

HIV pre-exposure prophylaxis (PrEP) in Ontario, 2020

Ontario HIV Treatment Network

The Ontario HIV Treatment Network (OHTN) is a non-profit network funded by the AIDS 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.

This report was prepared by the OHTN with support from researchers at St. Michael's Hospital. Data was provided by 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

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 2016 to March 2020.

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EXECUTIVE SUMMARY

Overview

Pre-exposure prophylaxis (PrEP) is a highly effective HIV-risk reduction strategy and a critical part of a comprehensive approach to HIV prevention. Although PrEP was found to be effective almost a decade ago, and has had successful roll-outs in other countries such as Australia and the U.K., its uptake has been slow in Canada. In Ontario, the annual number of new HIV diagnoses remains stable, highlighting the need to make more effective use of all available strategies, including PrEP.

Recent progress has been made to improve access to PrEP in Canada broadly, and specifically in Ontario. In February 2016, Health Canada approved Truvada (tenofovir/emtricitabine [TDF/FTC]) for use as PrEP and, in July 2017, lower cost generic versions of TDF/FTC became available. In September 2017, the Ontario Drug Benefit (ODB) started covering the cost of PrEP and at the start of 2018, ODB coverage was expanded to all individuals under age 25 through OHIP+. This was then modified in April 2019 to only cover individuals under age 25 without existing private insurance. In December 2020, Health Canada approved a new formulation of tenofovir (tenofovir alafenamide [TAF], also formulated with emtricitabine and sold under the brand name Descovy) for the indication of HIV prevention.

Diverse community-based efforts have facilitated awareness of PrEP, access to PrEP and moved PrEP programs and policies forward. 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, and such efforts are challenged by the range of health care providers who may be prescribing PrEP outside of dedicated clinics and programs. While clinic/program evaluations and other studies can provide some insight into uptake, these data are difficult to extrapolate to the provincial level. Larger-scale data sources are needed to understand and inform PrEP implementation across Ontario.

In response to this need, the Ontario HIV Treatment Network is pleased to bring you this report summarizing PrEP uptake in Ontario from 2016 to March 2020. This report contains projected provincial-level estimates which are based on Truvada (inclusive of generics) or Descovy dispensation data provided by IQVIA from more than 2,100 pharmacies across Ontario. It is an update and expansion on the PrEP report published in October 2019 by the OHTN ("[HIV pre-exposure prophylaxis in Ontario](#)"). In this report, the estimated number, proportion or rate of individuals dispensed PrEP is described overall, by sex, age, prescriber specialty, payment type, region, and as a ratio to number of first-time HIV diagnoses ("PrEP-to-need ratio"). Further, the estimated number, proportion or rate of physicians who prescribed PrEP is described overall, by sex, specialty, number of PrEP prescriptions written, region, and as a ratio to number of first-time HIV diagnoses ("PrEP prescriber-to-need ratio"). To complement and expand on these findings, PrEP uptake among gay, bisexual, transgender, Two-Spirit, and queer (GBT2Q) men in Ontario is described from Sex Now 2019 data, an annual national online survey of GBT2Q men's health in Canada.

Summary

By 2019, the estimated number of individuals dispensed PrEP over the year was 9,633; a figure 6.6 times the size of the estimated 1,451 individuals dispensed PrEP in 2016. More than one third (36.0%) of gay, bisexual, trans, Two-Spirit, and queer (GBT2Q) men living in Ontario in the Sex Now 2019 study who met the criteria for PrEP as per the Canadian guidelines were currently taking PrEP. Between 2016 and 2019, The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) increased for both sexes, but was consistently substantially higher for males than for females. Assessing successful uptake of PrEP in women is not straightforward however, as overall risk for HIV in women is lower, and PrEP guidelines are less developed for women as compared to men. Over this same time period, the estimated relative increases in individuals dispensed PrEP were greatest among younger age groups (<30) for both males and females. Large majorities of the estimated individuals dispensed PrEP were prescribed PrEP by family and general practitioners (≥61%) and covered the cost of PrEP through private health insurance (>75%). Greater income and education were also associated with greater PrEP uptake among GBT2Q men. While well over half of the estimated individuals dispensed PrEP were dispensed PrEP from a pharmacy in the “Toronto – Downtown” region, this proportion decreased over time and relative increases were greatest in regions outside of Toronto.

By 2019, the estimated number of physicians and nurse practitioners who prescribed PrEP over the year was 1,420; a 32% increase from 1,074 in 2018. In 2019, Toronto and Ottawa had the largest numbers of physicians who prescribed PrEP, together accounting for 61% of PrEP prescribers. Estimated numbers of physicians who prescribed PrEP increased substantially between 2018 and 2019, and the “PrEP prescriber-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) increased across all but one region (Northern region). Between 2018 and 2019, approximately 6 out of 7 of the estimated physicians who prescribed PrEP were family or general practitioners and they experienced a 30% increase in number. These increases likely signal some “decentralization” of PrEP delivery, with prescribing moving beyond HIV physicians to more broad provision. Still, in 2019 “low prescriber” physicians¹ made up 82% of all PrEP-prescribing physicians and together wrote approximately the same number of PrEP prescriptions as 13 “super prescriber” physicians², who made up 0.9% of all PrEP-prescribing physicians. This indicates that although PrEP prescribing seems to be expanding to more physicians, a substantial proportion of all PrEP prescriptions in 2019 continues to come from relatively few physicians, who are most likely to be infectious diseases specialists and to be located in the “Toronto – Downtown” region. Furthermore, in 2019, 51.8% of the estimated individuals who were dispensed PrEP were dispensed PrEP from a pharmacy in the “Toronto – Downtown” region whereas only 26.4% of the estimated physicians who prescribed PrEP were based in the “Toronto – Downtown” region. This further signifies a relatively small number of doctors writing a large number of PrEP prescriptions in downtown Toronto and could be attributed to emerging clinical models that provide access to both individuals living with HIV and those at risk of HIV (e.g. PrEP clinic within a pre-established HIV clinic).

¹ “Low prescriber” physicians wrote 22 or fewer PrEP prescriptions each in 2019.

² “Super prescriber” physicians wrote between 397 and 3,029 PrEP prescriptions each in 2019.

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INTRODUCTION

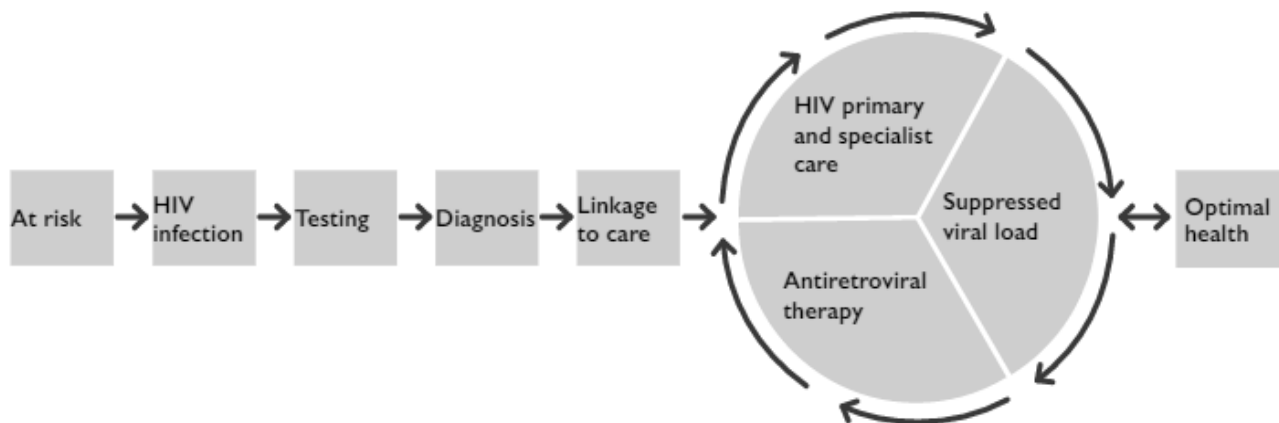
What is PrEP?

HIV pre-exposure prophylaxis (PrEP) refers to the use of antiretroviral medications by HIV-negative individuals to reduce their risk of HIV infection. Emtricitabine (FTC) paired with either tenofovir disoproxil fumarate (TDF, trade name Truvada, generics also available in Canada) or tenofovir alafenamide (TAF, 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. Go to www.OntarioPrEP.ca for more information.

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?

- These estimates are based on prescription dispensations from a large sample of retail pharmacies across Ontario, which are then projected/extrapolated to the Ontario-level. Dispensations refer to prescriptions which have been filled at a pharmacy.
- The data are presented by calendar year (2016 to 2019) or quarter (Jan-Mar 2019 to Jan-Mar 2020). Each year/quarter includes an estimate of the number of unique individuals dispensed PrEP at least once over the year or three-month period. If the same individual is dispensed PrEP more than once during the same year or quarter, they are not double-counted – with a few small exceptions (see limitations below).

- Estimated PrEP uptake is stratified by sex, age, prescriber specialty, payment type and geographic region. Estimated number of physicians who prescribed PrEP is stratified by sex, specialty, number of prescriptions written, and geographic region.

Where do these data come from?

IQVIA

- The estimated number of unique individuals dispensed PrEP and the estimated number of physicians who prescribed PrEP 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 of over 2,100 retail pharmacies in Ontario – which account for approximately 67% of all dispensations in the province. Prior to sending aggregate-level data to the Ontario HIV Treatment Network, IQVIA projected/extrapolated these dispensations to the provincial level using a proprietary algorithm.
- Physician prescriber data includes all physician prescribers who wrote one or more prescriptions for PrEP between January 1st 2018 and December 31st 2019

Sex Now 2019

- Sex Now is a Canada-wide online survey of gay, bisexual, transgender, Two-Spirit, and queer (GBT2Q) men’s health. First executed in 2002, Sex Now is the principal initiative of the Community-Based Research Centre (CBRC). Often referred to as “the gay census”, Sex Now has become an essential source of data on the health and well-being of GBT2Q men in Canada, and is widely used by community, public health, research, and policy stakeholders. Recent iterations of the survey have been completed in 2014, 2018, 2019, and 2020. This report uses data from the 2019 survey in order to correspond with the IQVIA data and represent PrEP uptake among GBT2Q men prior to the COVID-19 pandemic. For more information on Sex Now and the CBRC please visit www.cbrc.net/sex_now.

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%) and prescriber specialty (~7%).
- Use of both specific and broader geographic regions to better describe geographic trends in PrEP use and uptake
- Use of Sex Now data allows for the description of PrEP uptake among GBT2Q men
- 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’ve been approved by Health Canada, and are included in these data.

What are some of the limitations of these data?

- 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.
- Indication 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 in the deidentified-patient Claims-data sample. IQVIA then calculated “indication” proportions of prescriptions or patients by time-period and drug-product/group from this sample, and applied the ratios on to the projected data-set (prescriber-level or patient-level). 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 and those provided at no cost (e.g. by a health unit) are not included in the dispensation data and not counted in this report. Dispensations paid for out-of-pocket are included however 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.
- Due to the above limitations, the numbers in this report represent our best estimates of PrEP uptake and PrEP prescriptions in the province. It may be more valid to focus on proportions and general trends than the actual numbers.
- Address of residence for individuals dispensed PrEP was not available. Geographic breakdowns of PrEP dispensations were based on the location of the dispensing pharmacy.
- The address at which physicians wrote the PrEP prescription was not available. Geographic breakdowns of were based on the physician’s primary work location.
- Estimates of PrEP uptake by race/ethnicity and socio-demographic factors (annual income and education) are only available among GBT2Q men in the separate Sex Now study dataset and breakdowns by exposure category or Cis/Transgender identity are not available.
- Estimates of PrEP uptake specifically among transgender individuals are not available. Trans men are included as part of the data representing GBT2Q men from Sex Now, however with the IQVIA data the gender field is at the discretion of the pharmacist and is limited to ‘male’, ‘female’ and ‘unknown’ gender.

KEY FINDINGS

Uptake of PrEP

Overall

- In 2019, 9,633 individuals were estimated to have been dispensed HIV pre-exposure prophylaxis (PrEP) in Ontario.
- The estimated number of PrEP users increased dramatically between 2016 and 2019. In 2019 the estimated number of individuals dispensed PrEP was 6.6 times what it was in 2016.

By Canadian guidelines for PrEP (GBT2Q men)

- Among gay, bisexual, transgender, Two-Spirit and queer (GBT2Q) men living in Ontario who had never been diagnosed with HIV in the Sex Now 2019 study who met the criteria for PrEP as per the Canadian guidelines, 36.0% were currently on PrEP.
- Among GBT2Q men living in Ontario in the Sex Now 2019 study who were currently on PrEP, 84.0% met the criteria for PrEP as per the Canadian guidelines.

By sex

- The vast majority (97%) of PrEP users were male and only 254 were female (3%).
- PrEP dispensations increased for both sexes but the relative increase was greater among males (6.7 times) than females (4.7 times).
- The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV diagnoses among a population, where larger numbers indicate more optimal HIV prevention efforts) increased for both sexes, but was consistently substantially higher for males than for females and increased at nearly twice the rate among males than females between 2016 and 2019.
- Among GBT2Q men living in Ontario never diagnosed with HIV in the Sex Now 2019 study, 23.5% had ever been on PrEP and 18.7% were currently on PrEP.

By age

- The estimated number of males dispensed PrEP increased across all age groups between 2016 and 2019. While the relative increase in was greatest in the <20 age category (36 times), the 30-39 age category consistently made up the largest proportion of males dispensed PrEP. Among GBT2Q men living in Ontario who had never been diagnosed with HIV in the Sex Now 2019 study, those aged 40-49 were most likely to be currently on PrEP.
- The estimated number of females dispensed PrEP increased across all age groups between 2016 and 2019. The 30-39 age category consistently made up the largest proportion of females dispensed PrEP. However, interpretation of these trends among females should consider the relatively small numbers on which they are based.

By race/ethnicity (GBT2Q men)

- In 2019, among GBT2Q men living in Ontario who had never been diagnosed with HIV in the Sex Now 2019 study, the proportions of African/Caribbean/Black, East/Southeast Asian, White, and Other/mixed ethnicities that reported currently being on PrEP were very similar, ranging between 18.6% and 22.1%. Of the 79 Indigenous participants, 9 (11.4%) reported currently being on PrEP. Interpretation of these proportions should consider the relatively small numbers on which some of them are based (n ranged from 79 to 1,450).

By prescriber specialty

- In 2019, the majority of the estimated individuals dispensed PrEP were prescribed PrEP by family and general practitioners (61.2%), followed by infectious disease (18.3%) and internal medicine (10.3%) physicians, nurse practitioners (1.1%), public health and preventive medicine (2.2%) and other (6.9%) physicians.
- Between 2016 and 2019, the proportion of individuals dispensed PrEP by family and general practitioners decreased in favour of internal medicine and public health/preventive medicine specialists and nurse practitioners.

By payment type, by income, and by education

- Between 2016 and 2019, a large majority (>75%) of estimated PrEP users covered the cost of the prescription through private health insurance. The estimated proportion who covered the cost publicly increased from 13.3% in 2016 to 24.3% in 2019; this increase occurred between the years 2017 and 2018.
- In 2019, among GBT2Q men living in Ontario who had never been diagnosed with HIV in the Sex Now 2019 study, 10.0% of participants with annual incomes of less than \$30,000 were currently on PrEP, whereas 27.9% of participants with annual incomes of \$70,000+ were currently on PrEP. PrEP uptake increased with higher income.
- In 2019, among GBT2Q men living in Ontario who had never been diagnosed with HIV in the Sex Now 2019 study, 6.5% of participants with high school or less education were currently on PrEP, whereas 25.1% of participants with greater than a bachelor's degree were currently on PrEP. PrEP uptake increased with higher education.

By region

- In 2019, the rate of individuals dispensed PrEP per 100,000 people was highest in Toronto (219.2) and Ottawa (84.9), and the South West (40.4) region, and lowest in the North East (10.2) and York (12.3) regions.
- In 2019, the majority of estimated individuals dispensed PrEP (66.4%) were dispensed medications from pharmacies in Toronto (downtown and beyond downtown). The remainder were dispensed PrEP in Ottawa (8.9%), Central South region (5.3%), South West region (4.3%) or elsewhere (15.1%).
- Between 2016 and 2019, the relative increase in estimated PrEP users was greatest in regions outside of Toronto: Halton (16 times), Central East (13 times), Eastern (13 times) and Erie-St. Clair (12 times).
- In 2019, the “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) was highest in Ottawa (24.9) and Toronto (16.4), and the Central West (15.2) region, and lowest in the Northern (4.5) and Central East (6.2) (6.2) regions.

Prescribing PrEP

Overall, by specialty, and by number of PrEP prescriptions written

- Between 2018 and 2019, the estimated number of physicians who prescribed PrEP increased from 1,074 to 1,420 (32% increase).
- While the estimated number of family and general practitioners who prescribed PrEP increased by 30% between 2018 and 2019, their proportion of all physicians who prescribed PrEP did not substantially change (from 86.5% to 85.0%). Medical residents outpaced this growth, with the largest relative increase (2.5 times), from 32 (3.0%) in 2018 to 81 (5.7%) in 2019.
- Quintiles (five groups of equal size) of physicians who prescribed PrEP were calculated by the distribution of total number of PrEP prescriptions written over the full year of 2019. Therefore, each of the five quintiles/categories wrote an approximately equal total number (one fifth) of PrEP prescriptions in 2019.
- An estimated 1,165 physicians were “low prescribers” (wrote between 1 and 22 PrEP prescriptions); they comprised 82.0% of all physicians who prescribed PrEP and, together as a quintile, wrote approximately one fifth of all PrEP prescriptions in Ontario in 2019.
- The remaining four quintiles in 2019 included: 181 physicians who were “medium prescribers” (between 22 and 80 prescriptions, 12.7% of all physicians who prescribed PrEP), 48 who were “high prescribers” (between 80 and 262 prescriptions, 3.4% of all physicians), 13 who were “very high prescribers” (between 274 and 371 prescriptions, 0.9% of all physicians), and 13 who were “super prescribers” (between 397 and 3029 prescriptions, 0.9% of all physicians).

By region

- In all regions except the North West and Durham regions, the estimated number of physicians who prescribed PrEP increased between 2018 and 2019.
- In 2019, Toronto and Ottawa had the largest number of physicians who prescribed PrEP, together accounting for 6 in 10 (60.7%) of PrEP prescribers (these regions comprised 27.4% of Ontario’s population in 2019). Between 2018 and 2019, Erie-St. Clair and Eastern regions saw the greatest relative increases in number of physicians who prescribed PrEP.
- The “PrEP prescriber-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) increased across all regions, except the Northern region.

Number of PrEP prescriptions written by specialty and by region

- In 2019, among physicians who prescribed PrEP, at least three quarters of family/general practitioners and internal medicine specialists were “low prescribers” (wrote between 1 and 22 PrEP prescriptions). In contrast, low prescribers comprised less than half (43.1%) of infectious disease specialists who prescribed PrEP, with the remainder having written more than 22 PrEP prescriptions.
- In 2019, large majorities (76.9%-86.1%) of low, medium, high, and very high PrEP prescribers were family or general practitioners. Conversely, among the 13 super prescribers (wrote between 397 and 3029 PrEP prescriptions), only 4 (30.8%) were family or general practitioners, and 7 (53.9%) were infectious disease specialists.

- In 2019, a majority (56.6%) of low PrEP prescribers (wrote between 1 and 22 PrEP prescriptions) were located in either Toronto or Ottawa; however this majority increases to between 79.3% and 84.6% among the higher prescribing quintiles. With increased numbers of PrEP prescriptions per physician, there was a decrease in regional representation, culminating in the 13 super PrEP-prescribing physicians where 9 were located in downtown Toronto, 2 in Ottawa, and 2 in the Central South region.

