmacy. PrEP = pre-exposure prophylaxis. See technical notes for detailed information on the [Geographic regions](#). See **Table 5.6** for underlying data.

TECHNICAL NOTES

Data sources:

IQVIA: Individuals dispensed PrEP

The dispensation data used in this report was acquired from IQVIA (www.iqvia.com). IQVIA used its retail pharmacy drug dispensation database, which captures 70% of retail prescriptions in Ontario, excluding hospital dispensaries. Any analysis of IQVIA data is arrived at independently and IQVIA is not responsible for any reliance by recipients of the data or any analysis thereof. The analyses, conclusions, opinions and statements expressed herein are those of the author(s) and not necessarily those of IQVIA.

Dispensation data provided to IQVIA is de-identified, but linkable for the same person using anonymous identifiers, allowing for IQVIA to conduct counts of unique individuals. These anonymous identifiers are assigned at the pharmacy-level. See [Limitations](#) for explanation of possible miscounts or misclassifications.

IQVIA projects their data to the provincial-level using standardized proprietary weighting methods. Weights are calculated using data on the total number of antiretroviral medication sales in Ontario (acquired by IQVIA directly from pharmaceutical companies). The weighting method considers the number of pharmacies in a given area, the distance between IQVIA-captured and uncaptured pharmacies, and the size of the pharmacies. To provide a measure of precision for these projected estimates, IQVIA validated them against its census sales database for Ontario, which measures the actual sales of pharmaceutical products sold indirectly through wholesalers and chain warehouses, as well as directly from the manufacturers to retail pharmacies. This validation found that estimates were within ~2% for the total antiretroviral market overall (~1% for brand name products and ~7% for generic products, based on Ontario year end 2022 data).

IQVIA updated their methods of assigning prescriber specialty to PrEP dispensations. In the PrEP dispensation data, they use Claims (public and private) to assess a Patient's indication and stratify those dispensations based on geography, payer type, age, sex and physician specialty. The public Claims dataset does not identify if the dispensation was prescribed by a nurse practitioner, whereas the private drug plan dataset does. As only part of the IQVIA dataset had nurse/nurse practitioner specialty known, it was decided that no information on nurse/nurse practitioner specialty would be released and all those dispensations would be assigned "unknown" for prescriber specialty. We know from previous IQVIA data deliveries that nurse practitioner was the fastest growing physician specialty prescribing PrEP in Ontario. As such, the proportion of dispensations assigned "unknown" prescriber specialty has increased from 13.0% in 2018 to 40.9% in 2022.

Freddie/Affirming Care Ontario

Beginning in November 2021, Freddie (goFreddie.com), an online PrEP dispensing clinic began to offer online PrEP assessments, dispensation, and free delivery of PrEP throughout Ontario and Canada through their partner pharmacy (Affirming Care Ontario) located in the Peel region. IQVIA categorizes PrEP dispensations by geography based on the location of the dispensing pharmacy. As most PrEP dispensations from the Affirming Care Ontario pharmacy do not remain in the Peel region, an overestimation of PrEP

dispensations was attributed to the Peel region in the IQVIA data. To adjust for this, we acquired additional IQVIA data on the number of PrEP dispensations associated with the FSA in which the Affirming Care Ontario pharmacy is located. IQVIA estimated that the vast majority of the dispensations from that FSA could be attributed to the Affirming Care Ontario pharmacy. Freddie then provided a non-identifiable dataset of all PrEP dispensations from the Affirming Care Ontario pharmacy between April 1st and July 31st 2023 including drug name (TDF/FTC or TAF/FTC), quantity dispensed and FSA where dispensation was mailed to. These dispensations were then aggregated to PHU level data based on FSA (including the additional split of the Toronto PHU into Toronto – downtown and Toronto – not downtown) and analyzed to determine the proportion of dispensations being sent to each PHU across Ontario. The number of PrEP dispensations attributed to the Affirming Care Ontario pharmacy were then redistributed proportionally across Ontario according to the Freddie data. These new counts of estimated PrEP dispensations by region were used for all further regional analyses (counts, rates and PrEP-to-need ratios by region). As other online PrEP clinics emerge, more data adjustment will be necessary.

First-time HIV diagnoses

This report uses counts of first-time HIV diagnoses in 2018 through to 2022 in calculations of ratios of number of individuals dispensed PrEP to number of first-time HIV diagnoses (PrEP-to-need ratios) by sex, GBMSM exposure category and across seven regions defined by the Ontario HIV Epidemiology and Surveillance Initiative (OHESI). These data were provided to the OHTN by Public Health Ontario (PHO). First-time diagnoses are positive HIV tests with no previous evidence of HIV. Therefore, they exclude anyone with a previous documented positive diagnostic test, either inside or outside of Ontario. PHO also uses linked viral load testing history in Ontario as evidence of being in care for HIV and so excludes from first-time HIV diagnoses: 1) anyone with a history of viral load testing in Ontario of more than 30 days before a first diagnostic positive test and 2) anyone with viral load testing in Ontario within 30 days (including same day) with a viral load <200 copies/mL. More information about first-time HIV diagnoses, their definition and limitations, can be found in the OHESI blogpost “[HIV diagnoses in Ontario: Refinements to surveillance data in the 2018 reports](#)”.