DATA AND FIGURES

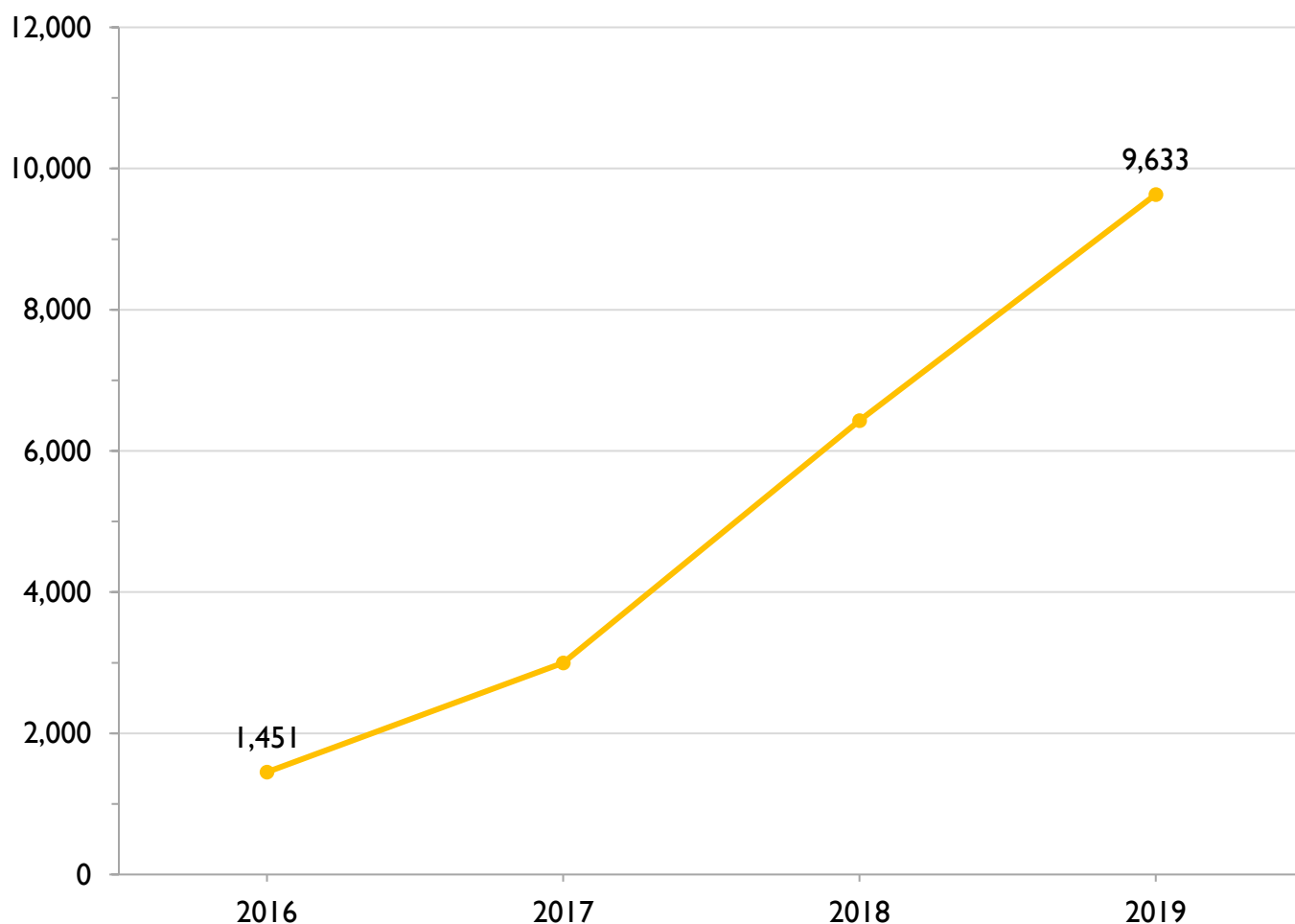
Uptake of PrEP

1. Overall

Summary & Interpretation

The total number of PrEP users in Ontario increased steadily between 2016 and 2019, including increases in each quarter of 2019 and the first quarter of 2020. An estimated total of 9,633 individuals were dispensed PrEP over the full year of 2019, while 8,143 were dispensed PrEP over the first quarter of 2020.

FIGURE I.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, ONTARIO, 2016 TO 2019 (ANNUAL)

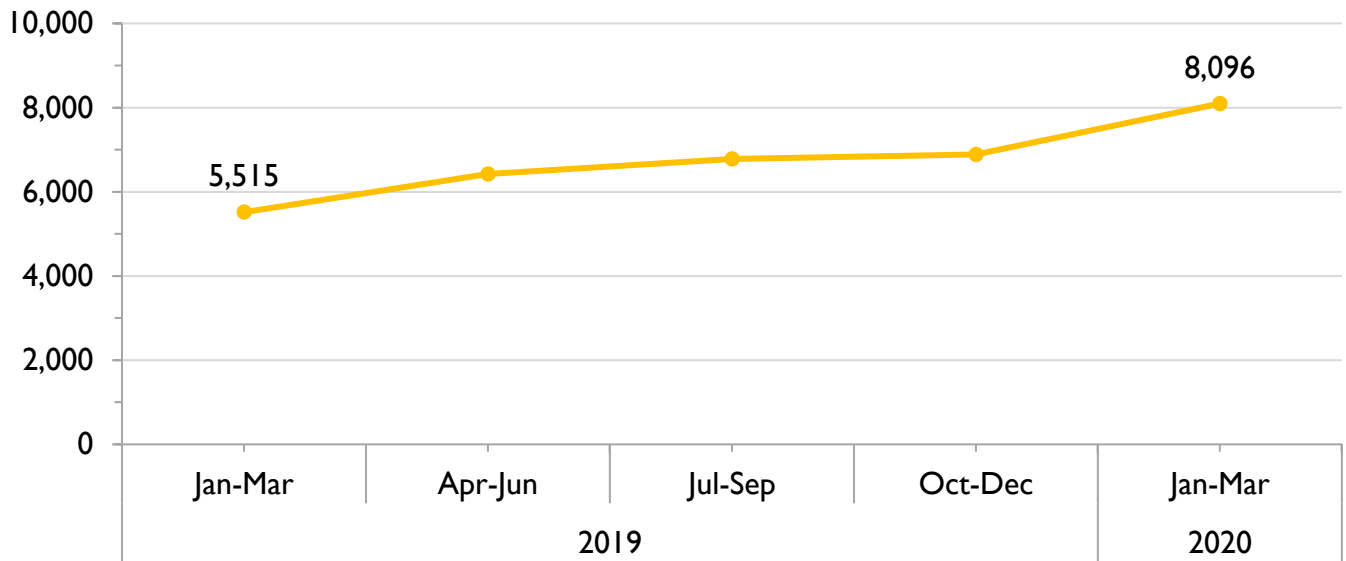


Trends

Between 2016 and 2019, the estimated number of individuals dispensed PrEP consistently increased, with a greater rate of increase between 2017 and 2019. In 2019 the estimated number of individuals dispensed PrEP was 6.6 times what it was in 2016.

Notes: Data acquired from IQVIA. Annual data represents the 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 2019 TO JAN-MAR 2020 (QUARTERLY)

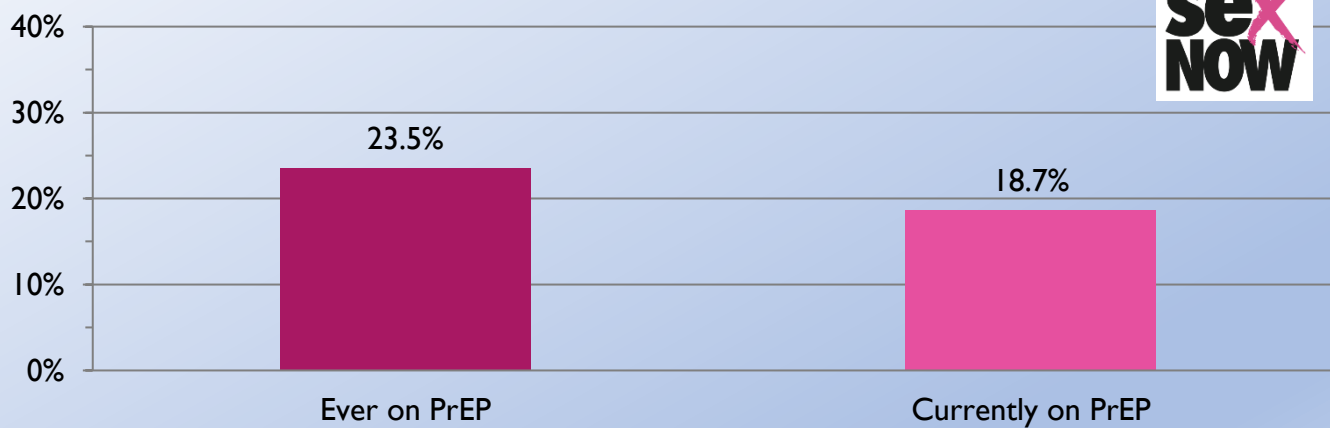


Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of individuals dispensed PrEP each quarter consistently increased, with a 47% increase overall. There was a greater rate of increase between Oct-Dec 2019 and Jan-Mar 2020.

FOCUS ON GBT2Q MEN

FIGURE I.3 GBT2Q MEN: PrEP UPTAKE AMONG PARTICIPANTS NEVER DIAGNOSED WITH HIV, ONTARIO, SEX NOW 2019, N = 1,958



Snapshot

In 2019, 23.5% of participants in the Sex Now study who reported never being diagnosed with HIV reported ever taking PrEP and 18.7% reported being currently on PrEP.

Notes: PrEP dispensation data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. Sex Now 2019 data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information. See **Table I.2** and **Table I.3** for underlying data.

2. By Canadian guidelines for PrEP (GBT2Q men)



Summary & Interpretation

Published in 2017, the Canadian guidelines on PrEP establish criteria for the indication of PrEP among different populations³. Aiming to define men who have sex with men (MSM) at elevated HIV risk, the main criteria for MSM are condomless anal sex within the previous six months and either a bacterial STI diagnosis in the previous 12 months (especially early syphilis, rectal gonorrhea or rectal chlamydia) or an HIV incidence risk index for MSM (HIRI-MSM) score of ≥ 11 . The HIRI-MSM is a validated seven-item screening tool developed to help service providers quantify HIV risk and identify PrEP candidates⁴. Six of the seven original HIRI-MSM items are used in these analyses; the item pertaining to poppers use is not used due to growing consensus favouring its exclusion.

While Sex Now 2019 does not have perfectly congruent indicators to these criteria, this report uses Sex Now 2019 data to best approximate these criteria where possible. See [Canadian guidelines for PrEP](#) in the Technical Notes for more detailed information³.

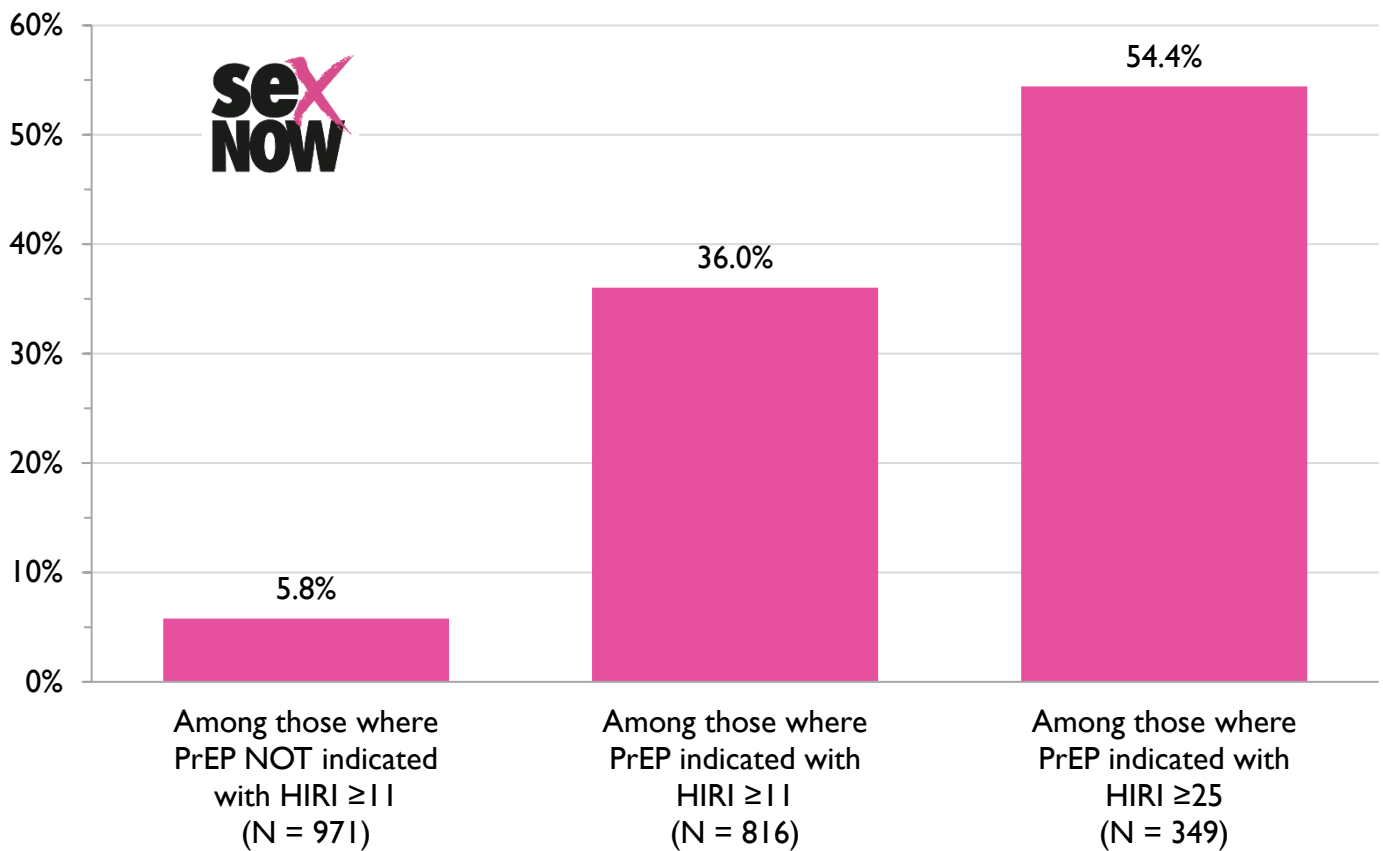
Sex Now 2019 data shows that approximately one third (36.0%) of GBT2Q men who met the criteria for PrEP were currently on PrEP. If, as part of the broader criteria for PrEP above, the HIRI-MSM score criterion was hypothetically increased to ≥ 25 (an alternative documented cut-off value used to define MSM at especially increased HIV risk) more than half (54.4%) of Sex Now 2019 participants who met these criteria for PrEP were currently on PrEP. PrEP uptake appears to increase with greater objective HIV risk.

Conversely, among the participants in Sex Now 2019 that were currently on PrEP, approximately 5 in 6 of them met the criteria for PrEP as per the published Canadian guidelines and approximately half met the criteria with the HIRI-MSM cut-off of ≥ 25 . This suggests that among GBT2Q men in Ontario, most PrEP users meet these objective definitions of elevated HIV risk. It is interesting to note that approximately one-third of participants who had never been on PrEP also met the criteria in the Canadian guidelines and one in 10 met the criteria using an HIRI-MSM score of ≥ 25 .

³ Tan, Darrell HS, et al. "Canadian guideline on HIV pre-exposure prophylaxis and nonoccupational postexposure prophylaxis." *CMAJ* 189.47 (2017): E1448-E1458.

⁴ Smith, Dawn K., et al. "Development of a clinical screening index predictive of incident HIV infection among men who have sex with men in the United States." *JAIDS Journal of Acquired Immune Deficiency Syndromes* 60.4 (2012): 421-427.

FIGURE 2.1 GBT2Q MEN: PrEP UPTAKE AMONG PrEP INDICATION CATEGORIES, DEFINED BY RECENT CAS AND EITHER RECENT STI OR MINIMUM HIRI-MSM SCORE, ONTARIO, SEX NOW 2019

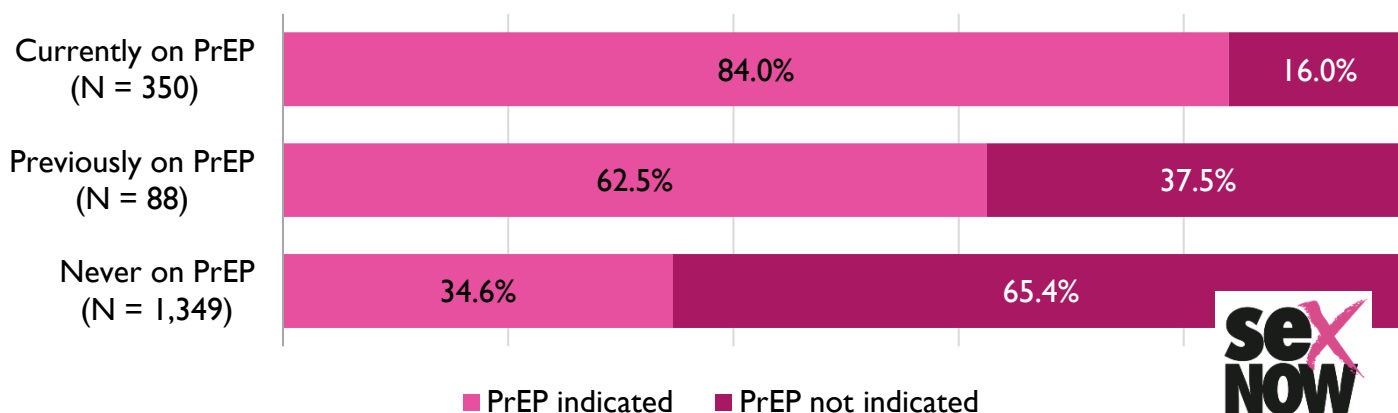


Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 5.8% of participants who did not meet the Canadian PrEP guidelines criteria for PrEP with an HIRI-MSM score of ≥ 11 were currently on PrEP, whereas 36.0% of participants who did meet these criteria for PrEP were currently on PrEP. Where an HIRI-MSM score of ≥ 25 is used instead of a score of ≥ 11 as part of the guidelines for PrEP (defining a subpopulation reporting greater HIV risk behaviour), 54.4% of participants who met these criteria for PrEP were currently on PrEP.

Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP indication is defined here as condomless anal sex in the past six months and either a bacterial sexually transmitted infection (STI) diagnosis at any anatomic site in the past year or an HIRI-MSM score of ≥ 11 where the criterion pertaining to poppers use is not included. PrEP = pre-exposure prophylaxis. See [Data source: Sex Now 2019](#) and [Canadian guidelines for PrEP](#) for more information. See **Table 2.1** for underlying data.

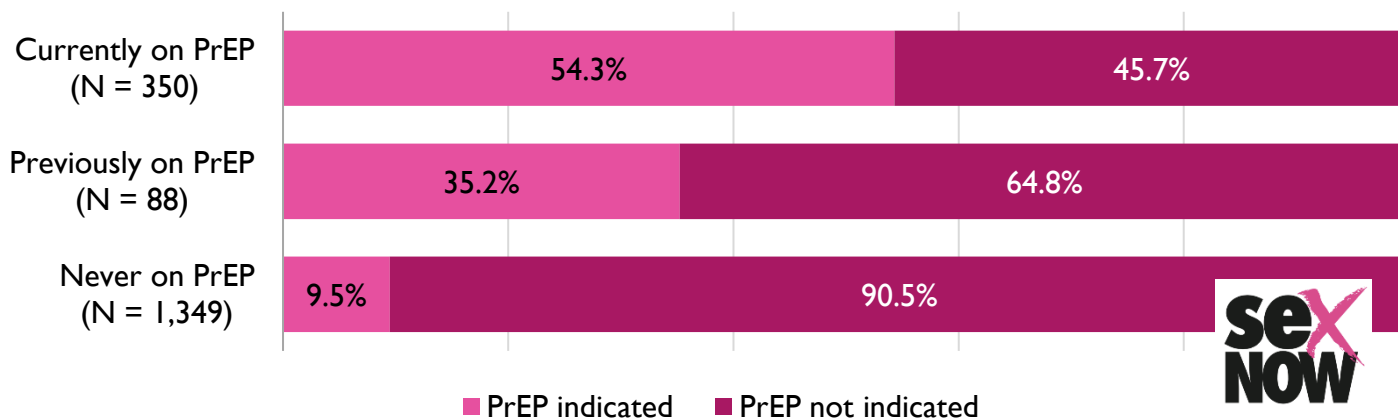
Figure 2.2 GBT2Q men: PrEP indication (defined by recent condomless anal sex and either a recent STI or a HIRI-MSM score ≥ 11) among PrEP uptake categories, Ontario, Sex Now 2019



Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 84.0% of participants currently on PrEP met the Canadian guidelines criteria for PrEP (defined by recent condomless anal sex and either a recent STI or an HIRI-MSM score ≥ 11); 34.6% of participants who had never been on PrEP also met these criteria.

FIGURE 2.3 GBT2Q MEN: PREP INDICATION (DEFINED BY RECENT CONDOMLESS ANAL SEX AND EITHER A RECENT STI OR A HIRI-MSM SCORE ≥ 25) AMONG PREP UPTAKE CATEGORIES, ONTARIO, SEX NOW 2019



Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 54.3% of participants currently on PrEP met the Canadian guidelines criteria for PrEP (defined by recent condomless anal sex and either a recent STI or an HIRI-MSM score ≥ 25), and 9.5% of participants (~1 in 10) who had never been on PrEP also met these criteria of considerable HIV risk. This represents a large number of GBT2Q men at objectively high HIV risk who have never been on PrEP.

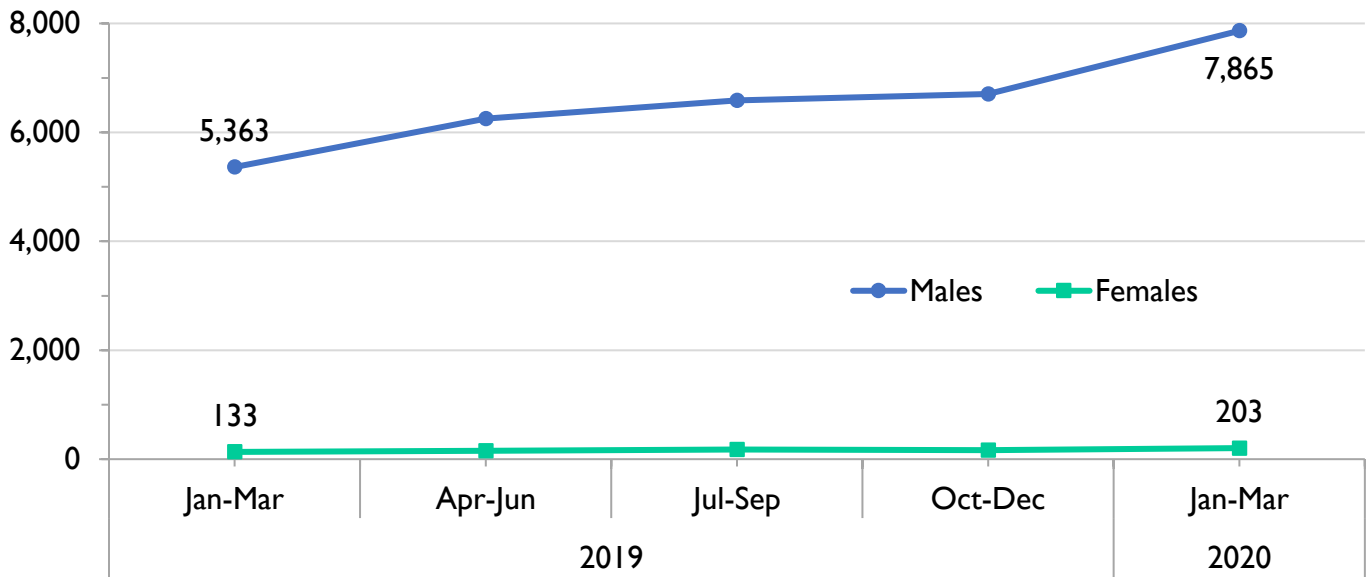
Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP indication is defined here as condomless anal sex in the past six months and either a bacterial sexually transmitted infection (STI) diagnosis at any anatomic site in the past year or a minimum HIRI-MSM score where the criterion pertaining to poppers use is not included. PrEP = pre-exposure prophylaxis. See [Data source: Sex Now 2019](#) and [Canadian guidelines for PrEP](#) for more information. See **Table 2.2** for underlying data.

3. By sex

Summary & Interpretation

The numbers of both males and females using PrEP in Ontario increased steadily between 2016 and 2019. Although the relative rate of increase was greater among males than females over these four years, it has been more comparable over recent quarters. Still, the proportion of estimated individuals dispensed PrEP who were female was very small, and it decreased from 3.7% in 2016 to 2.6% in 2019. The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) increased for both sexes, but was consistently and substantially higher for males than for females and increased at nearly twice the rate among males than females between 2016 and 2019. It appears that uptake and use of PrEP in Ontario has been and continues to be dominated by males, even when considered in proportion to HIV burden.

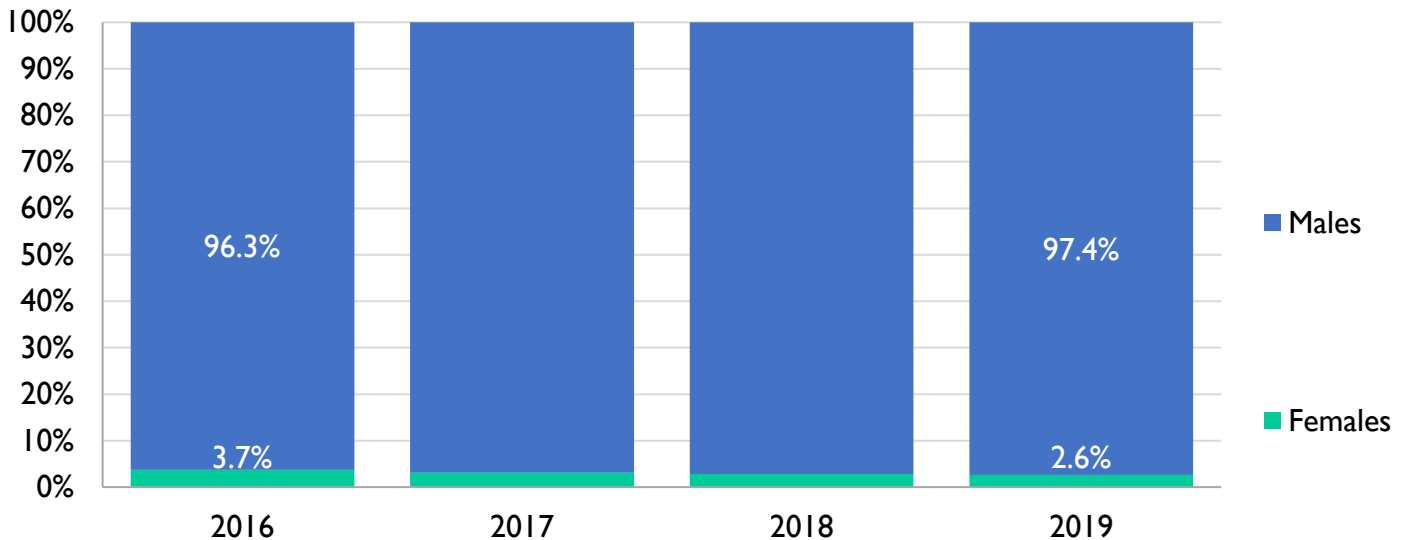
FIGURE 3.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY SEX, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of PrEP users increased for both males and females. The relative increase was slightly greater among females (53%) than males (47%). In Jan-Mar 2020, the estimated number of males dispensed PrEP was ~39 times larger than the number of females dispensed PrEP.

FIGURE 3.2 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY SEX (WHERE KNOWN), ONTARIO, 2016 TO 2019 (ANNUAL)

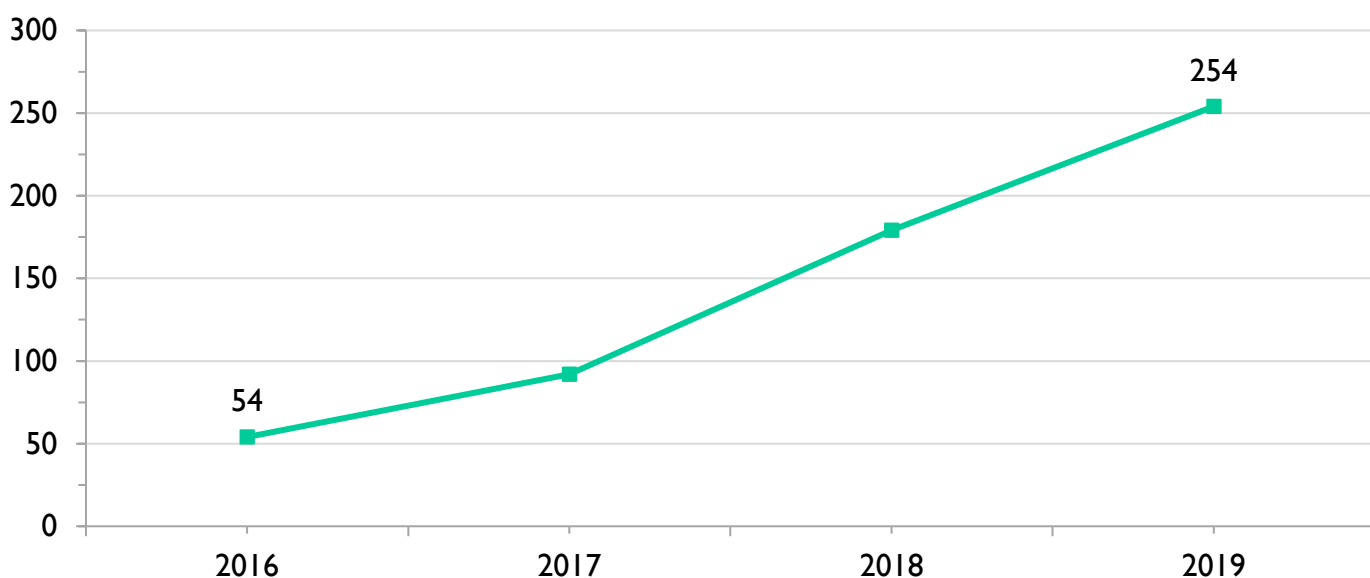


Trends

Between 2016 and 2019, the vast majority of estimated individuals dispensed PrEP were male and this increased slightly (from 96.3% to 97.4%) over this time period.

Notes: Data acquired from IQVIA. 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. See **Table 1.1** and **Table 1.2** for underlying data.

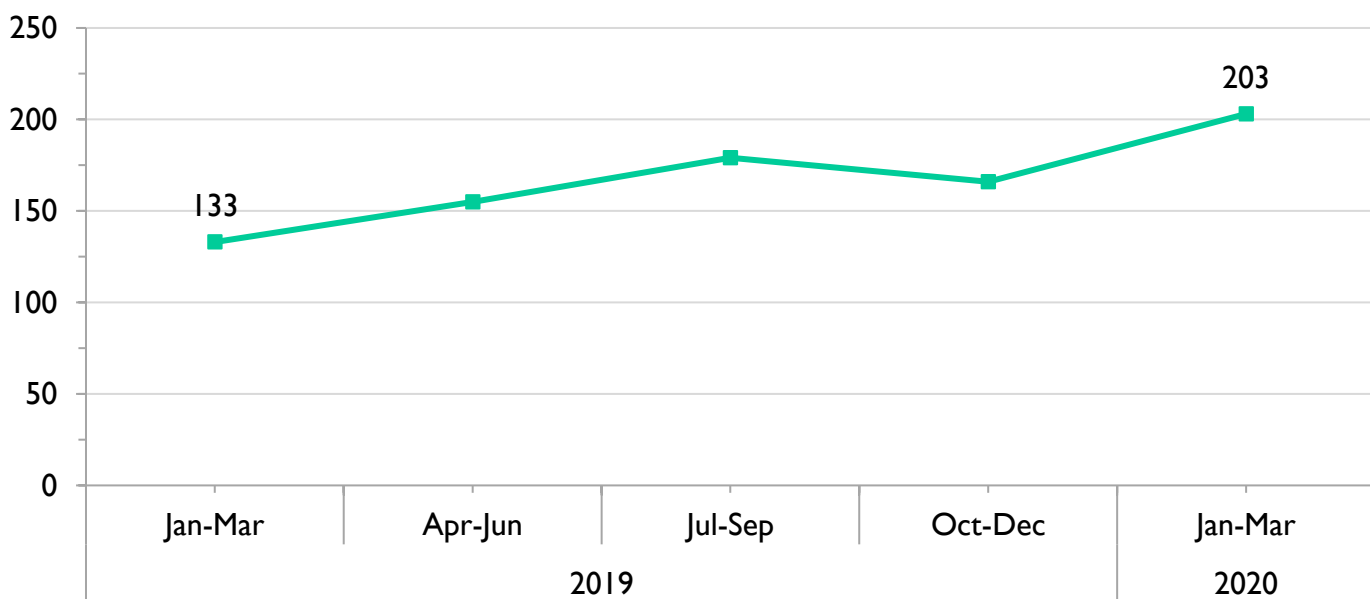
FIGURE 3.3 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, FEMALES, ONTARIO, 2016 TO 2019 (ANNUAL)



Trends

Between 2016 and 2019, the estimated number of female individuals dispensed PrEP consistently increased. In 2019, the estimated number of female individuals dispensed PrEP was 4.7 times what it was in 2016.

FIGURE 3.4 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, FEMALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

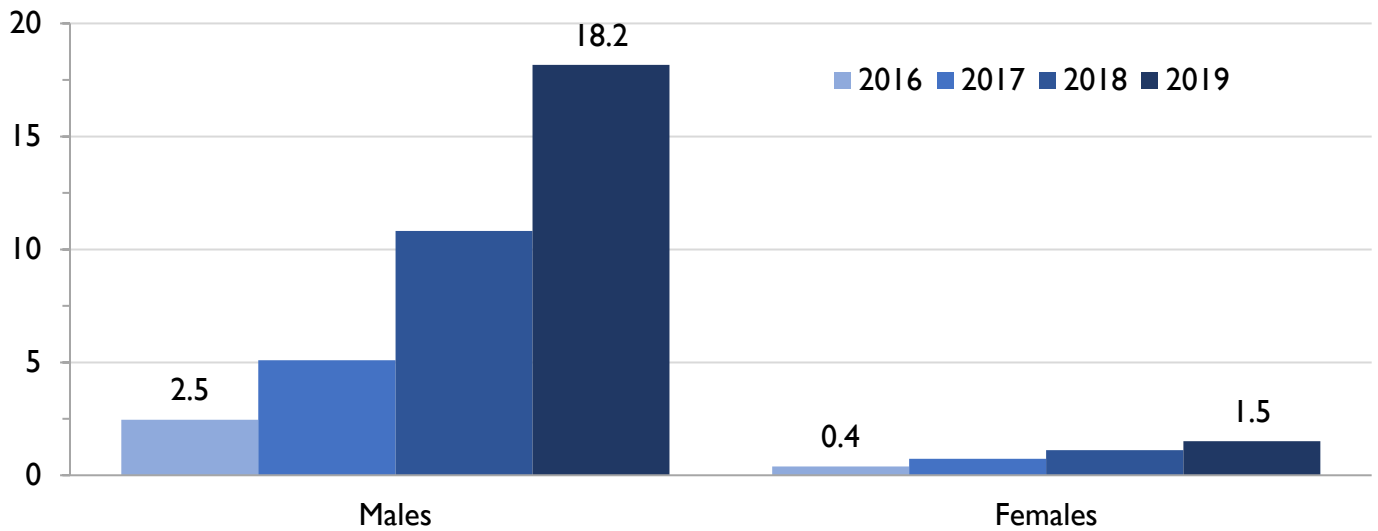


Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of female individuals dispensed PrEP had a relative increase of 53%.

Notes: Data acquired from IQVIA. 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. See **Table 1.1** and **Table 1.2** for underlying data.

FIGURE 3.5 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PrEP TO FIRST-TIME HIV DIAGNOSES (“PrEP-TO-NEED RATIO”), BY SEX, ONTARIO, 2016 TO 2019 (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 indicate more optimal HIV prevention efforts.

Between 2016 and 2019, the “PrEP-to-need ratio” increased for both males and females and was consistently substantially larger for males. The relative increase over this time period was greater among males (7.3 times) than females (3.8 times). In 2019, this ratio was 12 times higher for males than it was for females. Overall, the ratio of individuals dispensed PrEP to first-time HIV diagnoses increased from 2.0 in 2016 to 14.0 in 2019.

Assessing successful uptake of PrEP in women is not straightforward, as overall risk for HIV in women is lower, and PrEP guidelines are less developed for women as compared to men.

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. First-time HIV diagnoses acquired from Public Health Ontario (PHO). See [First-time HIV diagnoses](#) for more information. PrEP = pre-exposure prophylaxis. See **Table 1.4** for underlying data.

4. By age

Summary & Interpretation

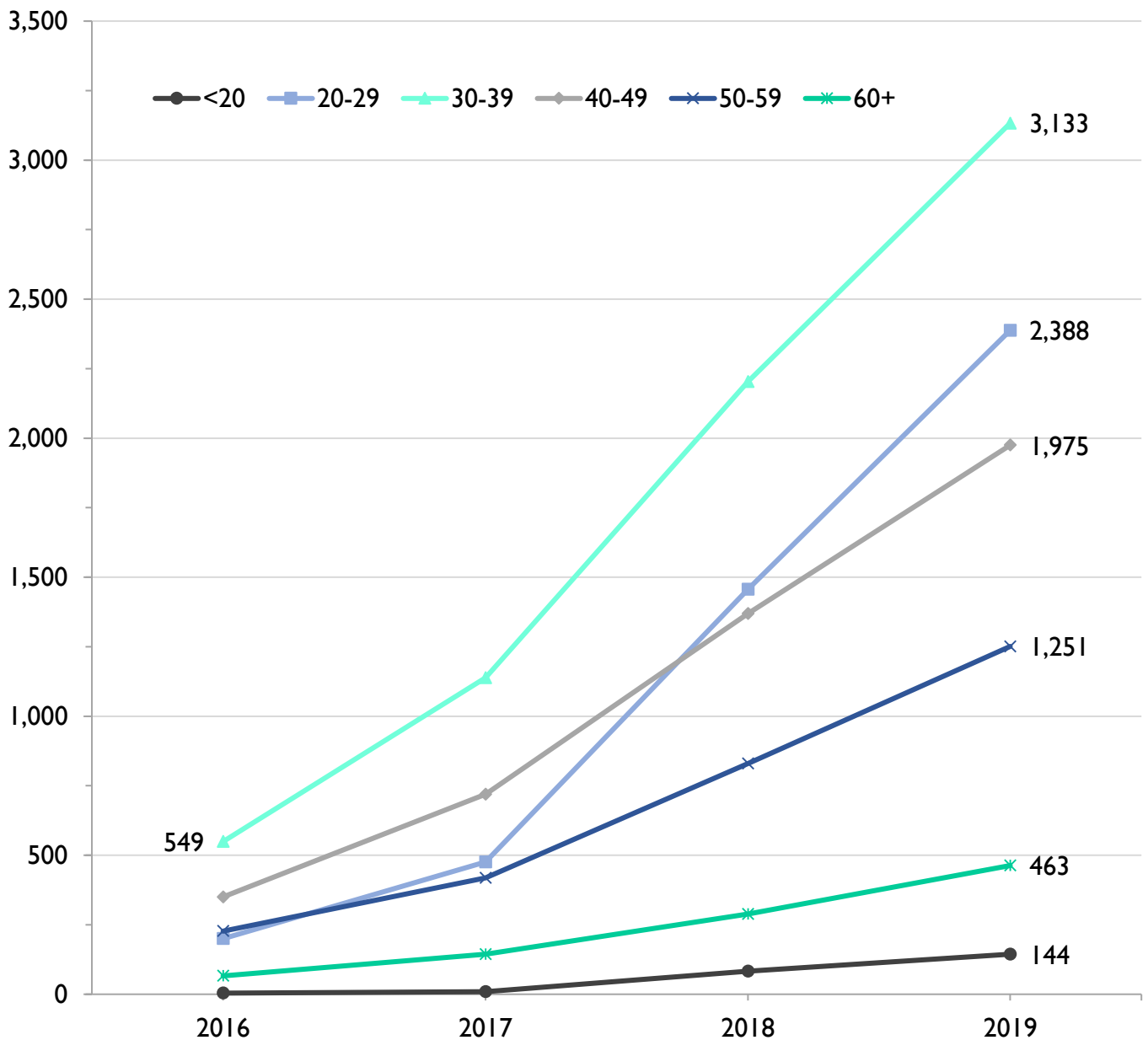
For both males and females, the data shows that the estimated numbers of individuals who used PrEP increased among all age categories between 2016 and 2019. In 2019, those aged 30-39 comprised the largest proportion of individuals on PrEP among both sexes.

Among males, there were more individuals aged 20-29 who used PrEP than those aged 40-49 years over the full year of 2019; however, when the data are examined quarterly, these numbers were more similar, suggesting that males aged 40-49 were more likely to use PrEP consistently over time. These findings are corroborated by Sex Now 2019 data, where among GBT2Q men never diagnosed with HIV, participants aged 30-49 years were most likely to be currently on PrEP.

Among females, the largest increases in PrEP users were among those under age 30 and those aged 40-49 years. Females under 30 accounted for ~1 in 5 of female PrEP users in 2016 and ~1 in 3 in 2019.

Males by age

FIGURE 4.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, 2016 TO 2019 (ANNUAL)



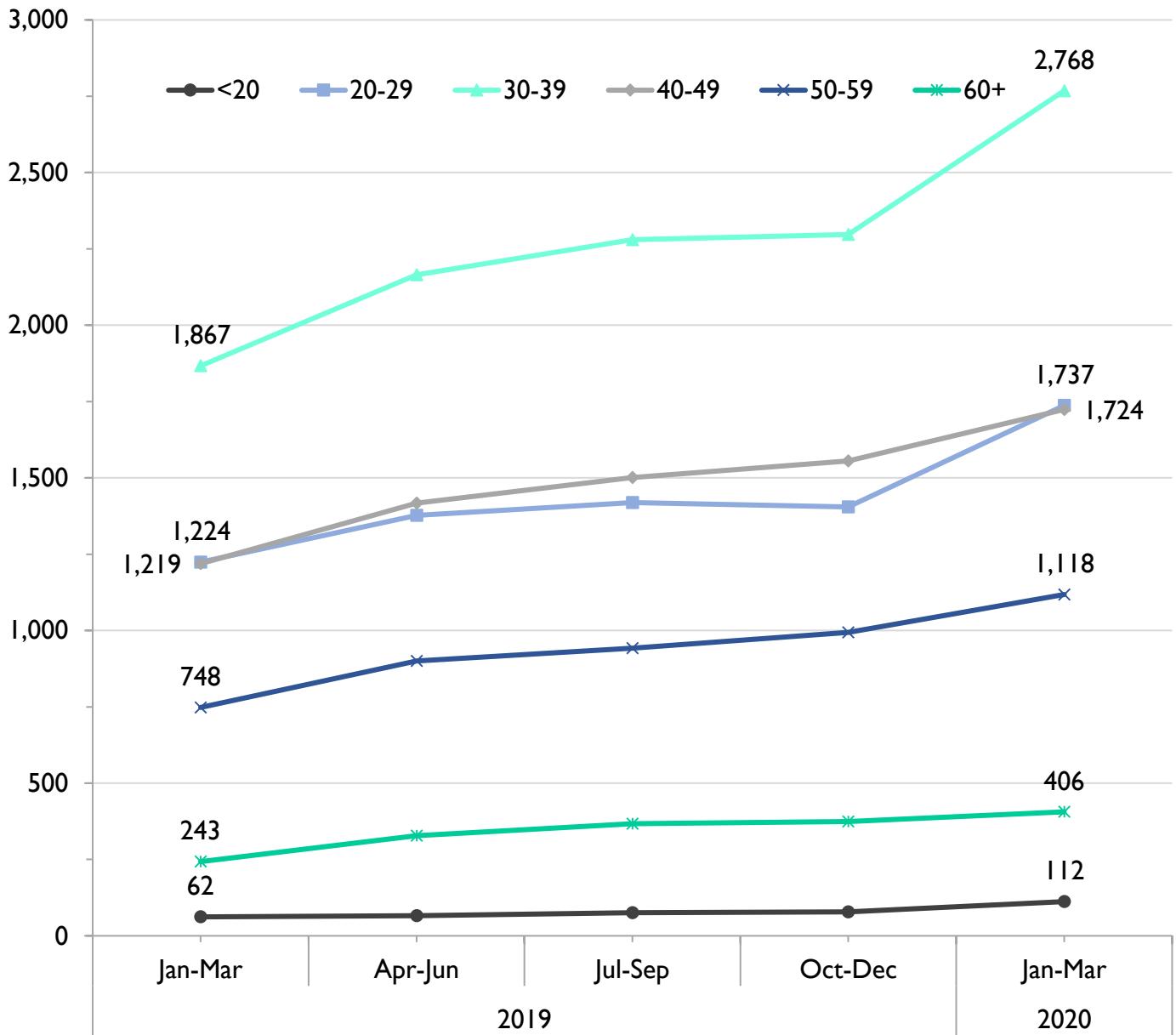
Age	2016	2019
<20	<5	144
20-29	200	2,388
30-39	549	3,133
40-49	350	1,975
50-59	227	1,251
60+	66	463

Trends

Between 2016 and 2019, the estimated number of males dispensed PrEP increased in all age categories. The relative increase was greatest among those under age 20 (36 times), followed by those aged 20-29 (12 times). The 30-39 age category had the greatest estimated number of unique individuals dispensed PrEP in each year of this time period.