PrEP use by covariates

The estimated number of PrEP users is stratified by sex (male/female), age (10-year categories), prescriber specialty, payer type (public/private) and public health units within Ontario.

Information on the individual (sex and age) was captured in the pharmacy profile which is created by the pharmacist during the first transaction at the pharmacy. Age was confirmed via the patient’s record for the Ontario Drug Benefit (ODB) program or the private payer depending on the individual’s coverage. The “sex” field is completed at the discretion of the pharmacist and can include ‘male’, ‘female’ and ‘unknown’ gender. No distinction or specification can be made about this ‘other’ category, other than the ‘male’ or ‘female’ options were not selected and there is no clear guidance on how transgender identity was categorized.

Prescriber specialty was assigned when the physician license is matched with IQVIA’s internal reference files on specialty from the college of physicians. Payer type was assigned to the highest reimbursement on the prescription. That is, if a patient has a co-pay, and the private portion covers a larger percentage of the total cost, the prescription is assigned to the private payer type.

Geographic breakdowns of PrEP dispensations were based on the location of the dispensing pharmacy and categorized into Public Health Units (PHUs). The Toronto PHU was further broken down into Toronto-Downtown and Toronto-Not Downtown. Toronto-Downtown included the loose geographic boundary of the Don Valley Parkway to the East, Lake Ontario to the South, Bathurst St. to the West and Dupont St. to the North. Toronto-Not Downtown included all other postal codes beginning with “M” not listed in the Toronto-Downtown geographic region. The regions and a corresponding map are discussed further in the [geographic regions](#) technical notes section.

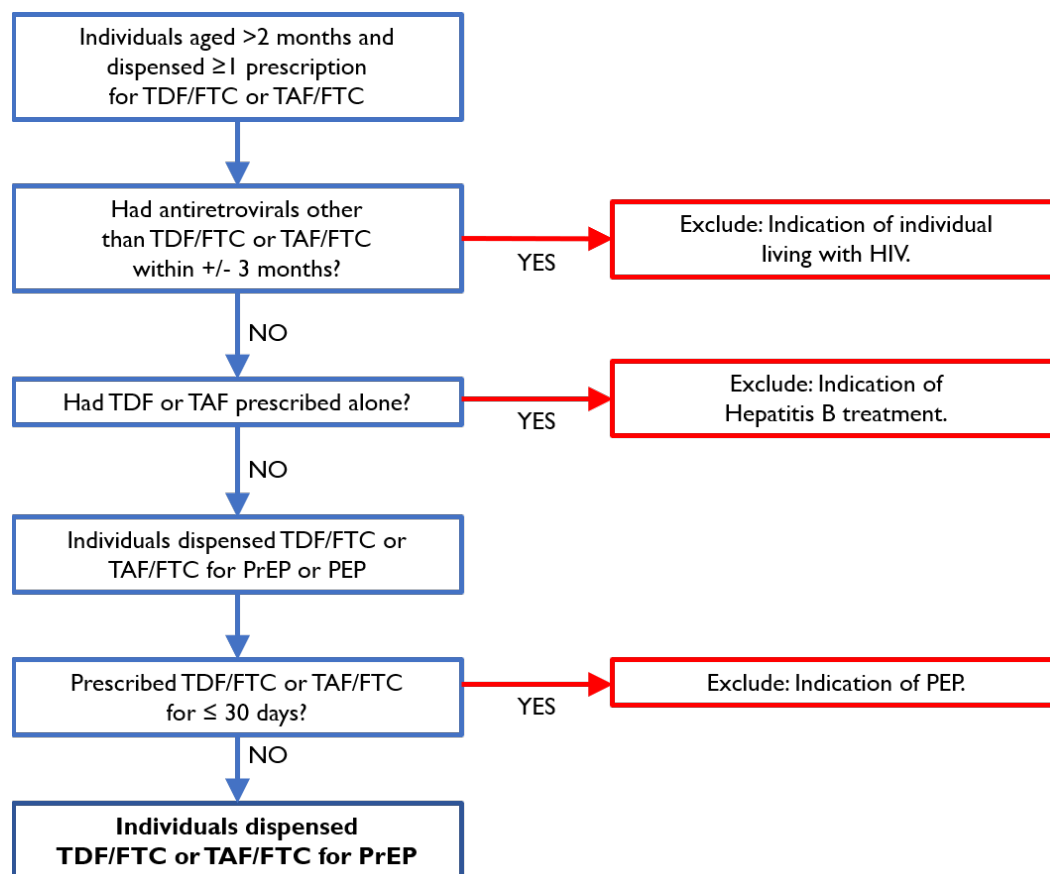
The “PrEP-to-need ratio²” (a calculated measure of PrEP provision relative to HIV burden [first-time HIV diagnoses] within a population, where larger numbers indicate more optimal HIV prevention) was calculated by sex, by gay, bisexual and other men who have sex with men (GBMSM) key population and by geographic region. Reported counts of first-time HIV diagnoses were obtained through the Ontario HIV Epidemiology and Surveillance Initiative (www.OHESI.ca). First-time HIV diagnoses are positive HIV tests with no previous evidence of HIV, that is, people receiving and HIV diagnoses for the first time. Further details on first-time HIV diagnoses are discussed above. There is no known cut-off of the PrEP-to-need ratio that indicates PrEP use has reached some optimal level of HIV prevention or that indicates an ideal level of PrEP coverage. Furthermore, the PrEP-to-need ratio does not assess PrEP appropriateness or eligibility – that is, whether people are taking PrEP when indicated by clinical guidelines. This report does not have access to risk information to assess PrEP appropriateness, rather it uses the PrEP-to-need ratio as a construct to explore disparities or similarities across other indicators and helps give context to PrEP uptake.