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 3.1** for underlying data.

FIGURE 4.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Age	Jan-Mar 2019	Jan-Mar 2020
<20	62	112
20-29	1,224	1,737
30-39	1,867	2,768
40-49	1,219	1,724
50-59	748	1,118
60+	243	406

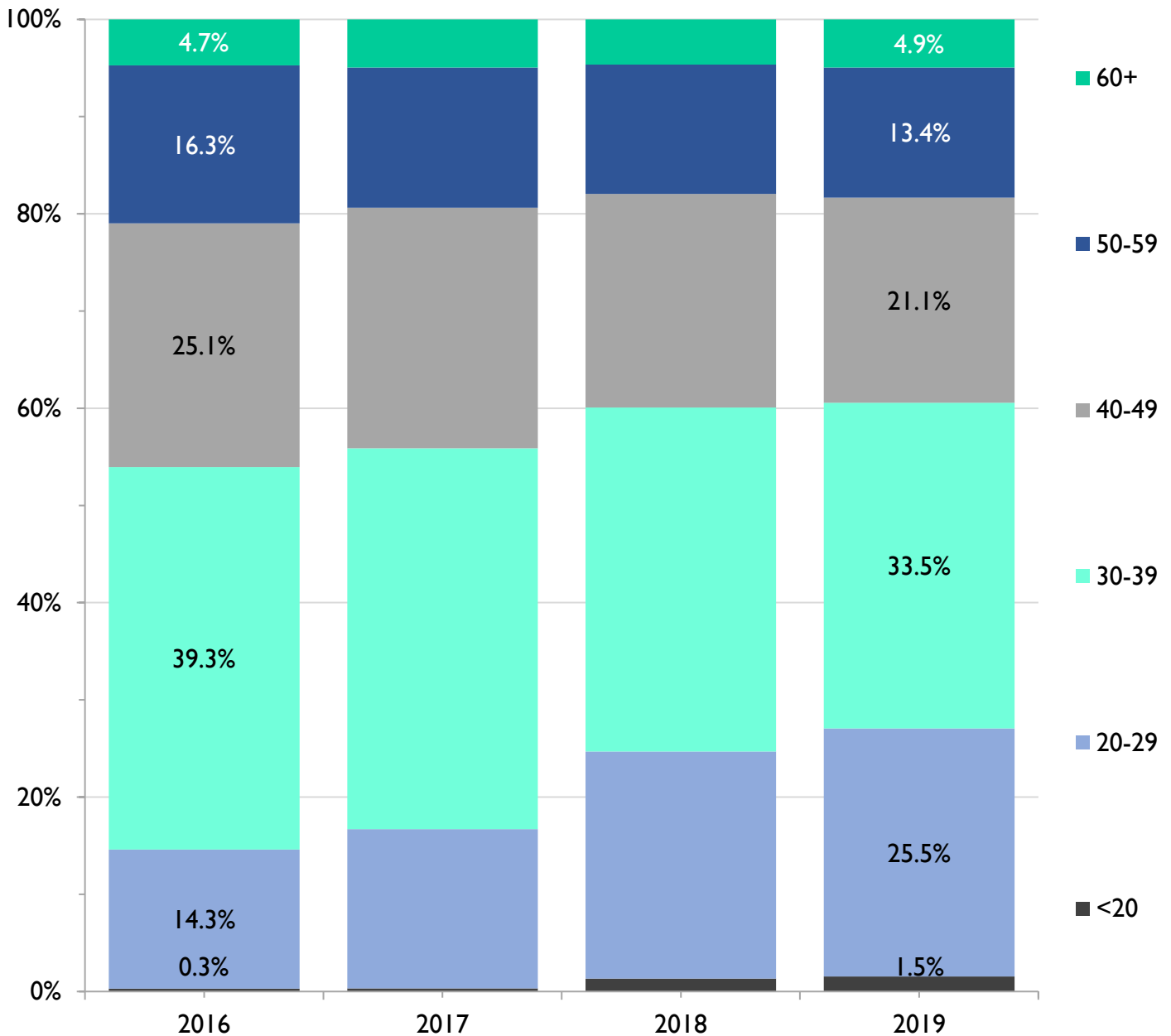
Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of males dispensed PrEP increased in all age categories and the 30-39 age category had the largest estimated number of unique individuals dispensed PrEP in each quarter of this time period. Whereas there was a larger estimated number of males aged 20-29 dispensed PrEP over the full year of 2019 than those aged 40-49 (Figure 3.1), for the latter three quarters of 2019, males aged 40-49 outnumbered those aged 20-29. This suggests that

males aged 40-49 were more likely to use PrEP consistently over time.

Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 3.2** for underlying data.

FIGURE 4.3 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, 2016 TO 2019 (ANNUAL)



Age	2016	2019
<20	0.3%	1.5%
20-29	14.3%	25.5%
30-39	39.3%	33.5%
40-49	25.1%	21.1%
50-59	16.3%	13.4%
60+	4.7%	4.9%

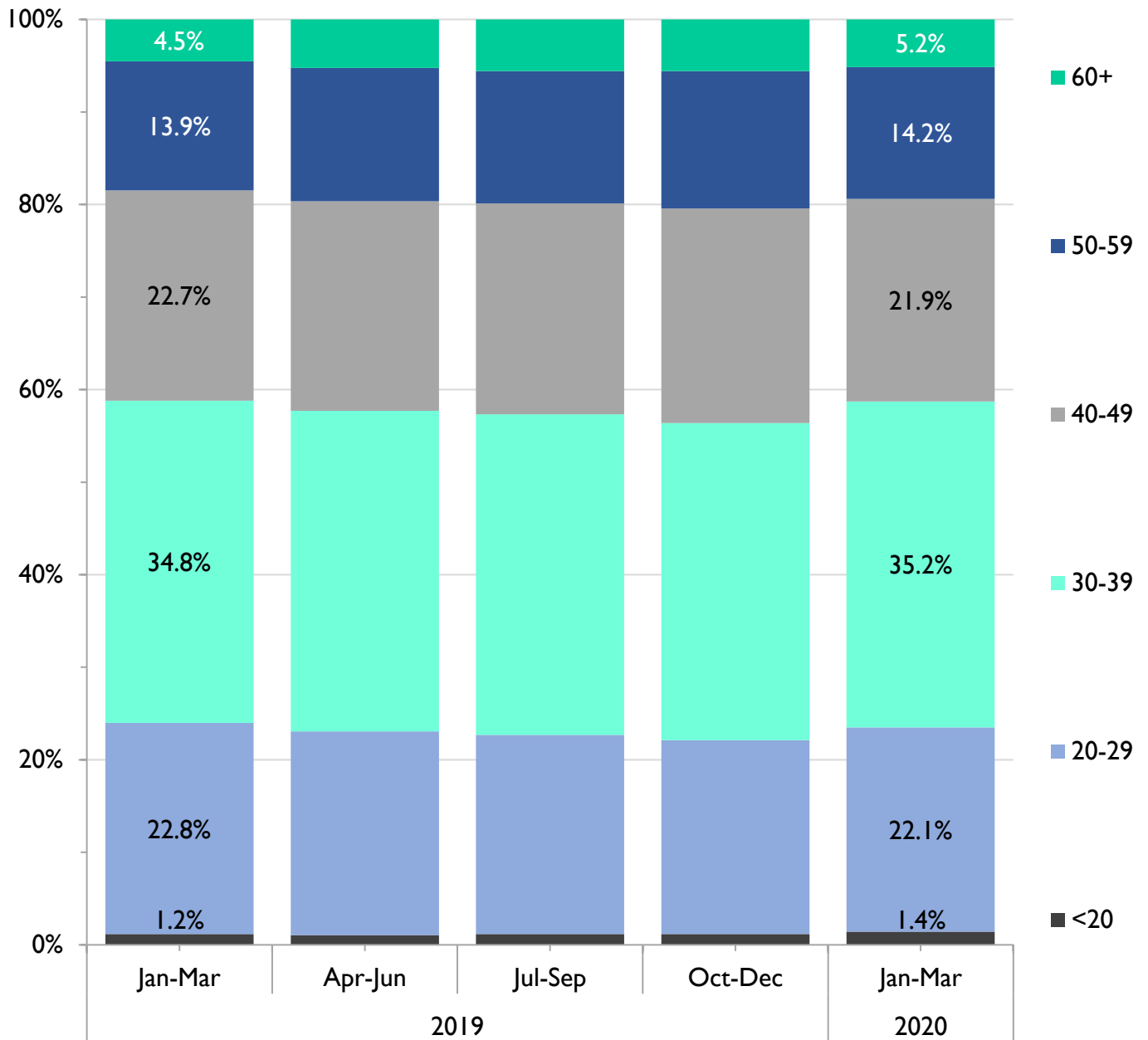
Trends

Between 2016 and 2019, the majority of the estimated males dispensed PrEP were under age 40 and this proportion grew over this time period. Despite an increase in counts, males aged 30-39, 40-49, and 50-59 saw their estimated proportions shrink while the estimated proportion of males dispensed PrEP aged 20-29 increased substantially. Males under 30 accounted for ~1 in 7 of the

estimated males dispensed PrEP in 2016 and ~1 in 4 in 2019.

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 3.1** for underlying data.

FIGURE 4.4 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, MALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Age	Jan-Mar 2019	Jan-Mar 2020
<20	1.2%	1.4%
20-29	22.8%	22.1%
30-39	34.8%	35.2%
40-49	22.7%	21.9%
50-59	13.9%	14.2%
60+	4.5%	5.2%

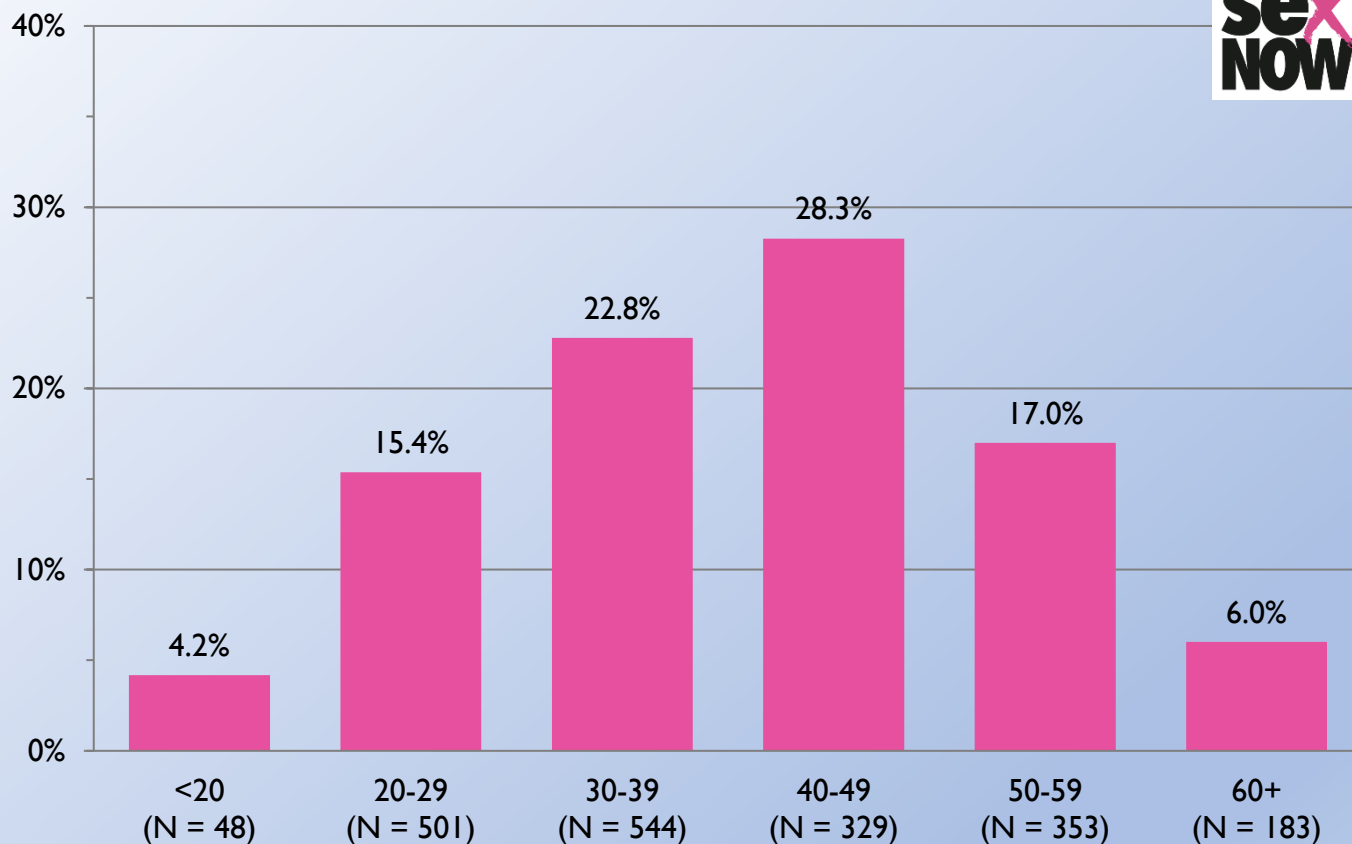
Trends

Between Jan-Mar 2016 and Jan-Mar 2020, the majority of the estimated males dispensed PrEP were under age 40. Whereas males aged 20-29 comprised 25.5% of the estimated males dispensed PrEP over the full year of 2019, they comprised between 21.0% and 22.8% over the four quarters of this year, suggesting that they were less likely to be consistent PrEP users in 2019.

Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. See **Table 3.2** for underlying data.

FOCUS ON GBT2Q MEN

FIGURE 4.5 GBT2Q MEN: PREP UPTAKE AMONG AGE GROUPS, ONTARIO, SEX NOW 2019



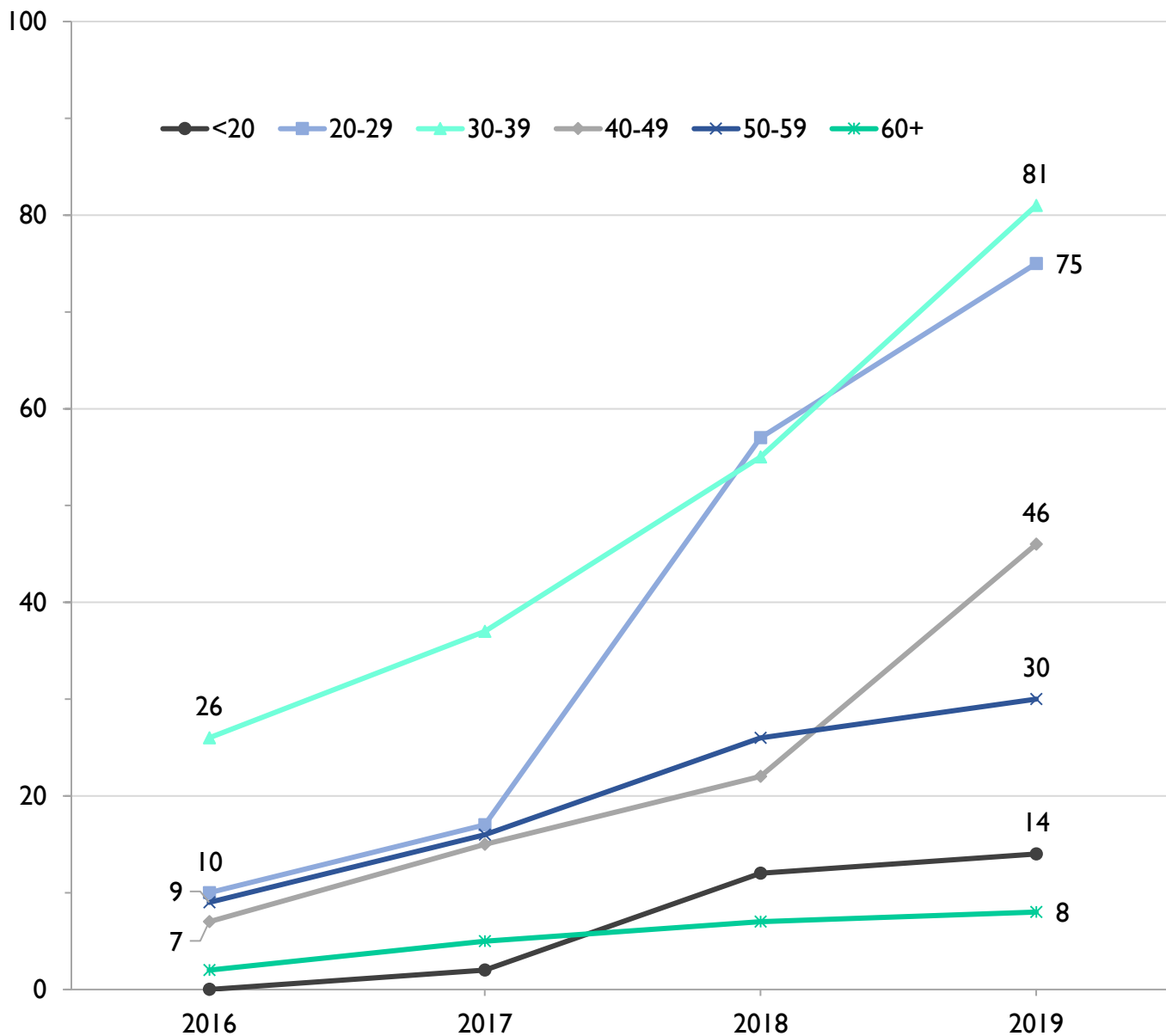
Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 28.3% of participants aged 40-49 reported currently using PrEP. The proportion of participants within each age category who reported currently being on PrEP increased with each successive category until reaching a peak of 28.3% among participants aged 40-49 and then decreasing in older age categories.

Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information. See **Table 3.3** for underlying data.

Females by age

FIGURE 4.6 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, 2016 TO 2019 (ANNUAL)



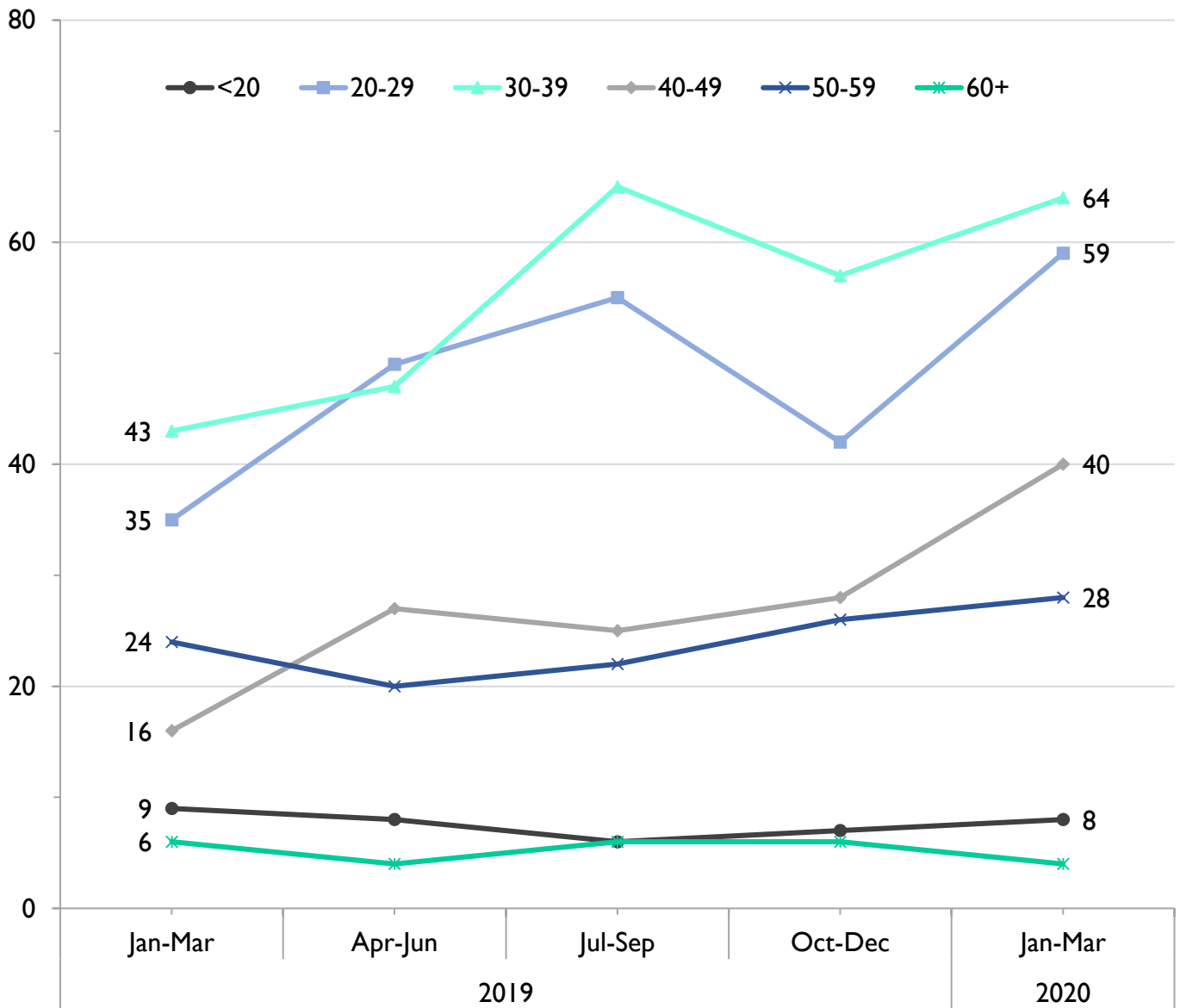
Age	2016	2019
<20	<5	14
20-29	10	75
30-39	26	81
40-49	7	46
50-59	9	30
60+	<5	8

Trends

Between 2016 and 2019, the estimated number of females dispensed PrEP increased in all age categories. The relative increase was greatest among those under age 20 (from 0 to 14), followed by those aged 20-29 (7.5 times). The 30-39 age category had the largest estimated number of unique individuals dispensed PrEP in each year of this period except one (2018). *Interpretation of these trends should consider the relatively small numbers on which they are based.*

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 3.4** for underlying data.

FIGURE 4.7 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Age	Jan-Mar 2019	Jan-Mar 2020
<20	9	8
20-29	35	59
30-39	43	64
40-49	16	40
50-59	24	28
60+	6	<5

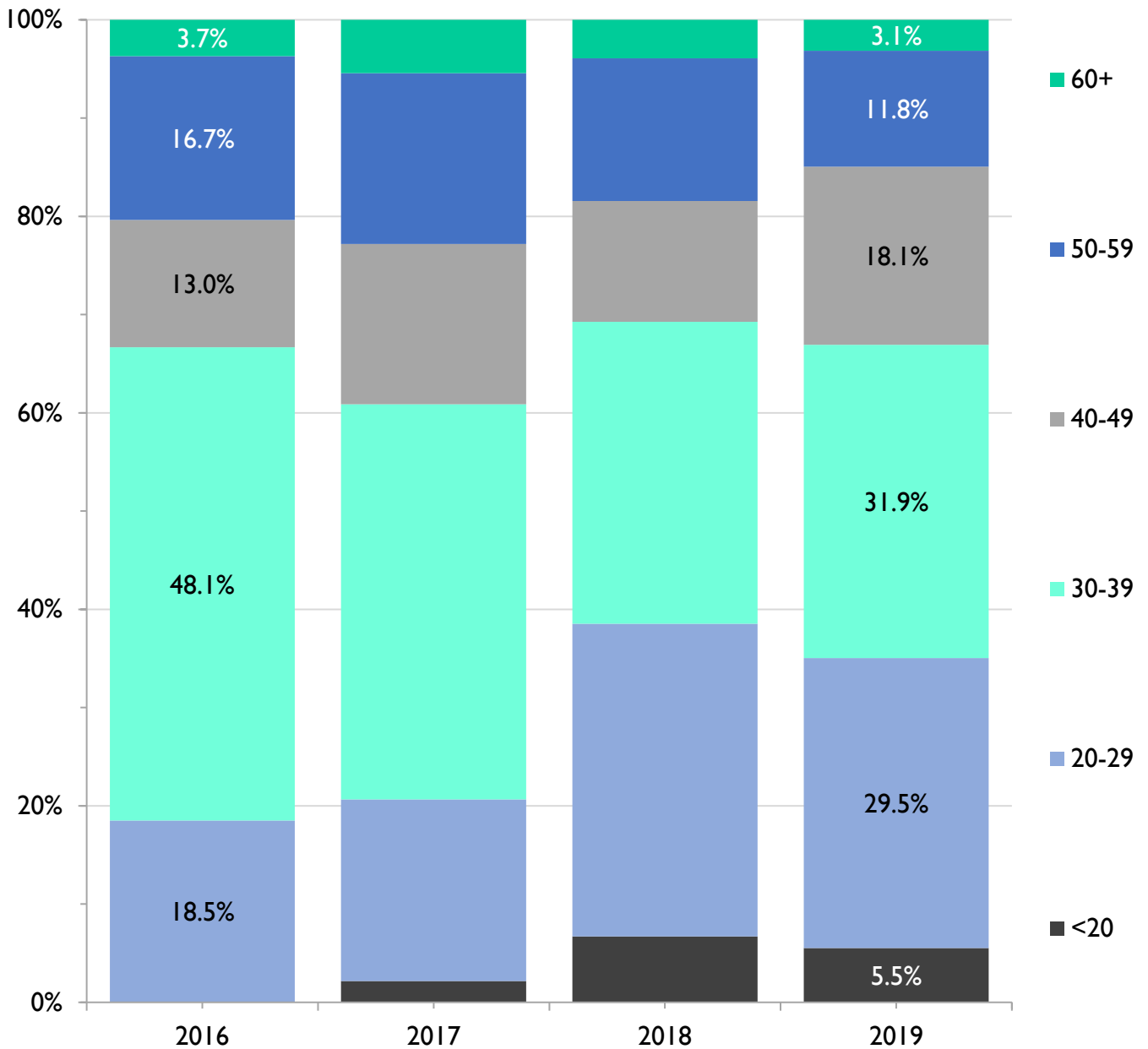
Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of females dispensed PrEP increased in the 20-29, 30-39, 40-49, and 50-59 age categories. The relative increase was greatest among those aged 40-49 (2.5 times), followed by those aged 20-29 (1.7 times). With the exception of Apr-Jun 2019, the 30-39 age category had the largest estimated number of females dispensed PrEP in each quarter of this time period. For females aged <20 and 60+, there has been little change, however this is

based on very small numbers. Interpretation of these trends should consider the relatively small numbers on which they are based.

Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. See **Table 3.5** for underlying data.

FIGURE 4.8 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, 2016 TO 2019 (ANNUAL)



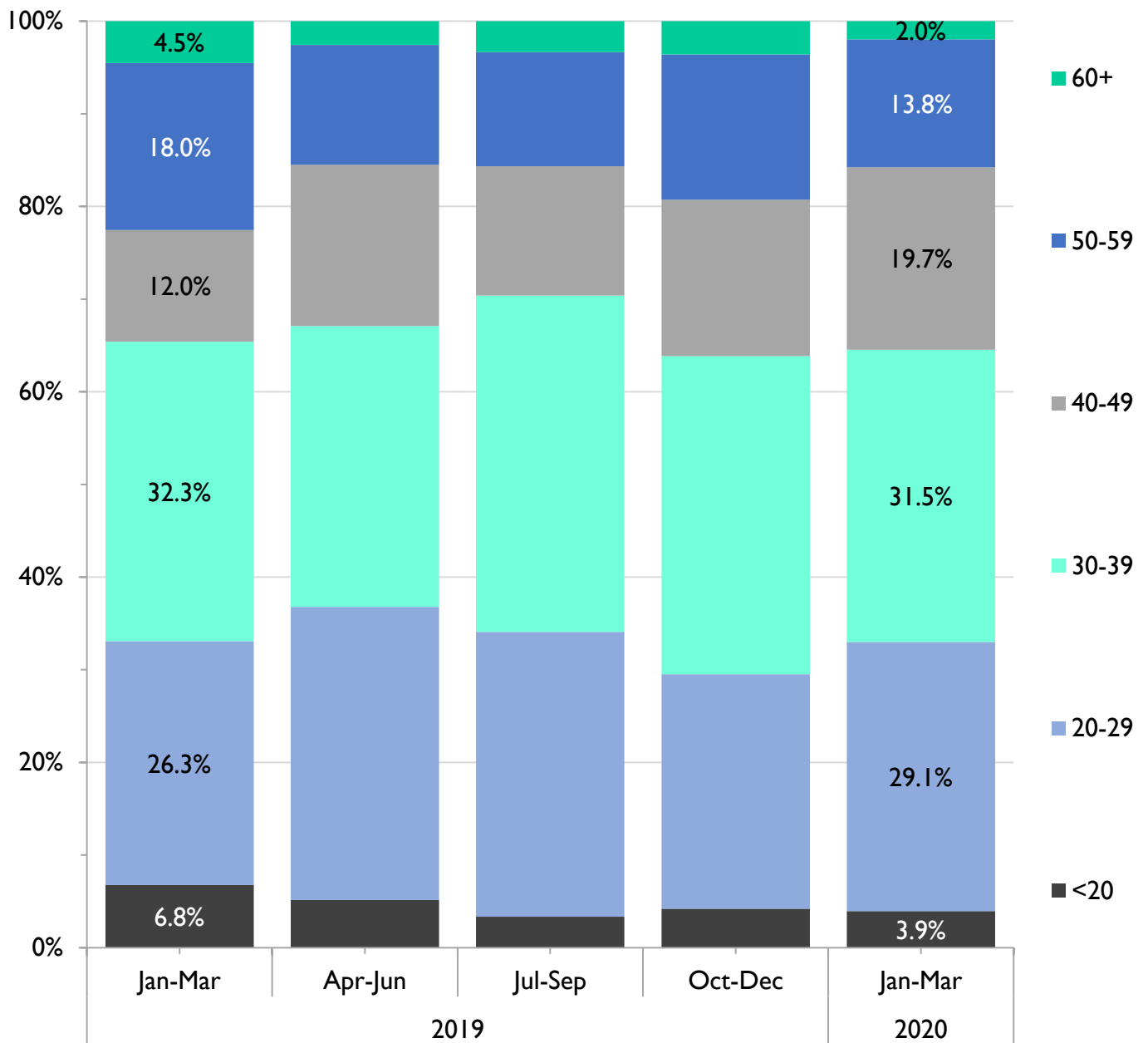
Age	2016	2019
<20	0.0%	5.5%
20-29	18.5%	29.5%
30-39	48.1%	31.9%
40-49	13.0%	18.1%
50-59	16.7%	11.8%
60+	3.7%	3.1%

Trends

Between 2016 and 2019, despite an increase in counts (Figure 3.4), females aged 30-39, 50-59, and 60+ saw their estimated proportions of females dispensed PrEP decrease while the estimated proportions of females aged <20, 20-29, and 40-49 increased. Females under 30 years of age accounted for ~1 in 5 of the estimated females dispensed PrEP in 2016 and ~1 in 3 in 2019. Interpretation of these proportions should consider the relatively small numbers on which they are based.

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. See **Table 3.4** for underlying data.

FIGURE 4.9 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY AGE, FEMALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Age	Jan-Mar 2019	Jan-Mar 2020
<20	6.8%	3.9%
20-29	26.3%	29.1%
30-39	32.3%	31.5%
40-49	12.0%	19.7%
50-59	18.0%	13.8%
60+	4.5%	2.0%

Trends

Between Jan-Mar 2016 and Jan-Mar 2020, more than 60% of the estimated females dispensed PrEP were under age 40. As the number of females aged 40-49 dispensed PrEP increased substantially (Figure 3.5), they comprised a growing proportion of all females dispensed PrEP over this period, whereas the modest increase in number of females aged 50-59 corresponded with a decrease in proportion. *Interpretation of these proportions should consider the relatively small numbers on which they are based.*

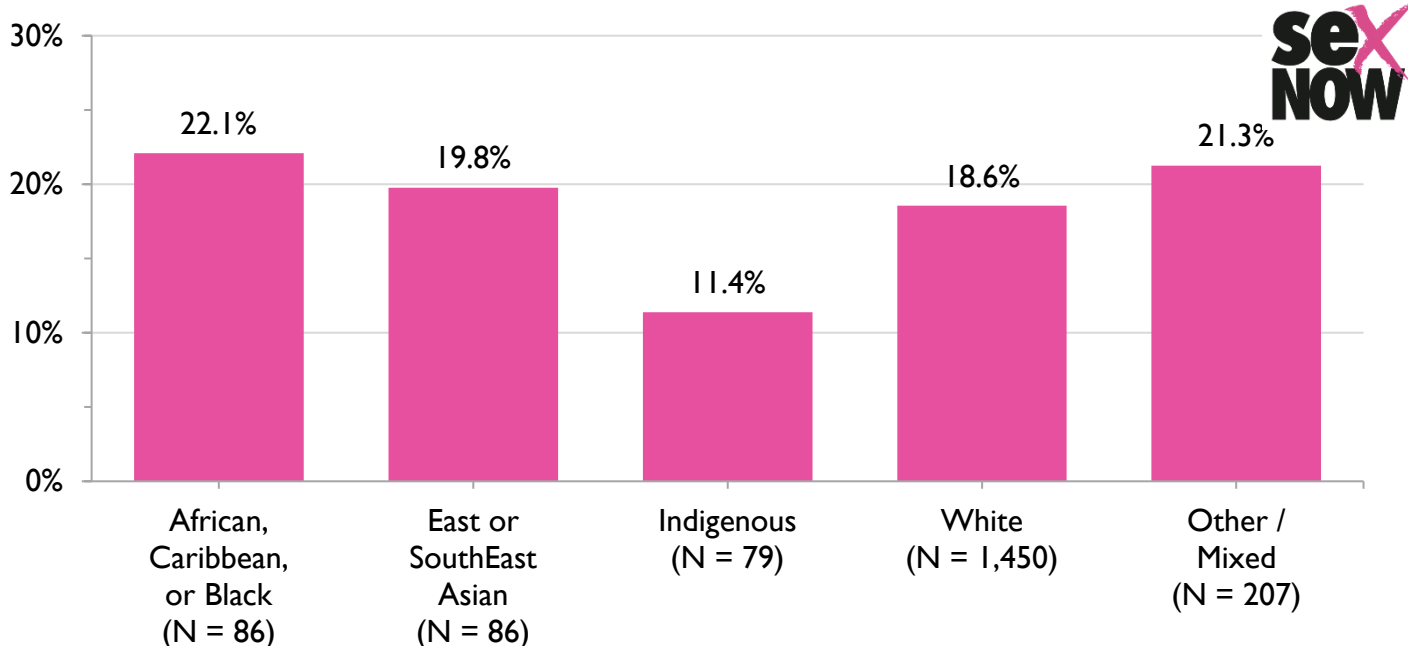
Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. See **Table 3.5** for underlying data.

5. By race/ethnicity (GBT2Q men)

Summary & Interpretation

Sex Now 2019 data shows that among GBT2Q men who had never been diagnosed with HIV, approximately 1 in 5 participants were PrEP users regardless of race/ethnicity. The one exception was Indigenous participants where approximately 1 in 9 were PrEP users. About 18.6% of HIV-negative White participants were PrEP users. White participants comprised 72.5% of all participants never diagnosed with HIV and three quarters (75.1%) of all current PrEP users in the study (not depicted).

FIGURE 5.1 GBT2Q MEN: PREP UPTAKE AMONG RACE/ETHNICITY CATEGORIES, ONTARIO, SEX NOW 2019



Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, the proportions of each race/ethnicity category that reported currently being on PrEP were very similar, ranging between 18.6% and 22.1%. The one exception was Indigenous participants, Of the 79 Indigenous participants, 9 (11.4%) reported currently being on PrEP.

White participants comprised 72.5% of all participants never diagnosed with HIV, and 75.1% of all participants currently on PrEP (not depicted).

Interpretation of these proportions should consider the relatively small numbers on which some of them are based (i.e. small sample sizes for African/Caribbean/Black, East/Southeast Asian, and Indigenous participants).

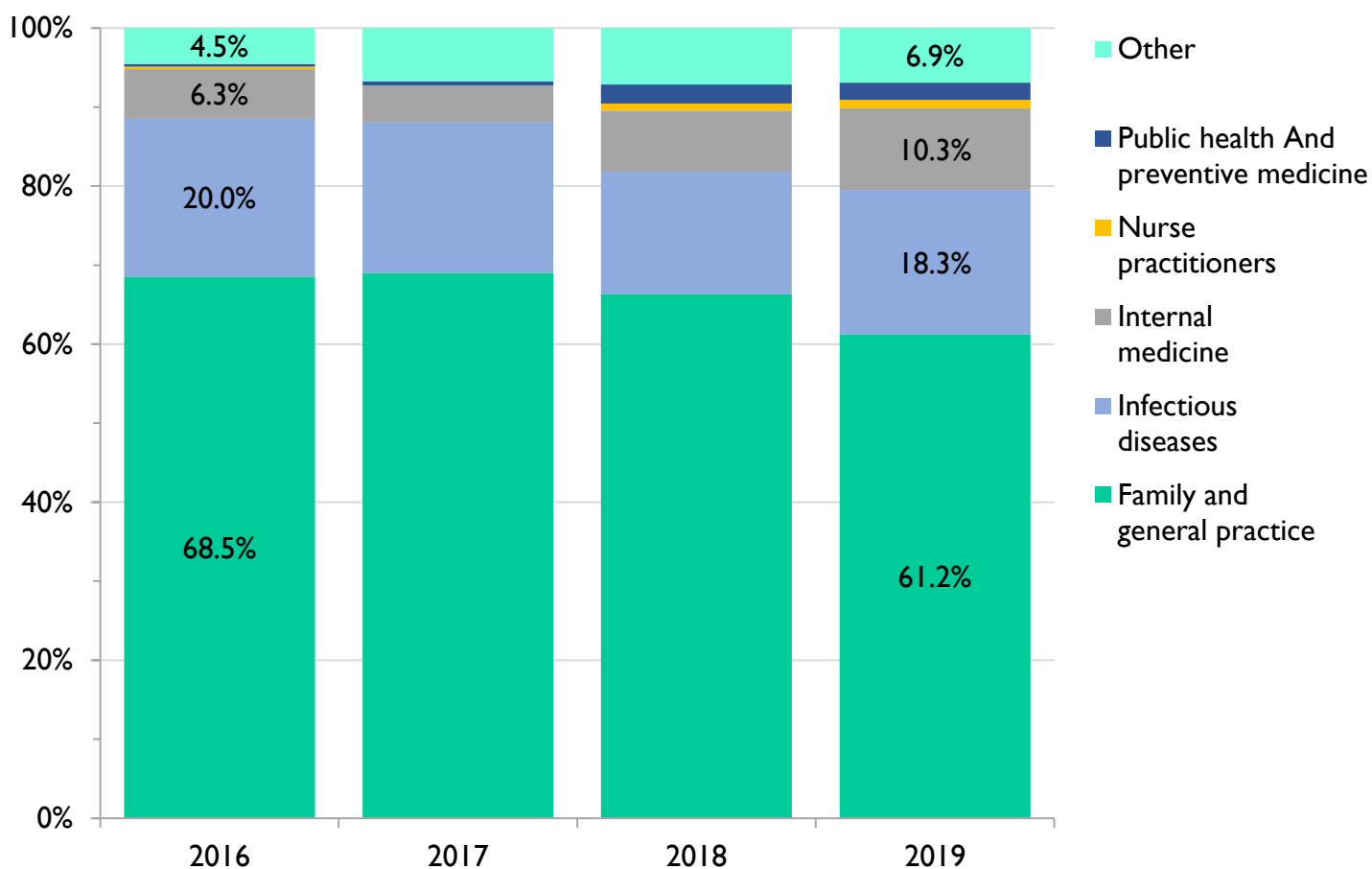
Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. “African, Caribbean, or Black” include participants who reported one or more of the response options: “African”, “Caribbean”, or “Black”. Indigenous includes all participants who reported Indigenous race/ethnicity, regardless of other options selected. Otherwise, participants who responded to more than one race/ethnicity category (with “African, Caribbean, or Black” considered a single category) were categorized as “Mixed”. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See Data source: Sex Now 2019 for more information. See **Table 4.1** for underlying data.

6. By prescriber specialty

Summary & Interpretation

In 2019, family and general practitioners prescribed PrEP for 3 in 5 of the estimated individuals who used PrEP. However, over time, internal medicine and public health/preventive medicine specialists and nurse practitioners accounted for a growing proportion of PrEP dispensations.