² More information about the PrEP-to-need ratio can be found here: <https://pubmed.ncbi.nlm.nih.gov/29983236/>

Indication decision tree

For this report, we acquired the estimated number of individuals dispensed branded or generic TDF/FTC OR branded TAF/FTC. These antiretroviral medications can be used for a variety of purposes (i.e. indications) including HIV treatment, post-exposure prophylaxis (PEP), PrEP and hepatitis B virus treatment. However, IQVIA does not collect data on indication and therefore an indication decision tree was developed to assign this information to each individual (see Figure ii below). Some of the parameters (such as the length of time to classify as “post-exposure prophylaxis” or “antiretroviral therapy”) were chosen based on clinical judgement. Of note, the indication decision tree has not been validated for either the dispensation data or physician prescription data and therefore may misclassify some dispensations. Sensitivity analyses could not be carried out on the underlying assumptions. The acquired dispensation data was stratified by indication and sex, age, prescriber specialty, payer type and geography (geographic region of dispensation). On-demand PrEP use exists but is estimated to make up a small proportion of the total number of PrEP dispensations. It is unclear how the majority of on-demand PrEP prescriptions are being dispensed, and there may be some misclassification if first-time on demand PrEP dispensations are only one bottle (30-day quantity).

FIGURE II. DECISION TREE USED TO DEFINE DISPENSATIONS OF TDF/FTC OR TAF/FTC AS PREP



Notes: TDF/FTC = tenofovir disoproxil fumarate-emtricitabine. TAF/FTC = tenofovir alafenamide-emtricitabine. PrEP = Pre-Exposure Prophylaxis. PEP = Post-Exposure Prophylaxis.

Limitations

The numbers in this report represent our best estimates of unique PrEP users in the province. Double-counting individuals in the quarterly data is possible. For example, an individual would be counted twice if they fill TDF/FTC or TAF/FTC prescriptions at two different pharmacies during the same calendar quarter. However, if multiple TDF/FTC or TAF/FTC dispensations from the same pharmacy occurs, the individual will not be double-counted as identifiers used to link individuals are assigned at the pharmacy-level. Alternatively, individuals regularly taking PrEP but filling prescriptions irregularly (e.g. early or late) could potentially be missed in adjacent calendar quarters - leading to underestimation.

Misclassification is possible if portions of prescriptions are filled at more than one pharmacy in the same quarter. For example, if an HIV-positive individual on antiretroviral treatment (ART) fills a prescription containing TDF/FTC or TAF/FTC at one pharmacy and the remainder of their ART regimen at a different pharmacy, the first dispensation would be misclassified as PrEP and the second correctly classified as ART. This is because dispensations from different pharmacies are not linkable at the individual level.

With respect to the IQVIA data, this report did not assess the appropriateness of PrEP dispensation (e.g. whether PrEP was indicated based on the risk factors for that individual). The comparison of population rates by geography provided a crude comparison which accounts for overall population size. It does not account for HIV risk or appropriateness of PrEP in a jurisdiction. The ratios between number of individuals prescribed PrEP and the number of first-time HIV diagnoses (“PrEP-to-need ratio”) provide some measure of PrEP uptake relative to HIV diagnoses (a proxy measure of HIV incidence), though these also do not reflect PrEP appropriateness at the level of the individual.