FIGURE 6.1 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PREP BY PRESCRIBER SPECIALTY, ONTARIO, 2015 TO 2020 (WHERE KNOWN, ANNUAL)



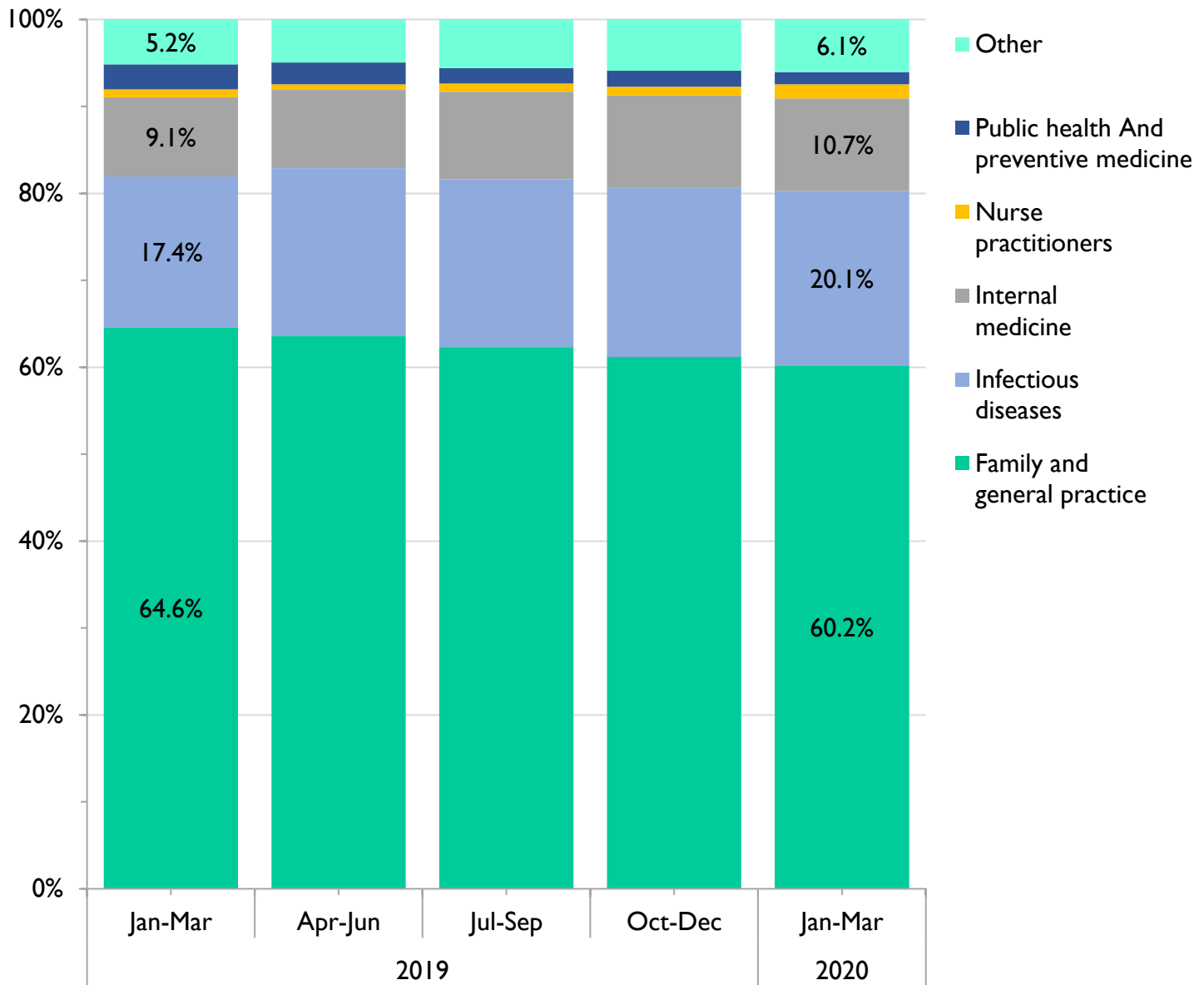
Prescriber Specialty	2016	2019
Family / GP	68.5%	61.2%
Infectious diseases	20.0%	18.3%
Internal medicine	6.3%	10.3%
Nurse practitioners	0.3%	1.1%
PH & Preventive	0.4%	2.2%
Other	4.5%	6.9%

Trends

Between 2016 and 2019, a majority (>60%) of the estimated individuals dispensed PrEP were prescribed PrEP by family and general practitioners, however this proportion decreased over time. The proportion of estimated individuals prescribed PrEP by internal medicine specialists increased and, by 2019, nurse practitioners accounted for a still small but growing proportion of PrEP dispensations.

Notes: Data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Prescriber specialty was unknown for between 8.8% (2016) and 13.3% (2019) of estimated PrEP dispensations. PrEP = pre-exposure prophylaxis. GP = general practice. PH = public health. See **Table 5.1** for underlying data.

FIGURE 6.2 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PRESCRIBER SPECIALTY, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



Prescriber Specialty	Apr-Jun 2019	Jan-Mar 2020
Family / GP	64.6%	60.2%
Infectious diseases	17.4%	20.1%
Internal medicine	9.1%	10.7%
Nurse practitioners	0.9%	1.6%
PH & Preventive	2.9%	1.4%
Other	5.2%	6.1%

Trends

Between Jan-Mar 2019 and Jan-Mar 2020, a consistent majority (60%+) of the estimated individuals dispensed PrEP were prescribed PrEP by family and general practitioners. By Jan-Mar 2020, nurse practitioners accounted for a still small but growing proportion of PrEP dispensations.

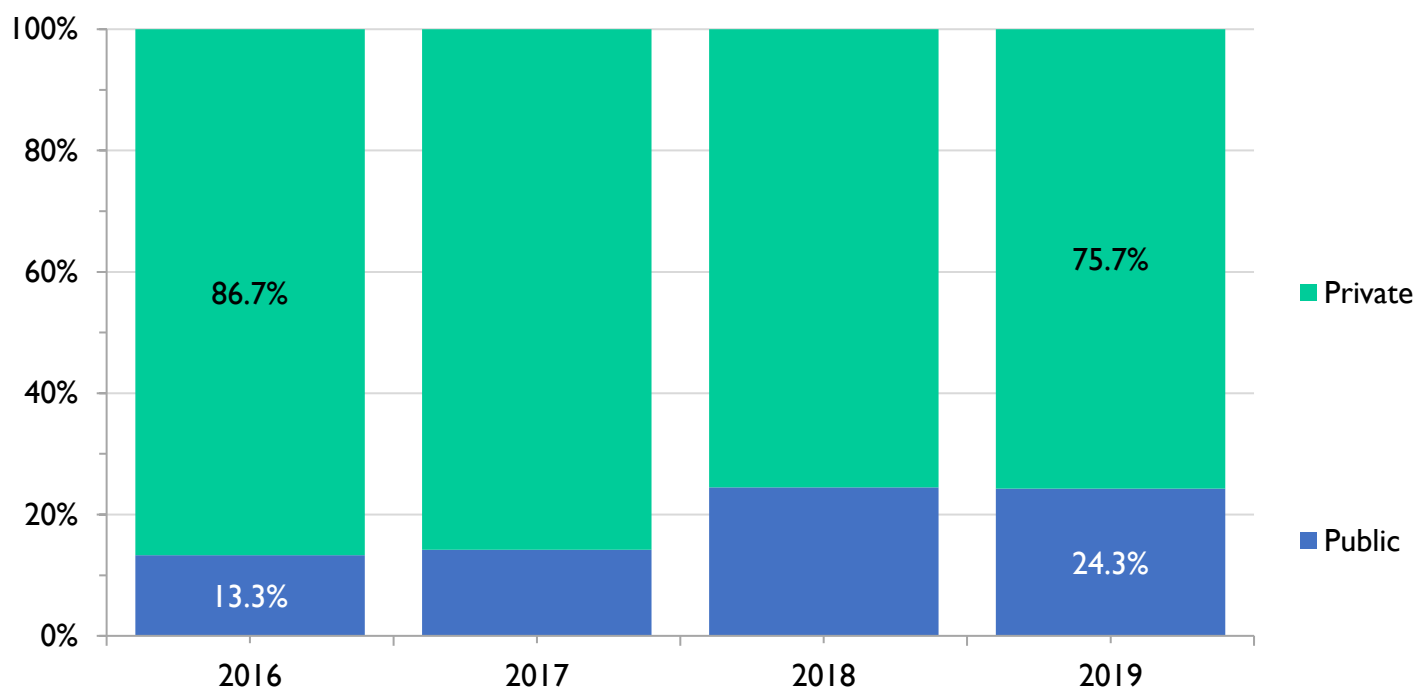
Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. Prescriber specialty was unknown for between 9.9% (Jan-Mar 2019) and 12.1% (Jan-Mar 2020) of estimated PrEP dispensations. PrEP = pre-exposure prophylaxis. GP = general practice. PH = public health. See **Table 5.2** for underlying data.

7. By payment type, by income, and by education

Summary & Interpretation

Between 2016 and 2019, a large majority of the estimated number of individuals who used PrEP covered the cost through private health insurance; however, the proportion who covered the cost through public payment options increased from ~1 in 7 in 2016/2017 to ~1 in 4 in 2018/2019. This shift is likely due in part to PrEP being added to the list of drugs covered through the Ontario Drug Benefit (ODB) program in September 2017 and the expansion of PrEP coverage through this program to those under age 25 (OHIP+) in January 2018. IQVIA data do not include PrEP dispensations paid out-of-pocket, so it is noteworthy that Sex Now 2019 data shows that, among GBT2Q men never diagnosed with HIV, greater PrEP uptake was associated with higher income and higher education. As private health insurance continues to be the predominant means of payment for PrEP, greater PrEP uptake among those with higher income and education may be at least partially explained by their increased likelihood of having employment with private health insurance coverage, and/or the means to pay out-of-pocket.

FIGURE 7.1 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PREP BY PAYMENT TYPE, ONTARIO, 2016 TO 2020 (ANNUAL)



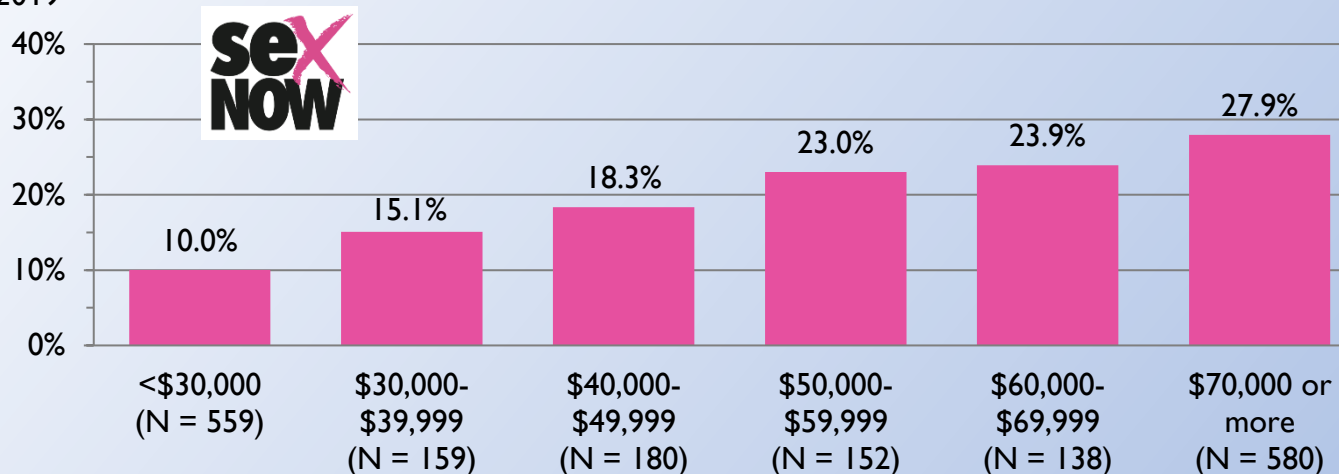
Trends

Between 2016 and 2019, a large majority of the estimated individuals dispensed PrEP covered the cost of the prescription through private health insurance. The estimated proportion who covered the cost publicly increased from 13.3% in 2016 to 24.3% in 2019; this increase occurred between the years 2017 and 2018.

Notes: Data acquired from IQVIA. Quarterly data represents the 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 6.1** for underlying data.

FOCUS ON GBT2Q MEN

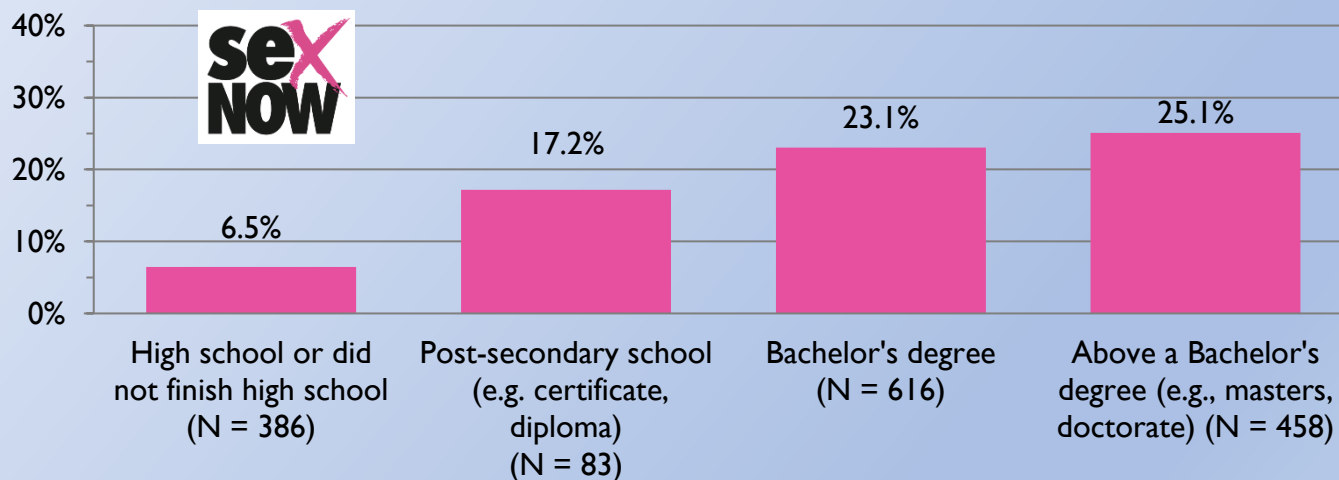
FIGURE 7.2 GBT2Q MEN: PREP UPTAKE AMONG ANNUAL INCOME CATEGORIES, ONTARIO, SEX NOW 2019



Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 10.0% of participants with annual incomes of less than \$30,000 were currently on PrEP, whereas 27.9% of participants with annual incomes of \$70,000 or more were currently on PrEP. PrEP uptake increased with each successive category of higher income.

FIGURE 7.3 GBT2Q MEN: PREP UPTAKE AMONG EDUCATION CATEGORIES, ONTARIO, SEX NOW 2019



Snapshot

In 2019, among GBT2Q men who had never been diagnosed with HIV, 6.5% of participants with high school or less education were currently on PrEP compared to 25.1% of participants with greater than a bachelor's degree. PrEP uptake increased with each successive category of increased education. *Participants with less education may be younger and working toward these tiers of education at the time of the survey.*

Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information. See **Table 6.2** and **Table 6.3** for underlying data.

8. By region

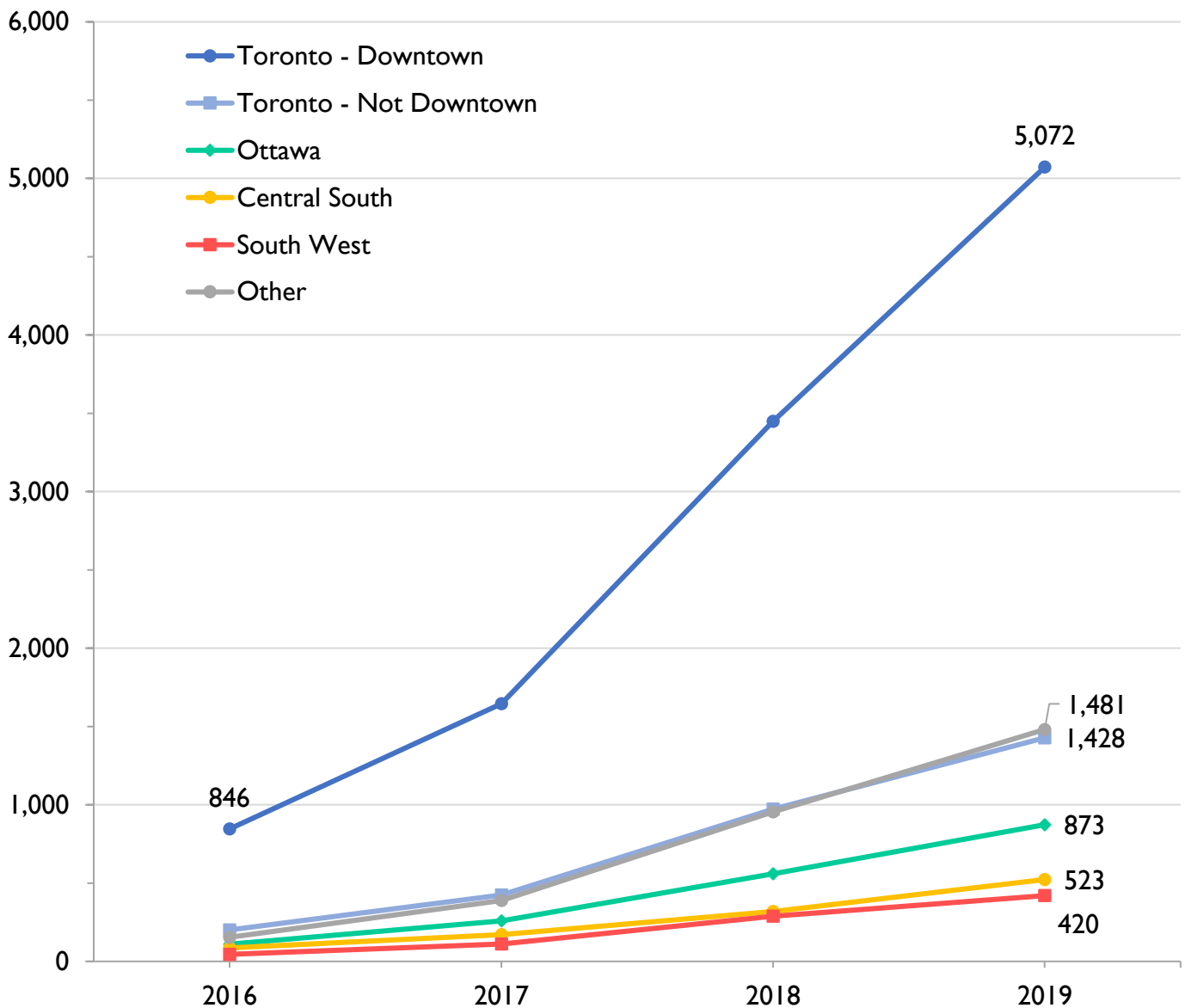
Summary & Interpretation

The “Toronto – Downtown” region had by far the largest number of PrEP users between 2016 and 2019, accounting for the majority (51.8%-58.7%) of all PrEP users in each of these years. The number of PrEP users in downtown Toronto continued to increase substantially into the first quarter of 2020, however this region saw its proportion of all PrEP users decrease between 2016 and 2019 as increases in all other Southern Ontario regions outpaced its growth (notably Halton, Central East, Eastern, and Erie-St. Clair regions).

The rate of PrEP users per capita was highest in Toronto and increased in all regions between 2016 and 2019, with Halton and Central East regions having the largest relative increases.

The “PrEP-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where higher numbers indicate more optimal HIV prevention efforts) also increased for all regions, with Eastern and South West regions having the largest relative increases. Ottawa replaced Toronto as having the highest “PrEP-to-need ratio” in 2018 and 2019.

FIGURE 8.1 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, 2016 TO 2019 (ANNUAL)

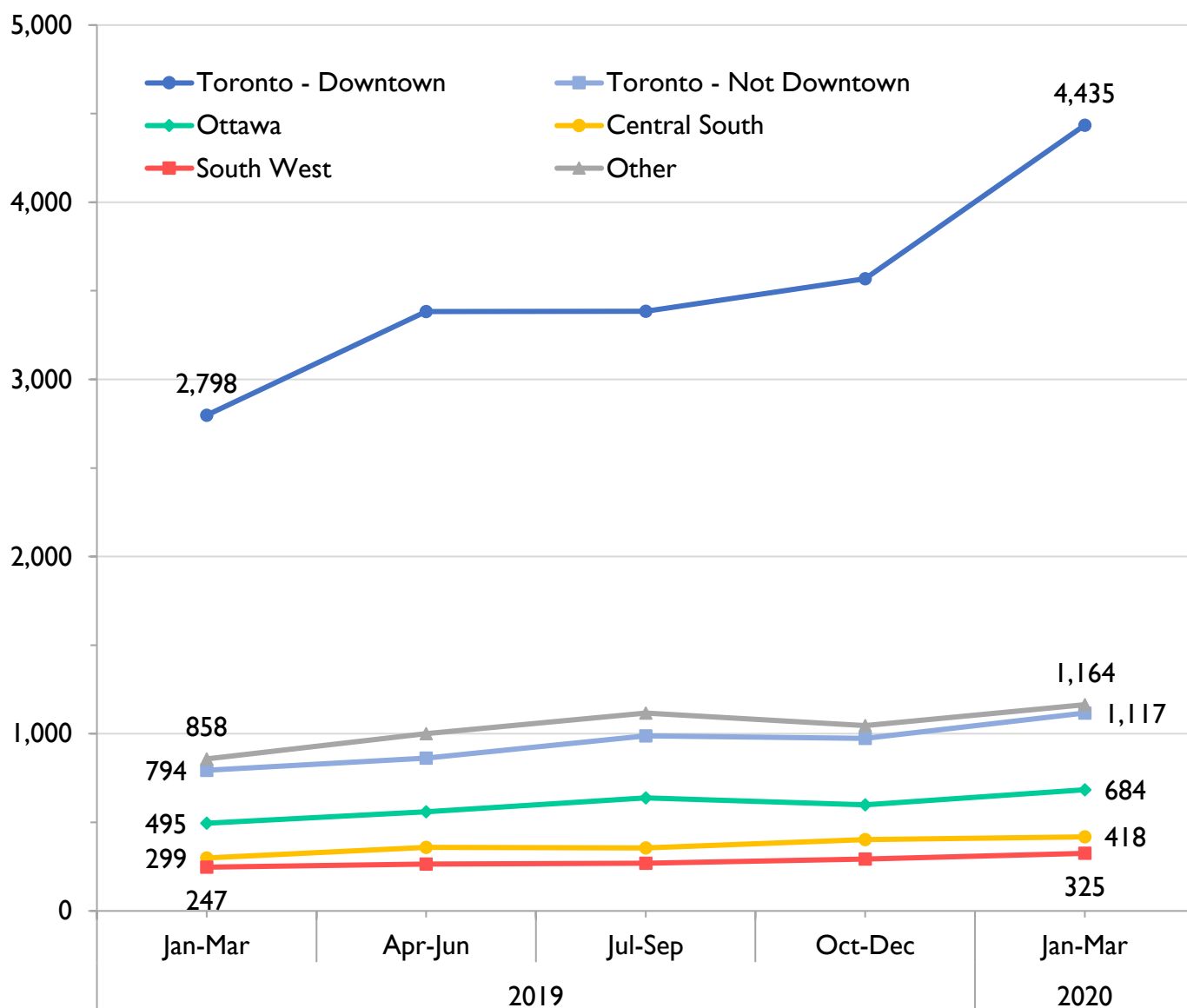


Region	2016	2019
Toronto – Downtown	846	5,072
Toronto – Not Downtown	201	1,428
Ottawa	110	873
Central South	86	523
South West	45	420
Other	154	1,481

Trends
 Between 2016 and 2019, the estimated number of individuals dispensed PrEP increased in all regions. In Across all four years, the largest number of individuals dispensed PrEP were dispensed PrEP from a pharmacy in the “Toronto – Downtown” region. The relative increases were greatest in the Other (9.6 times, see Figure 6.4 for these regions) and South West (9.3 times) regions.

Notes: Data acquired from IQVIA. Annual data represents the 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 7.1** for underlying data.

FIGURE 8.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)



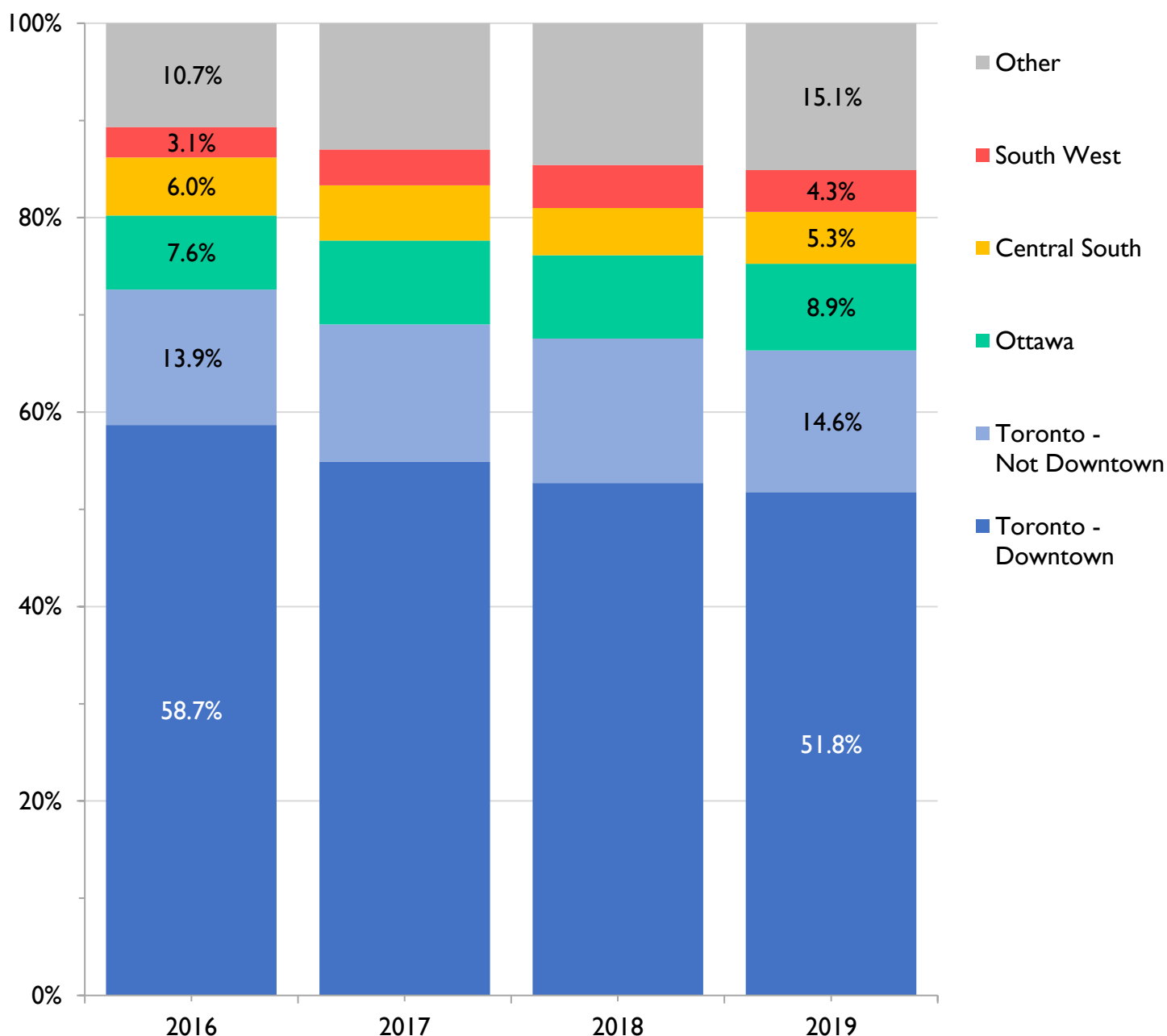
Region	Jan-Mar 2019	Jan-Mar 2020
Toronto – Downtown	2,798	4,435
Toronto – Not Downtown	794	1,117
Ottawa	495	684
Central South	299	418
South West	247	325
Other	858	1,164

Trends

Between Apr-Jun 2019 and Jan-Mar 2020, the estimated number of individuals dispensed PrEP increased in all regions. In all quarters, the largest number of individuals dispensed PrEP were dispensed PrEP from a pharmacy in the “Toronto – Downtown” region. The relative increases were greatest in the “Toronto – Downtown” (59%) region, followed by the “Toronto – Not Downtown” (41%) and Central South (40%) regions.

Notes: Data acquired from IQVIA. Quarterly data represents the 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 7.2](#) for underlying data.

FIGURE 8.3 ESTIMATED PROPORTION OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, 2016 TO 2019 (ANNUAL)

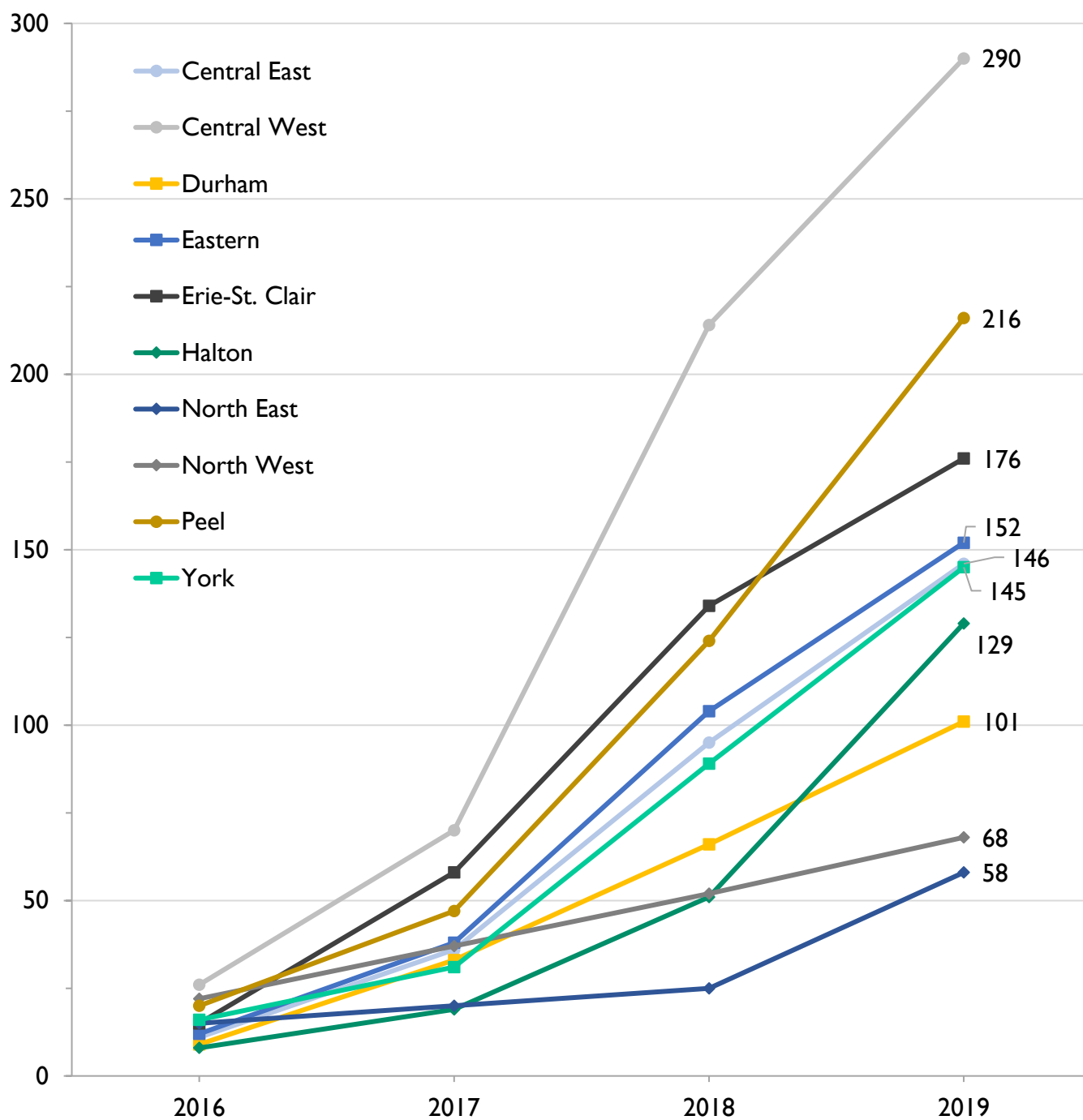


Trends

Between 2016 and 2019, a majority of estimated individuals dispensed PrEP were dispensed PrEP from a pharmacy in the “Toronto – Downtown” region, however this proportion decreased over this time period to 51.8%. The proportions of estimated individuals dispensed PrEP from a pharmacy in the Ottawa, South West, and other regions (shown in [Figure 8.4](#) and [Figure 8.5](#)) increased over this time. Of the 10 regions combined into the ‘other’ category, each accounted for less than 3.4% of estimated individuals dispensed PrEP per year (together summing to between 10.7% and 15.1%).

Notes: Data acquired from IQVIA. Quarterly data represents the 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 7.1](#) for underlying data.

FIGURE 8.4 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO (EXCLUDING TORONTO, OTTAWA, CENTRAL SOUTH, AND SOUTH WEST), 2016 TO 2019 (ANNUAL)

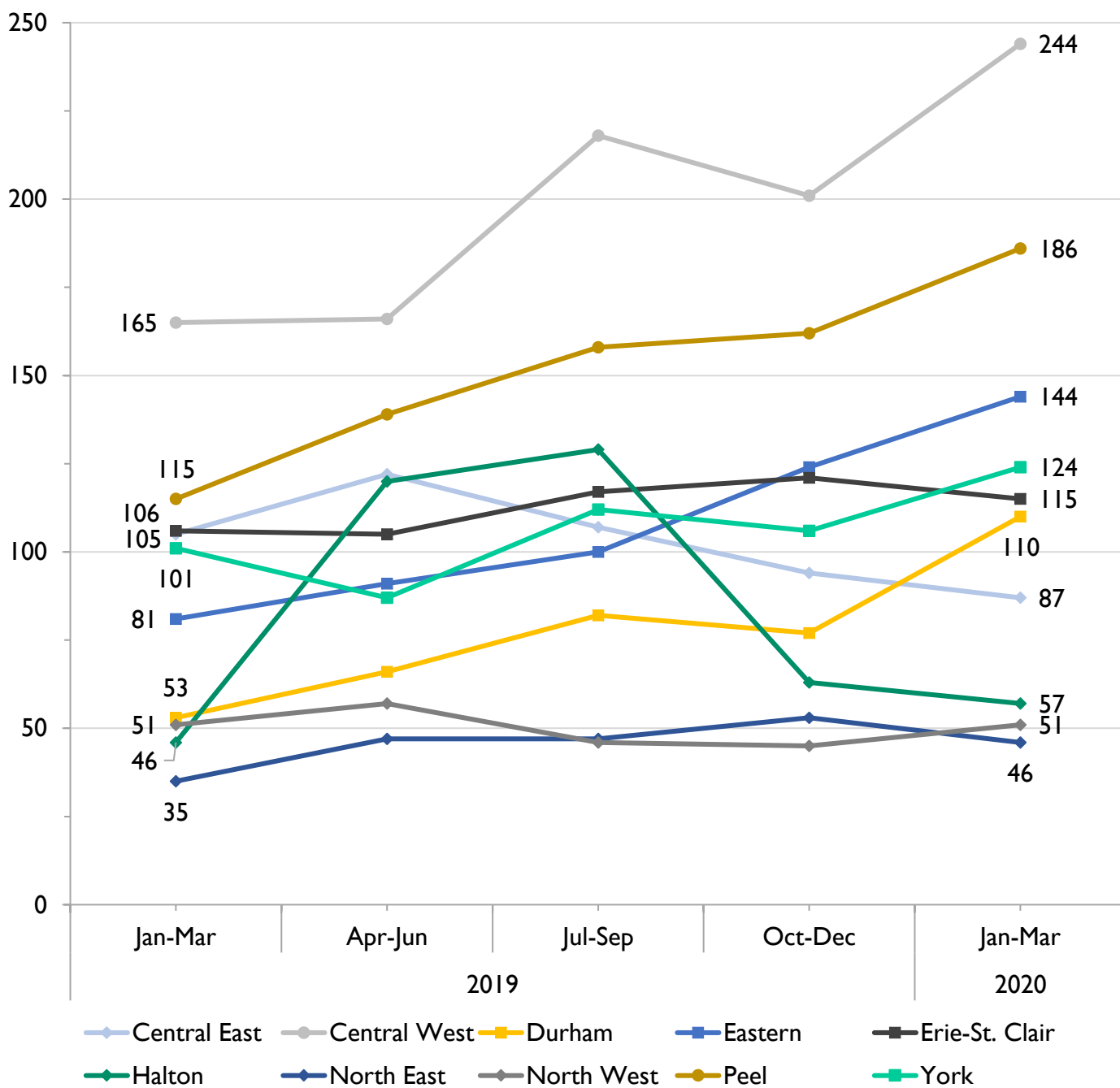


Trends

Between 2016 and 2019, the estimated number of individuals dispensed PrEP increased in all regions. Outside of Toronto, Ottawa, Central South and South West regions, the estimated number of individuals dispensed PrEP was consistently highest in the Central West region. The relative increases were greatest in the Halton (16 times) and Central East (13 times) regions.

Notes: Data acquired from IQVIA. Annual data represents the 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 7.1** for underlying data.

FIGURE 8.5 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO (EXCLUDING TORONTO, OTTAWA, CENTRAL SOUTH AND SOUTH WEST), JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

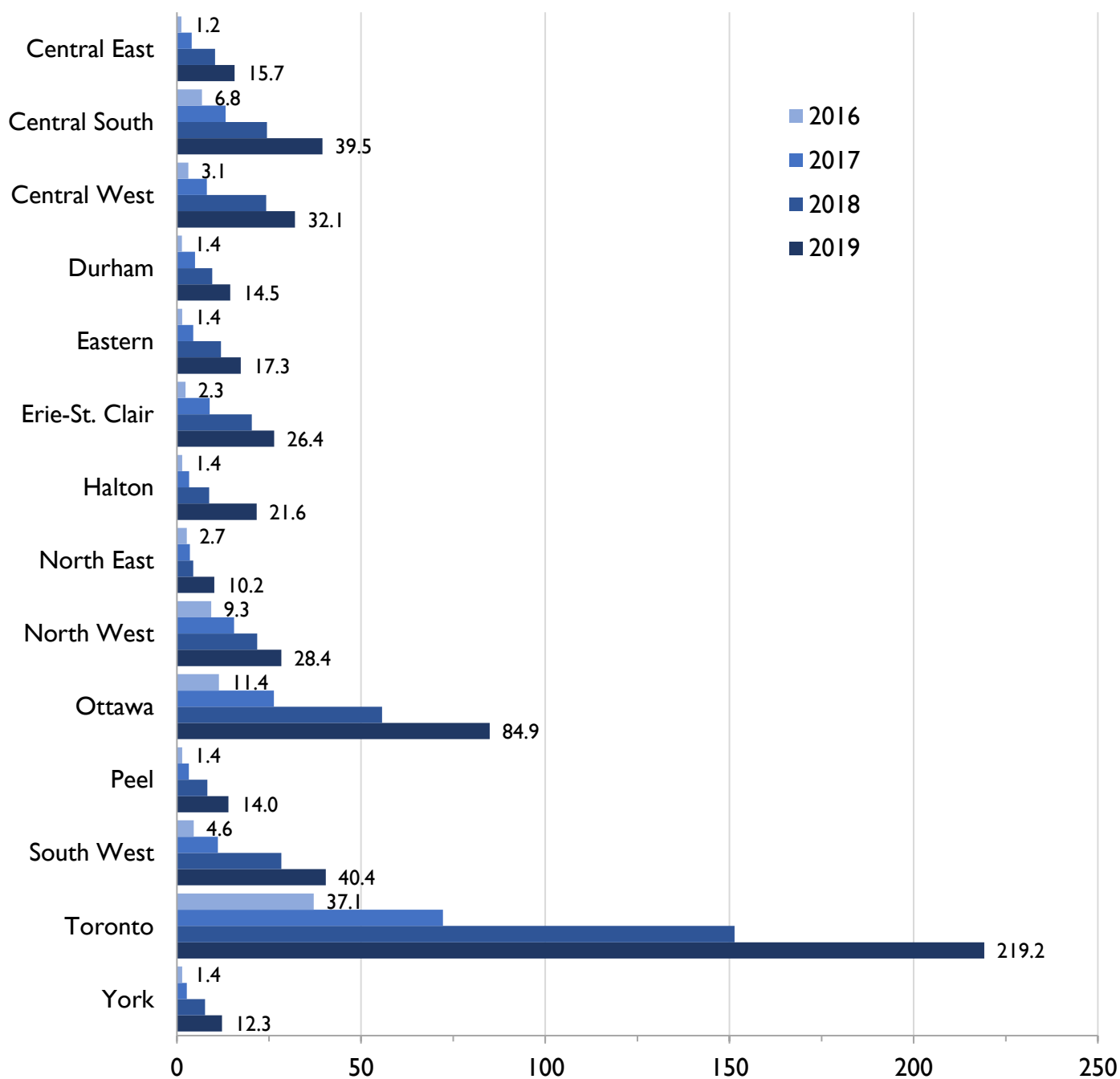


Trends

Between Jan-Mar 2019 and Jan-Mar 2020, the estimated number of individuals dispensed PrEP increased in all regions except North West and Central East. Outside of Toronto, Ottawa, Central South and South West regions, the estimated number of individuals dispensed PrEP was consistently largest in the Central West region.

Notes: Data acquired from IQVIA. Quarterly data represents the 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 7.2** for underlying data.

FIGURE 8.6 ESTIMATED RATE OF INDIVIDUALS DISPENSED PREP PER 100,000 PEOPLE BY REGION, ONTARIO, 2016 TO 2019 (ANNUAL)

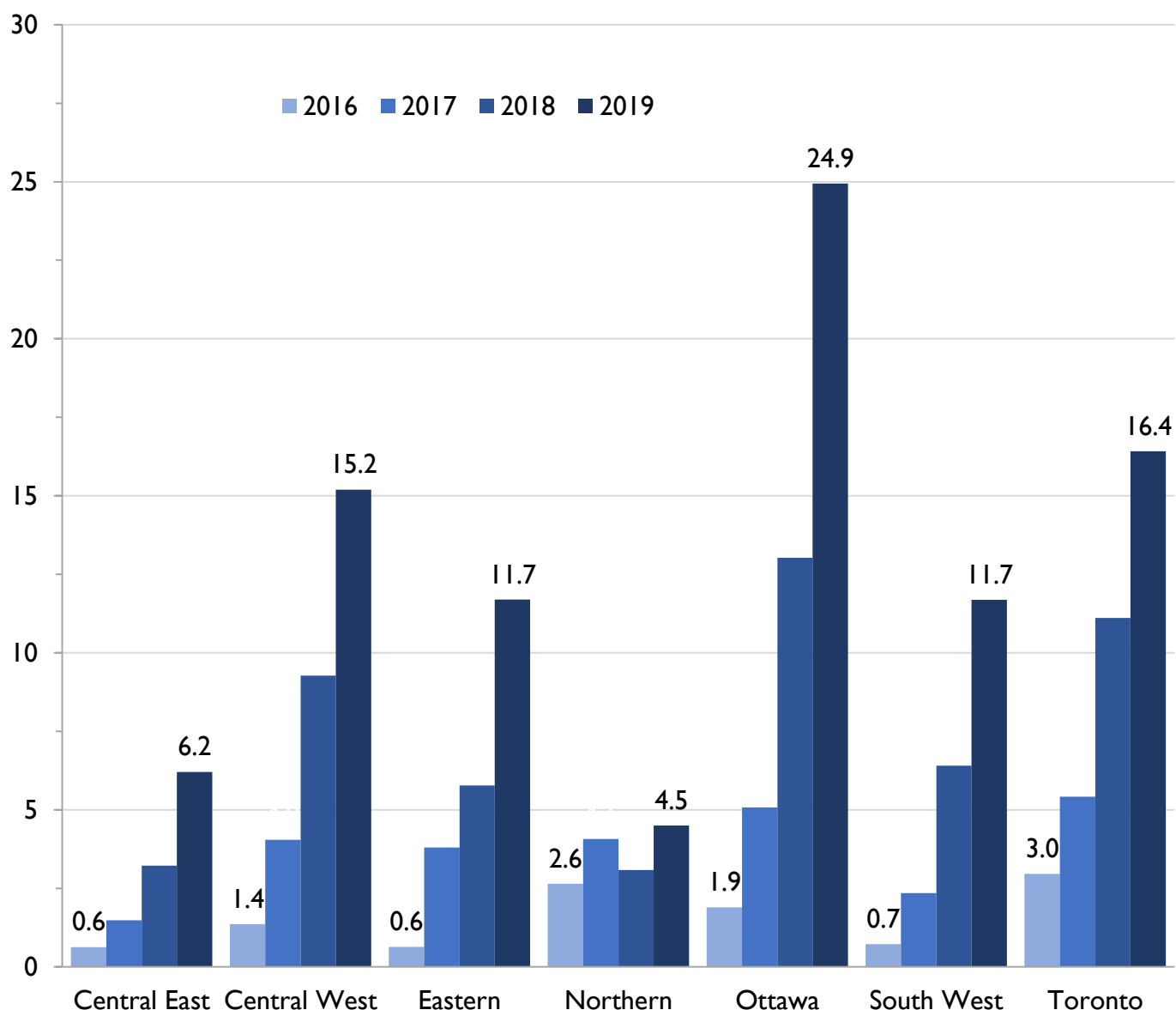


Trends

Between 2016 and 2019, the estimated rate of individuals dispensed PrEP per 100,000 people increased in all regions. The highest rate was consistently in the Toronto region. The relative increases were greatest in the Halton (15.3 times) and Central East (12.6 times) regions. Provincewide, the overall rate of individuals dispensed PrEP per 100,000 people increased from 10.4 in 2016 to 67.3 in 2019.