Geographic regions

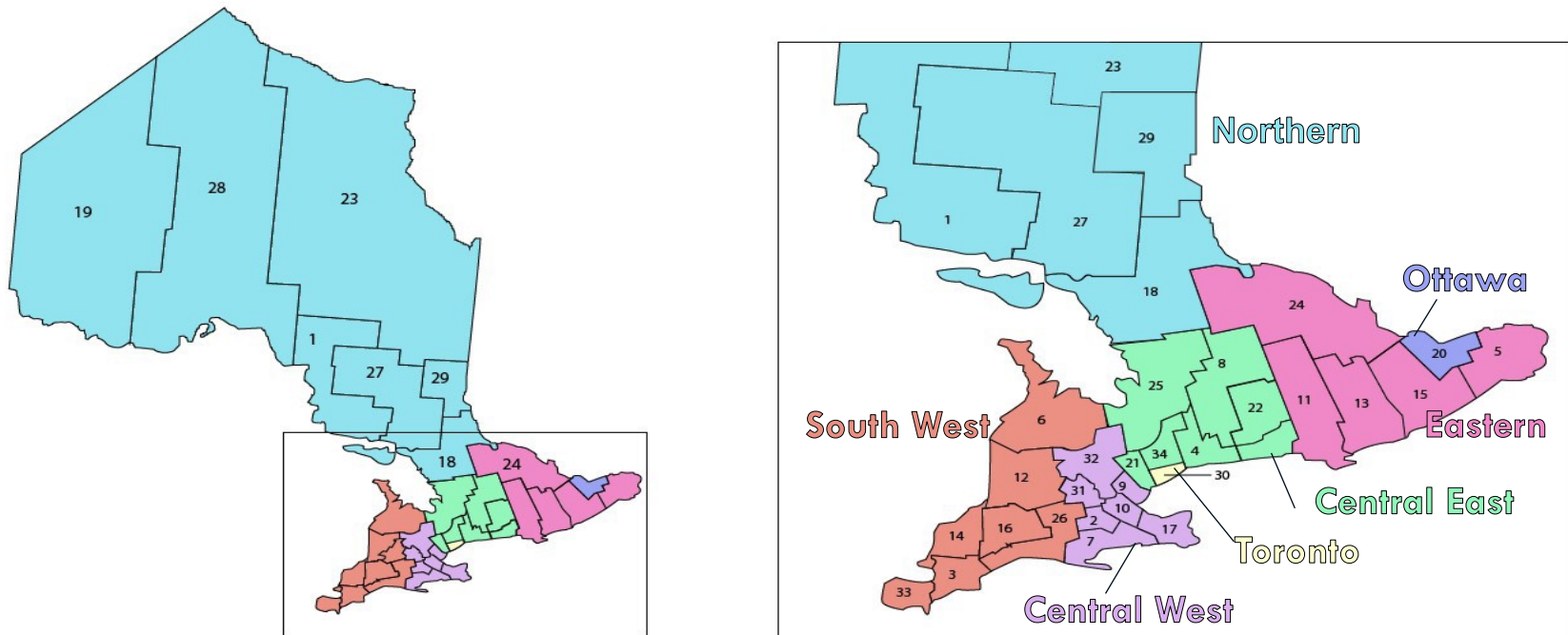
This report utilizes data provided at a Public Health Unit level, which was analysed by PHU and also combined into existing OHESI geographic regions for a better presentation and due to privacy issues. Often, geographic regions are presented first as Toronto – Downtown, Toronto – Not Downtown, Ottawa, Northern, Eastern, Central East, Central West and South West, and then broken down by PHU. The “Toronto – Downtown” and “Toronto – Not Downtown” regions were grouped together when estimating the rates per 100,000 people. Ratios pertaining to first-time HIV diagnoses by region (PrEP-to-need ratios) are reported by larger OHESI health regions.

OHESI regions used in ratios to first-time HIV diagnoses	Corresponding public health unit (or FSAs in Toronto)
Toronto	Toronto - Downtown - Forward sortation areas (FSAs): M4W, M4X, M4Y, M5A, M5B, M5C, M5E, M5G, M5H, M5J, M5K, M5L, M5R, M5S, M5T, M5V, M5W, M5X
	Toronto - Not downtown - All other FSAs starting with M not listed above
Ottawa	Ottawa
Northern	Northwestern; Thunder Bay; Algoma; North Bay Parry Sound; Porcupine; Sudbury; Timiskaming
Eastern	Eastern Ontario; Hastings and Prince Edward Counties; Kingston, Frontenac, Lennox & Addington; Leeds, Grenville and Lanark; Renfrew
Central East	Durham; Peel; York; Haliburton, Kawartha, Pine Ridge; Peterborough; Simcoe Muskoka
Central West	Waterloo; Wellington-Dufferin-Guelph; Brant; Haldimand-Norfolk; Hamilton; Niagara; Halton
South West	Grey Bruce; Huron Perth; Middlesex-London, Southwestern; Chatham-Kent; Lambton; Windsor-Essex

Notes: FSA: forward sorting address. PrEP dispensations are assigned to a region based on the address of the dispensing pharmacy. For an individual dispensed PrEP more than once in a calendar period, the geographic location corresponding to each pharmacy (if more than one in different geographic locations) is reflected in the quarterly data. The geographic location associated with the most recent dispensation is selected to be representative in the yearly data.

Health regions map

FIGURE III. MAP OF GEOGRAPHIC REGIONS ENCOMPASSING PUBLIC HEALTH UNIT BOUNDARIES (LARGER OHESI REGIONS REPRESENTED BY COLOUR; CREATED USING STATISTICS CANADA BOUNDARY FILES, 2020).



Public health units (map legend)

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

DATA TABLES

1. Overall and by sex

TABLE I.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP, OVERALL AND BY SEX, ONTARIO, 2018 TO 2022 (ANNUAL)

Year	Overall	Males		Females	
		n	Row %	n	Row %
2018	6,504	6,288	96.9%	199	3.1%
2019	9,357	9,037	96.8%	301	3.2%
2020	9,607	9,787	97.1%	295	2.9%
2021	11,042	11,762	97.2%	342	2.8%
2022	14,650	14,176	97.2%	403	2.8%

TABLE I.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, OVERALL AND BY SEX, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

Year	Quarter	Overall	Males	Females	Unknown sex
2021	Jan-Mar	6,637	6,475	147	15
	Apr-Jun	6,834	6,653	162	19
	Jul-Sep	7,872	7,653	199	20
	Oct-Dec	7,836	7,611	199	26
2022	Jan-Mar	8,284	8,054	202	28
	Apr-Jun	8,747	8,490	209	48
	Jul-Sep	9,061	8,804	213	44
	Oct-Dec	10,131	9,828	247	56

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis.

TABLE I.3 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), OVERALL, BY SEX AND BY GBMSM KEY POPULATION, ONTARIO, 2018 TO 2022 (ANNUAL)

Year	Overall	Males	Females	GBMSM
2018	8.8	10.9	1.2	18.3
2019	13.7	17.6	1.8	29.5
2020	19.8	24.2	2.8	45.5
2021	25.4	30.9	3.6	58.8
2022	23.7	31.6	2.4	69.5

Notes: GBMSM – Gay, bisexual and other men who have sex with men. This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. HIV diagnoses acquired from Public Health Ontario (PHO). See [First-time HIV diagnoses](#) for more information. PrEP = pre-exposure prophylaxis.

2. By age

TABLE 2.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, MALES, ONTARIO, 2018 TO 2022 (ANNUAL)

	<20		20-29		30-39		40-49		50-59		60+	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2018	64	1.0%	1,307	20.8%	2,283	36.3%	1,457	23.2%	871	13.9%	306	4.9%
2019	118	1.3%	2,122	23.5%	3,031	33.5%	1,995	22.1%	1,283	14.2%	488	5.4%
2020	135	1.4%	2,193	22.4%	3,362	34.4%	2,139	21.9%	1,414	14.4%	544	5.6%
2021	231	2.0%	2,689	22.9%	4,135	35.2%	2,458	20.9%	1,590	13.5%	659	5.6%
2022	275	1.9%	3,224	22.7%	5,077	35.8%	2,909	20.5%	1,822	12.9%	869	6.1%

TABLE 2.2 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, MALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

		<20		20-29		30-39		40-49		50-59		60+	
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2021	Jan-Mar	112	1.7%	1,270	19.6%	2,225	34.4%	1,453	22.4%	1,005	15.5%	410	6.3%
	Apr-Jun	104	1.6%	1,408	21.2%	2,290	34.4%	1,429	21.5%	1,024	15.4%	398	6.0%
	Jul-Sep	133	1.7%	1,617	21.1%	2,621	34.2%	1,662	21.7%	1,130	14.8%	490	6.4%
	Oct-Dec	116	1.5%	1,526	20.0%	2,640	34.7%	1,725	22.7%	1,125	14.8%	479	6.3%
2022	Jan-Mar	148	1.8%	1,666	20.7%	2,840	35.3%	1,795	22.3%	1,106	13.7%	499	6.2%
	Apr-Jun	125	1.5%	1,742	20.5%	2,999	35.3%	1,852	21.8%	1,216	14.3%	556	6.5%
	Jul-Sep	137	1.6%	1,812	20.6%	3,128	35.5%	1,898	21.6%	1,257	14.3%	572	6.5%
	Oct-Dec	146	1.5%	1,978	20.1%	3,481	35.4%	2,138	21.8%	1,404	14.3%	681	6.9%

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis.

TABLE 2.3 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, 2018 TO 2022 (ANNUAL)

	<20		20-29		30-39		40-49		50-59		60+	
	n	Row %	n	Row %	N	Row %	n	Row %	n	Row %	n	Row %
2018	9	4.5%	52	26.1%	67	33.7%	40	20.1%	26	13.1%	≤5	2.5%
2019	11	3.7%	81	26.9%	109	36.2%	62	20.6%	33	11%	≤5	1.7%
2020	12	4.1%	85	28.8%	113	38.3%	48	16.3%	35	11.9%	≤5	0.7%
2021	15	4.4%	111	32.5%	127	37.1%	53	15.5%	30	8.8%	6	1.8%
2022	10	2.5%	127	31.5%	149	37%	77	19.1%	35	8.7%	5	1.2%

TABLE 2.4 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

		<20		20-29		30-39		40-49		50-59		60+	
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2021	Jan-Mar	≤5	3.4%	35	23.8%	69	46.9%	24	16.3%	12	8.2%	≤5	1.4%
	Apr-Jun	10	6.2%	49	30.2%	57	35.2%	22	13.6%	20	12.3%	≤5	2.5%
	Jul-Sep	9	4.5%	66	33.2%	67	33.7%	32	16.1%	21	10.6%	≤5	2.0%
	Oct-Dec	10	5.0%	65	32.7%	62	31.2%	35	17.6%	23	11.6%	≤5	2.0%
2022	Jan-Mar	7	3.5%	60	29.7%	64	31.7%	46	22.8%	23	11.4%	≤5	1.0%
	Apr-Jun	7	3.3%	72	34.4%	67	32.1%	45	21.5%	16	7.7%	≤5	1.0%
	Jul-Sep	10	4.7%	62	29.1%	75	35.2%	44	20.7%	18	8.5%	≤5	1.9%
	Oct-Dec	7	2.8%	72	29.1%	89	36.0%	46	18.6%	28	11.3%	≤5	2.0%

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis.

3. By prescriber specialty

TABLE 3.1 ESTIMATED NUMBER AND PROPORTION (AMONG KNOWN) OF INDIVIDUALS DISPENSED PREP BY PRESCRIBER SPECIALTY, ONTARIO, 2018 TO 2022 (ANNUAL)

	Family and general practice		Infectious diseases		Internal medicine		Residents		Other		Unknown	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2018	3,839	58.2%	1,063	16.1%	336	5.1%	8	0.1%	493	7.5%	857	13.0%
2019	5,099	54.2%	1,826	19.4%	565	6.0%	16	0.2%	585	6.2%	1,314	14.0%
2020	5,408	53.1%	2,006	19.7%	553	5.4%	22	0.2%	237	2.3%	1,957	19.2%
2021	5,308	43.7%	2,090	17.2%	632	5.2%	89	0.7%	174	1.4%	3,846	31.7%
2022	5,414	36.9%	2,210	15.0%	701	4.8%	134	0.9%	226	1.5%	6,001	40.9%

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis.

TABLE 3.2 ESTIMATED NUMBER AND PROPORTION (AMONG KNOWN) OF INDIVIDUALS DISPENSED PREP BY PRESCRIBER SPECIALTY, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

		Family and general practice		Infectious diseases		Internal medicine		Residents		Other		Unknown	
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	%
2021	Jan-Mar	3,330	50.3%	1,362	20.6%	349	5.3%	34	0.5%	90	1.4%	1,459	22.0%
	Apr-Jun	3,219	47.2%	1,298	19.0%	340	5.0%	27	0.4%	96	1.4%	1,845	27.0%
	Jul-Sep	3,577	45.5%	1,394	17.7%	428	5.4%	43	0.5%	76	1.0%	2,336	29.7%
	Oct-Dec	3,500	44.7%	1,312	16.7%	405	5.2%	41	0.5%	98	1.3%	2,479	31.6%
2022	Jan-Mar	3,571	43.2%	1,399	16.9%	405	4.9%	41	0.5%	79	1.0%	2,774	33.5%
	Apr-Jun	3,729	42.7%	1,425	16.3%	382	4.4%	53	0.6%	82	0.9%	3,059	35.0%
	Jul-Sep	3,540	39.1%	1,381	15.3%	403	4.5%	50	0.6%	85	0.9%	3,596	39.7%
	Oct-Dec	3,707	36.6%	1,539	15.2%	506	5.0%	69	0.7%	176	1.7%	4,119	40.7%

4. By payer type

TABLE 4.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PAYER TYPE, ONTARIO, 2018 TO 2022 (ANNUAL)

	Private		Public	
	n	Row %	n	Row %
2018	5,035	77.3%	1,476	22.7%
2019	7,227	77.2%	2,130	22.8%
2020	7,770	76.9%	2,334	23.1%
2021	9,084	74.9%	3,050	25.1%
2022	11,129	76.0%	3,518	24.0%

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis.

5. By region

TABLE 5.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)

Region	2018		2019		2020		2021		2022	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Central East	380	6.0%	586	6.4%	653	6.5%	809	6.7%	1,039	7.3%
Central West	660	10.3%	1,174	12.8%	1,291	12.9%	1,103	9.2%	1242	8.7%
Eastern	107	1.7%	166	1.8%	203	2.0%	172	1.4%	294	2.1%
Northern	93	1.5%	140	1.5%	159	1.6%	140	1.2%	195	2.1%
Ottawa	733	11.5%	1,012	11.0%	985	9.9%	1,479	12.3%	1,707	12.0%
South West	515	8.1%	682	7.4%	579	5.8%	587	4.9%	740	5.2%
Toronto – Downtown	3,000	47.0%	4,182	45.4%	4,606	46.2%	5,200	43.2%	6,642	46.6%
Toronto – Not Downtown	890	14.0%	1,261	13.7%	1,497	15.0%	2,549	21.2%	2,408	16.9%

Notes This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Region based on address of dispensing pharmacy. See technical notes for detailed information on the [Geographic regions](#). PrEP = pre-exposure prophylaxis. The Toronto PHU is broken down into Toronto-Downtown and Toronto-Not Downtown in some analyses. Toronto-Downtown included the loose geographic boundary of the Don Valley Parkway to the East, Lake Ontario to the South, Bathurst Street to the West and Dupont Street to the North. Toronto-Not Downtown included all other postal codes beginning with “M” not listed in the Toronto-Downtown geographic region.

TABLE 5.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PREP BY REGION, ONTARIO, JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

Region	2021				2022			
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
Central East	440	477	462	506	630	648	656	753
Central West	798	670	620	570	758	805	795	833
Eastern	115	90	107	114	133	187	150	204
Northern	104	92	98	126	142	131	132	149
Ottawa	829	971	991	962	1,011	1,061	1,072	1,220
South West	386	363	364	400	398	444	523	588
Toronto – Downtown	2,701	2,607	3,317	3,403	3,650	3,809	3,990	4,382
Toronto – Not Downtown	1,187	1,453	1,794	1,676	1,326	1,411	1,502	1,699

TABLE 5.3 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)

Region	2018	2019	2020	2021	2022
Central East	8.9	13.5	14.8	18.1	73.3
Central West	23.8	41.6	45.1	38.1	32.2
Eastern	12.3	18.9	22.9	19.2	26.0
Northern	11.5	17.3	19.6	17.3	17.0
Ottawa	72.9	98.7	94.3	140.5	136.6
South West	30.7	40.1	33.7	33.9	33.6
Toronto	133.3	183.7	204.5	262.2	261.1

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month. Population estimates for all ages retrieved from Statistics Canada. Region based on address of dispensing pharmacy. “Toronto – Downtown” and “Toronto – Not Downtown” aggregated in Table 5.3. See technical notes for detailed information on the [Geographic regions](#). PrEP = pre-exposure prophylaxis

TABLE 5.4 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PrEP TO FIRST-TIME HIV DIAGNOSES (“PrEP-TO-NEED RATIO”), BY REGION, ONTARIO, 2018 TO 2022 (ANNUAL)

Region	2018	2019	2020	2021	2022
Central East	3.3	6.0	9.3	9.1	9.5
Central West	10.5	18.9	24.4	14.0	13.6
Eastern	5.9	12.8	15.6	17.2	15.5
Northern	3.7	5.0	6.6	5.0	7.5
Ottawa	17.0	29.8	26.6	54.8	37.9
South West	7.8	13.4	17.5	15.1	21.8
Toronto	9.8	13.8	22.0	37.1	31.2

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Population estimates for all ages retrieved from Statistics Canada. Region based on address of dispensing pharmacy. . “Toronto – Downtown” and “Toronto – Not Downtown” aggregated in Table 5.4 are collapsed OHESI regions. See technical notes for detailed information on the [Geographic regions](#) and [First-time HIV diagnoses](#). PrEP = pre-exposure prophylaxis.

TABLE 5.5 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY PUBLIC HEALTH UNIT, ONTARIO, 2018 -2022 (ANNUALLY)

Public Health Unit	2018	2019	2020	2021	2022
District of Algoma Health Unit, Ontario	5.2	13.7	13.6	16.2	28.0
Brant County Health Unit, Ontario	16.1	25.1	25.4	24.2	43.6
Durham Regional Health Unit, Ontario	10.2	16.3	18.4	20.7	24.2
Grey Bruce Health Unit, Ontario	5.3	6.3	12.5	14.5	19.6
Haldimand-Norfolk Health Unit, Ontario	1.7	1.7	3.3	14.7	15.6
Haliburton, Kawartha, Pine Ridge District Health Unit, Ontario	7.4	10.6	14.1	21.2	30.5
Halton Regional Health Unit, Ontario	9.9	23.2	15.7	16.5	25.7
City of Hamilton Health Unit, Ontario	53.9	104.6	124.9	96.2	84.1
Hastings and Prince Edward Counties Health Unit, Ontario	7.7	11.1	14.5	14.9	13.5
Huron County Health Unit & Perth District Health Unit, Ontario	5.6	6.9	12.3	17.5	25.8
Chatham-Kent Health Unit, Ontario	8.5	13.2	10.3	13.0	26.1
Kingston, Frontenac and Lennox and Addington Health Unit, Ontario	26.8	44.3	62.6	42.8	52.2
Lambton Health Unit, Ontario	4.6	4.5	5.3	7.5	8.1
Leeds, Grenville and Lanark District Health Unit, Ontario	11.9	14.6	9.5	11.5	21.6
Middlesex-London Health Unit, Ontario	67.9	91.3	71.4	65.1	65.3
Niagara Regional Area Health Unit, Ontario	14.2	22.4	27.4	24.5	24.7
North Bay Parry Sound District Health Unit, Ontario	7.8	18.6	13.1	16.0	28.1
Northwestern Health Unit, Ontario	0.0	8.6	7.4	9.8	17.0
City of Ottawa Health Unit, Ontario	72.9	98.7	94.3	140.5	159.3
Peel Regional Health Unit, Ontario	8.1	12.7	17.4	22.0	26.1

Peterborough County-City Health Unit, Ontario	9.5	17.6	15.6	19.5	29.5
Porcupine Health Unit, Ontario	0.0	7.0	1.2	3.5	8.0
Renfrew County and District Health Unit, Ontario	5.6	2.8	5.5	7.3	26.7
Eastern Ontario Health Unit, Ontario	5.7	12.2	11.1	12.3	40.2
Simcoe Muskoka District Health Unit, Ontario	12.9	16.7	12.7	14.4	15.9
Sudbury and District Health Unit, Ontario	5.9	9.8	9.3	9.2	18.4
Thunder Bay District Health Unit, Ontario	39.5	40.6	61.6	42.3	38.0
Timiskaming Health Unit, Ontario	8.9	8.8	8.8	11.7	16.0
Waterloo Health Unit, Ontario	13.6	17.2	21.2	18.5	33.2
Wellington-Dufferin-Guelph Health Unit, Ontario	41.1	60.0	52.5	46.8	48.5
Windsor-Essex County Health Unit, Ontario	28.9	36.6	33.2	37.3	55.2
York Regional Health Unit, Ontario	7.4	11.2	10.3	12.8	19.2
Southwest Health Unit, Ontario	12.3	12.1	6.8	7.2	16.4
City of Toronto Health Unit, Ontario	133.3	183.7	204.5	262.2	299.1

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Population estimates for all ages retrieved from Statistics Canada. Region based on address of dispensing pharmacy. See technical notes for detailed information on the [Geographic regions](#) and [First-time HIV diagnoses](#). PrEP = pre-exposure prophylaxis

TABLE 5.6 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY PUBLIC HEALTH UNIT, ONTARIO, , JAN-MAR 2021 TO OCT-DEC 2022 (QUARTERLY)

Public Health Unit	2021				2022			
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
District of Algoma Health Unit, Ontario	12.8	13.6	12.8	16.8	16.2	19.1	18.6	14.7
Brant County Health Unit, Ontario	10.2	14.0	16.6	19.8	24.0	27.1	29.3	35.6
Durham Regional Health Unit, Ontario	10.6	11.0	12.2	14.9	15.0	16.1	15.4	16.5
Grey Bruce Health Unit, Ontario	7.2	8.4	10.6	12.0	11.0	12.6	13.9	19.7
Haldimand-Norfolk Health Unit, Ontario	3.3	4.1	9.0	9.2	9.3	10.4	8.9	11.0
Haliburton, Kawartha, Pine Ridge District Health Unit, Ontario	9.8	15.0	13.9	19.8	20.2	17.4	23.4	30.1
Halton Regional Health Unit, Ontario	10.4	11.4	10.1	11.2	16.3	15.0	15.1	16.0
City of Hamilton Health Unit, Ontario	79.8	60.1	53.5	38.4	55.3	58.0	53.6	50.8
Hastings and Prince Edward Counties Health Unit, Ontario	7.4	11.5	9.2	8.2	8.6	11.2	7.9	10.1
Huron County Health Unit & Perth District Health Unit, Ontario	8.1	6.7	10.8	17.9	19.0	18.4	13.3	15.1
Chatham-Kent Health Unit, Ontario	7.4	9.3	8.3	10.5	11.0	12.6	16.5	26.7
Kingston, Frontenac and Lennox and Addington Health Unit, Ontario	32.8	20.5	25.7	28.3	30.4	30.7	16.5	41.9
Lambton Health Unit, Ontario	5.3	5.3	3.8	4.7	3.9	5.8	6.0	7.3
Leeds, Grenville and Lanark District Health Unit, Ontario	6.6	6.0	6.6	10.2	12.3	14.5	12.5	15.1
Middlesex-London Health Unit, Ontario	49.0	42.1	39.9	42.1	40.1	45.0	45.4	47.5
Niagara Regional Area Health Unit, Ontario	17.3	14.4	17.7	14.4	16.3	16.6	17.1	19.3

North Bay Parry Sound District Health Unit, Ontario	9.2	8.4	9.2	14.9	16.1	17.6	18.6	18.4
Northwestern Health Unit, Ontario	11.0	12.2	4.9	6.6	13.7	9.8	13.7	18.9
City of Ottawa Health Unit, Ontario	78.8	92.3	94.2	91.4	94.3	99.0	100.0	113.9
Peel Regional Health Unit, Ontario	11.1	11.5	10.3	11.2	16.4	16.4	14.8	18.2
Peterborough County-City Health Unit, Ontario	9.4	14.8	16.2	17.1	14.9	17.4	19.6	25.1
Porcupine Health Unit, Ontario	1.2	2.4	4.7	3.7	5.1	7.8	5.6	6.2
Renfrew County and District Health Unit, Ontario	3.6	1.8	1.8	9.5	14.5	13.3	17.1	20.0
Eastern Ontario Health Unit, Ontario	7.8	6.4	10.5	8.6	11.8	30.9	32.9	28.6
Simcoe Muskoka District Health Unit, Ontario	10.5	9.7	8.7	9.2	9.4	9.4	11.5	12.8
Sudbury and District Health Unit, Ontario	8.3	6.3	8.7	10.0	13.8	13.4	12.1	15.9
Thunder Bay District Health Unit, Ontario	31.4	24.4	27.6	34.5	34.5	24.4	26.0	32.5
Timiskaming Health Unit, Ontario	2.9	5.8	5.8	11.8	9.4	9.6	9.6	7.0
Waterloo Health Unit, Ontario	11.3	10.0	13.3	14.3	17.4	19.8	22.5	25.4
Wellington-Dufferin-Guelph Health Unit, Ontario	29.1	28.1	30.3	23.9	26.2	30.8	29.5	31.6
Windsor-Essex County Health Unit, Ontario	19.0	21.8	22.8	24.9	22.7	25.4	42.6	47.9
York Regional Health Unit, Ontario	7.5	8.8	8.8	8.4	10.9	11.8	12.8	13.2
Oxford Elgin St. Thomas Health Unit, Ontario	5.4	4.9	5.4	5.2	8.5	9.5	10.9	12.7
City of Toronto Health Unit, Ontario	131.5	137.4	172.9	171.8	164.5	172.5	181.5	201.0

Notes: This is based on information licensed from IQVIA: GPM with Projected Patients for the period 2018-2022 reflecting estimates of real-world activity. All rights reserved. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Population estimates for all ages retrieved from Statistics Canada. Region based on address of dispensing pharmacy. See technical notes for detailed information on the [Geographic regions](#) and [First-time HIV diagnoses](#). PrEP = pre-exposure prophylaxis