Notes: Data acquired from IQVIA. 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. 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 7.3** for underlying data.

FIGURE 8.7 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), BY REGION, ONTARIO, 2016 TO 2019 (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 indicate more optimal HIV prevention efforts.

Between 2016 and 2019, the “PrEP-to-need ratio” increased across all regions. This ratio was highest in Toronto in 2016 and 2017 and Ottawa in 2018 and 2019. In 2019, it was lowest in Northern and Central East regions. The relative increases were greatest in the Eastern (19 times) and South West (16 times) regions. Provincewide, the overall ratio of individuals dispensed PrEP to first-time HIV diagnoses increased from 2.0 in 2016 to 14.0 in 2019.

Notes: PrEP dispensation data acquired from IQVIA. Annual data represents the 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 7.4** for underlying data.

Prescribing PrEP

9. Overall, by specialty, and by number of PrEP prescriptions written

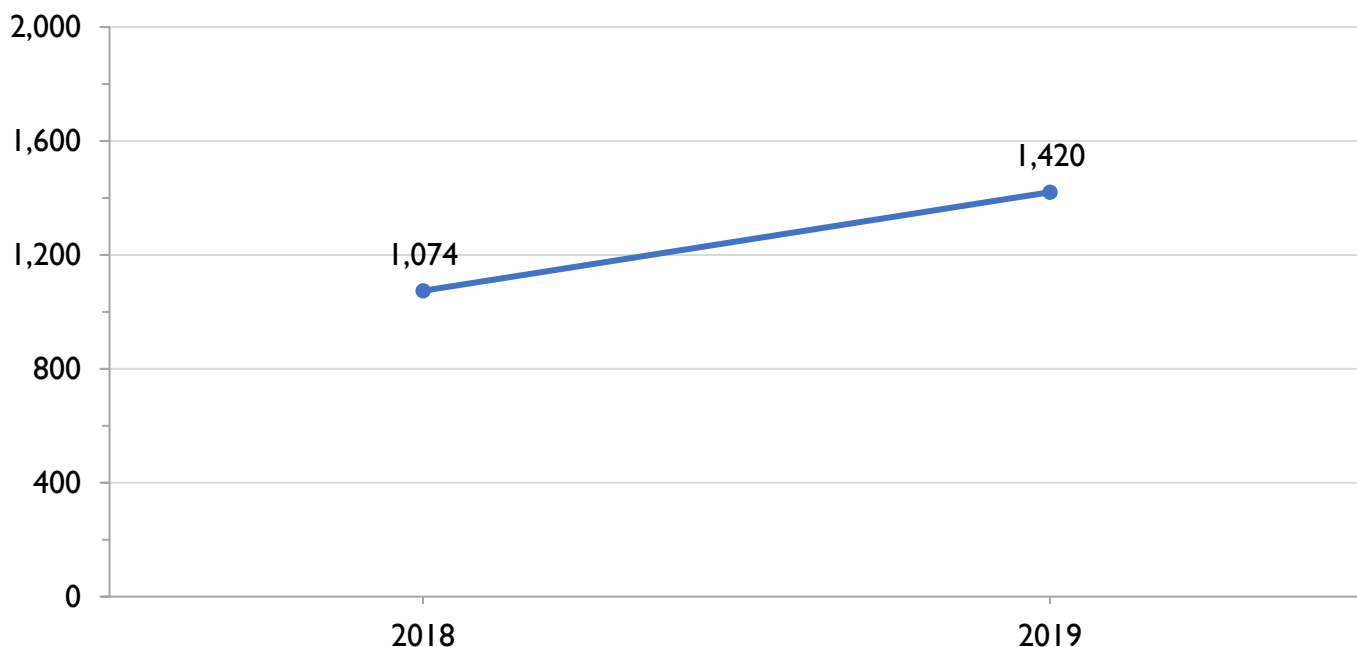
Summary & Interpretation

The total number of PrEP prescribers in Ontario increased by 32% from 1,074 in 2018 to 1,420 in 2019.

While the estimated number of family and general practitioners who prescribed PrEP increased by 30% between 2018 and 2019, they continued to make up a similar proportion of all physicians who prescribed PrEP (86.5% and 85.0% respectively). Over the same time period, the number of medical residents prescribing PrEP increased by 2.5 times: from 32 (3.0%) in 2018 to 81 (5.7%) in 2019.

In 2019, approximately 4 of 5 PrEP prescribers in Ontario wrote fewer than 23 PrEP prescriptions each, and together these 1,165 physicians wrote only one fifth of all PrEP prescriptions in Ontario. Two fifths of all prescriptions in 2019 were written by only 26 physicians, who wrote between 274 and 3,029 PrEP prescriptions each. While the number of PrEP prescribers has increased in Ontario, the vast majority of these prescribers write relatively few prescriptions, and most PrEP prescriptions in the province are written by relatively few physicians. These super prescribing physicians are likely to be prescribing from PrEP clinics in Toronto or Ottawa.

FIGURE 9.1 ESTIMATED NUMBER OF PHYSICIANS WHO PRESCRIBED PREP, ONTARIO, 2018 TO 2019 (ANNUAL)

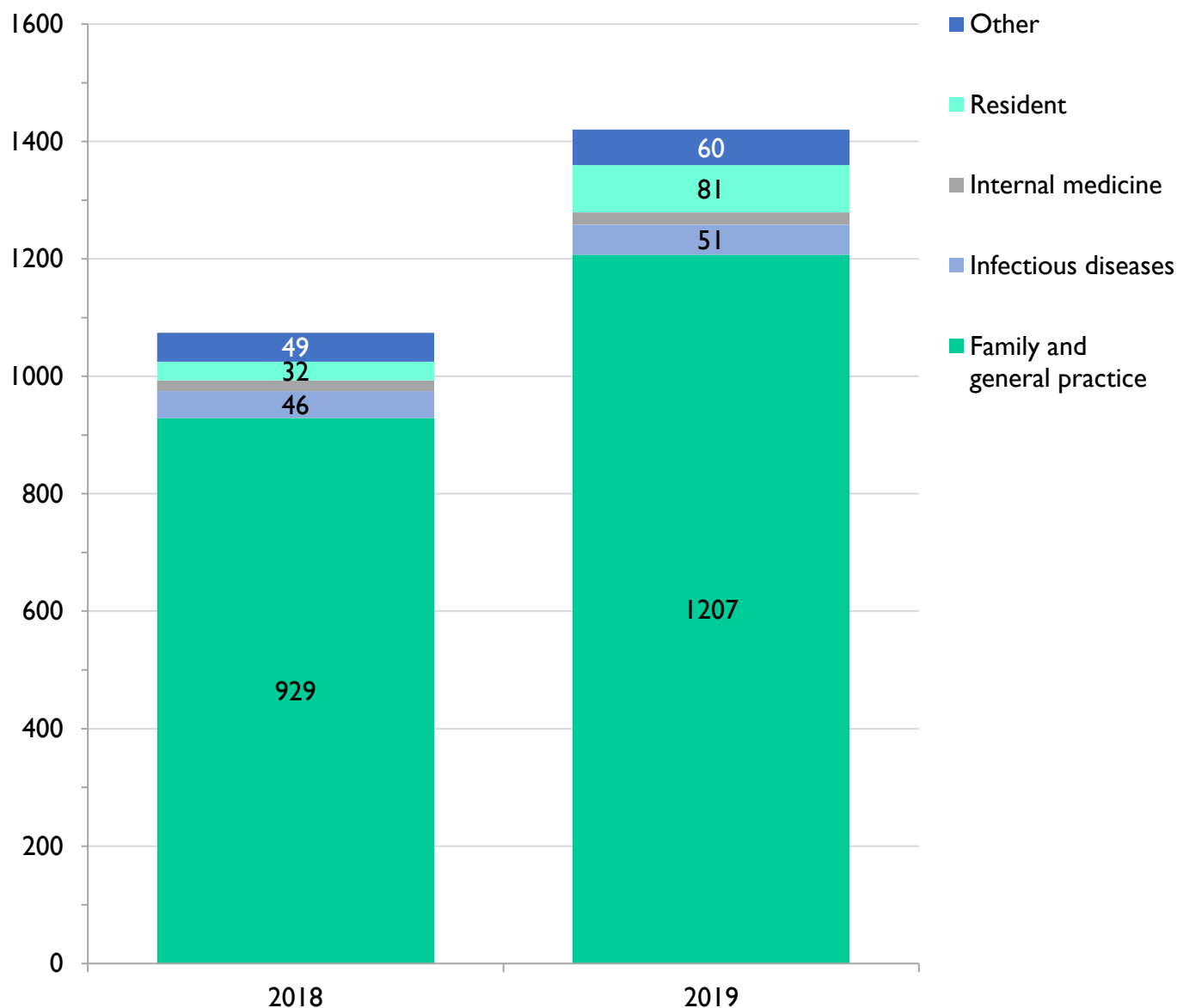


Trends

Between 2018 and 2019, the estimated number of physicians who prescribed PrEP increased from 1,074 to 1,420 (32% increase).

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once during the year. PrEP = pre-exposure prophylaxis. See **Table 8.1** for underlying data.

FIGURE 9.2 ESTIMATED NUMBER OF PHYSICIANS WHO PRESCRIBED PREP BY SPECIALTY, ONTARIO, 2018 TO 2019 (ANNUAL)



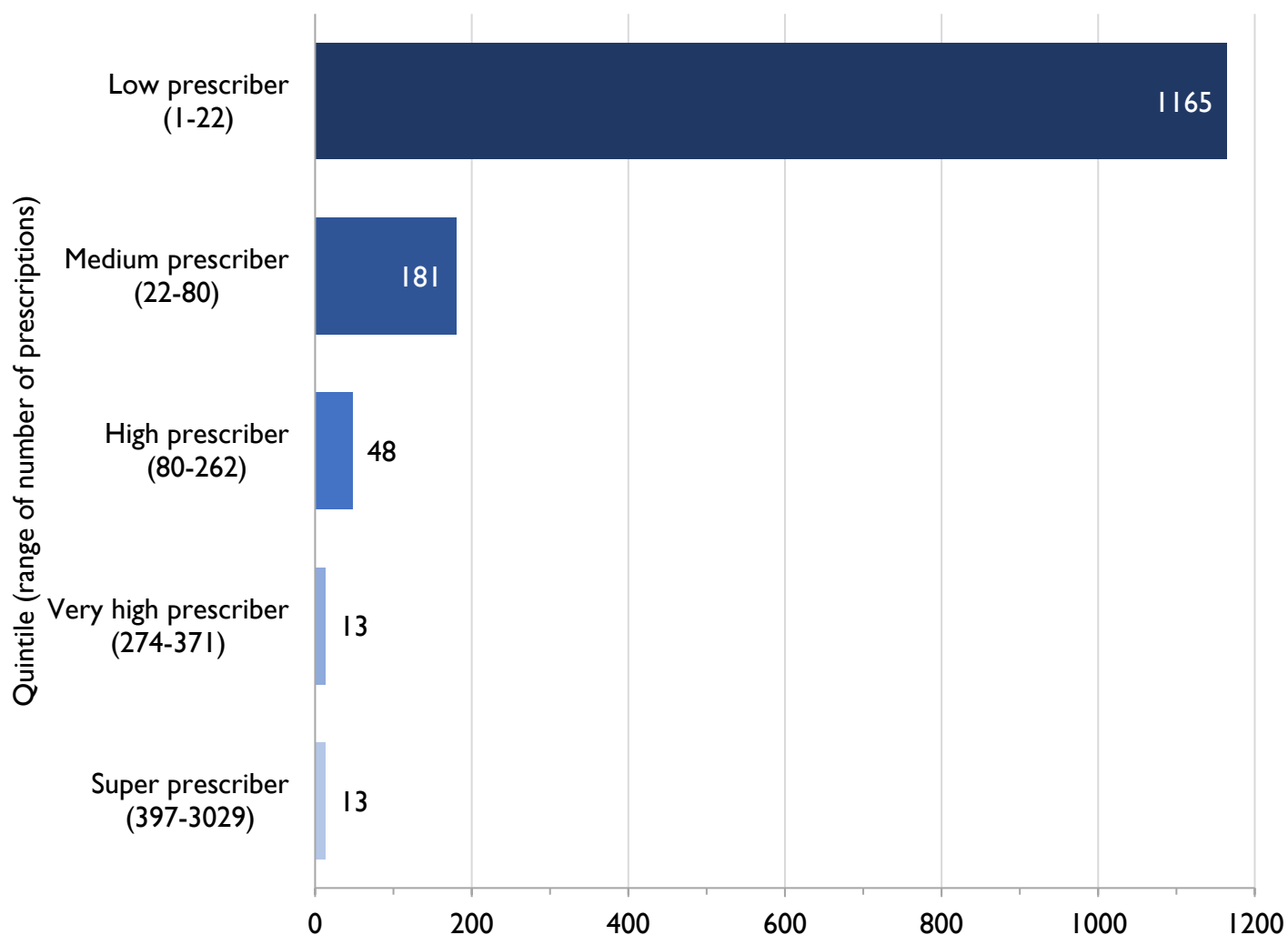
Prescriber Specialty	2018	2019
Family / GP	929 (86.5%)	1,207 (85.0%)
Infectious diseases	46 (4.3%)	51 (3.6%)
Internal medicine	18 (1.7%)	21 (1.5%)
Resident	32 (3.0%)	81 (5.7%)
Other	49 (4.6%)	60 (4.2%)

Trends

Between 2018 and 2019, the estimated number of family and general practitioners who prescribed PrEP increased from 929 (86.5% of physicians who prescribed PrEP that year) to 1,207 (85.0%). The estimated number of residents who prescribed PrEP saw the largest relative increase (2.5 times), from 32 (3.0%) to 81 (5.7%). Changes for other specialties were less notable.

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once during the three-month period. PrEP = pre-exposure prophylaxis. GP = general practice. See **Table 8.2** for underlying data.

FIGURE 9.3 ESTIMATED NUMBER OF PHYSICIANS WHO PRESCRIBED PrEP BY QUINTILES OF TOTAL NUMBER OF PrEP PRESCRIPTIONS WRITTEN (WHERE KNOWN), ONTARIO, 2019



Quintile (range of prescriptions)	Number	Percent
Low (1-22)	1,165	82.0%
Medium (22-80)	181	12.7%
High (80-262)	48	3.4%
Very high (274-371)	13	0.9%
Super (397-3,029)	13	0.9%

Trends

As these categories represent quintiles, each of the following five categories of physicians together wrote approximately equal numbers (one fifth each) of all PrEP prescriptions in Ontario in 2019. An estimated 1,165 physicians were “low prescribers” (wrote between 1 and 22 PrEP prescriptions); they comprised 82.0% of all physicians who prescribed PrEP. 181 physicians were “medium prescribers” (between 22 and 80 prescriptions, 12.7% of all

physicians who prescribed PrEP), 48 were “high prescribers” (between 80 and 262 prescriptions, 3.4% of physicians), 13 were “very high prescribers” (between 274 and 371 prescriptions, 0.9% of physicians), and 13 were “super prescribers” (between 397 and 3029 prescriptions, 0.9% of physicians).

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#). See **Table 8.3** for underlying data.

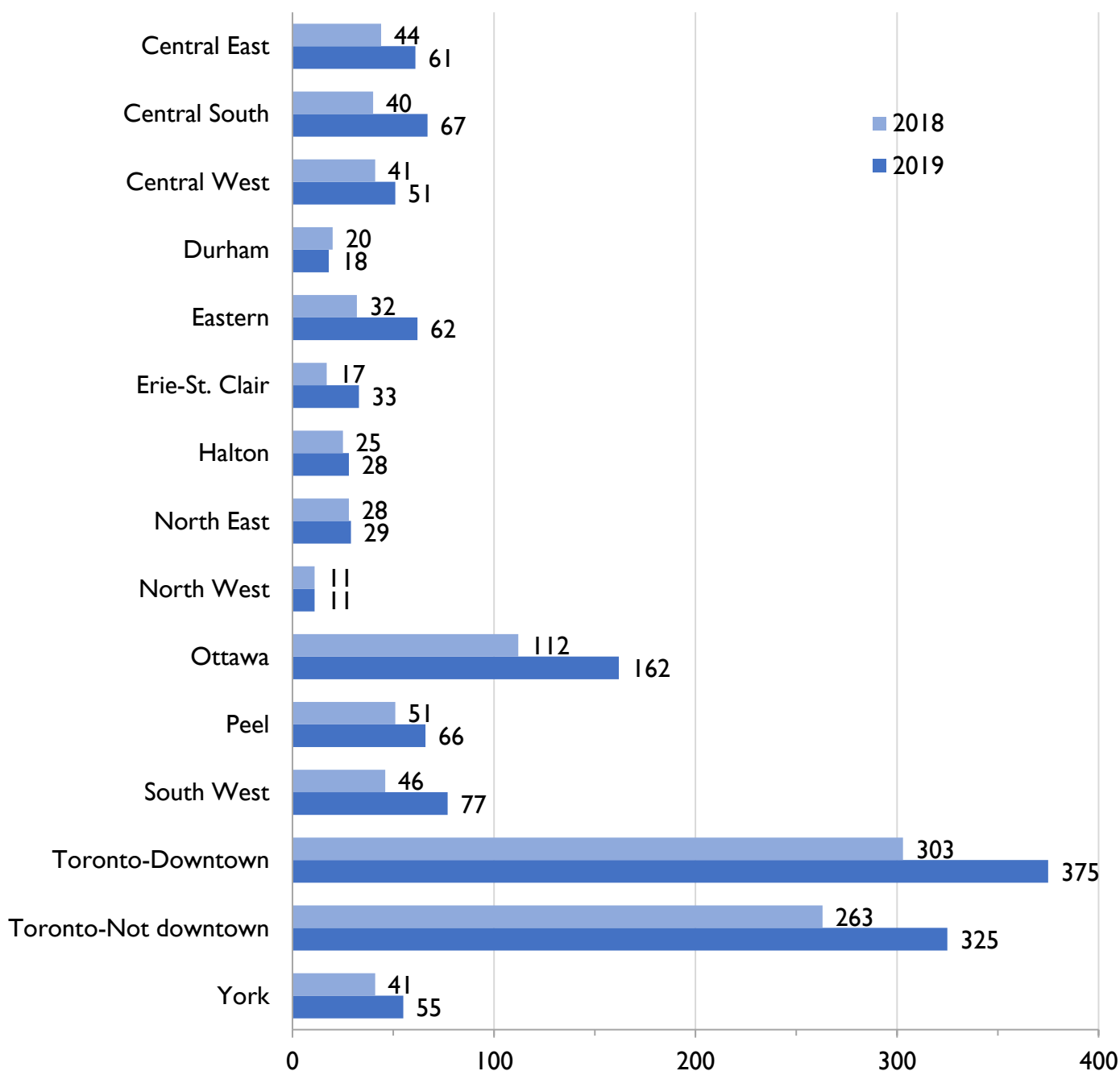
10. By region

Summary & Interpretation

Between 2018 and 2019, the estimated number of physicians who prescribed PrEP increased across all regions except North West and Durham regions. In 2019, Toronto and Ottawa had the largest number of PrEP prescribers by large margins, together accounting for 6 in 10 (60.7%) PrEP prescribers – although this figure had decreased slightly from 2018. Erie-St. Clair and Eastern regions saw the greatest relative increases in number of physicians who prescribed PrEP between 2018 and 2019.

The “PrEP prescriber-to-need ratio” (a calculated measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention efforts) increased across all regions except the Northern region. In 2019, Northern region had the fewest PrEP prescribers relative to first-time HIV diagnoses, followed by Toronto; however, Toronto was more likely than other regions to have more PrEP prescribers who wrote more PrEP prescriptions (Figure 13.3). Eastern region and Ottawa had substantially higher PrEP prescriber-to-need ratios than the other regions.

FIGURE 10.1 ESTIMATED NUMBER OF PHYSICIANS WHO PRESCRIBED PrEP BY REGION, ONTARIO, 2018 TO 2019 (ANNUAL)

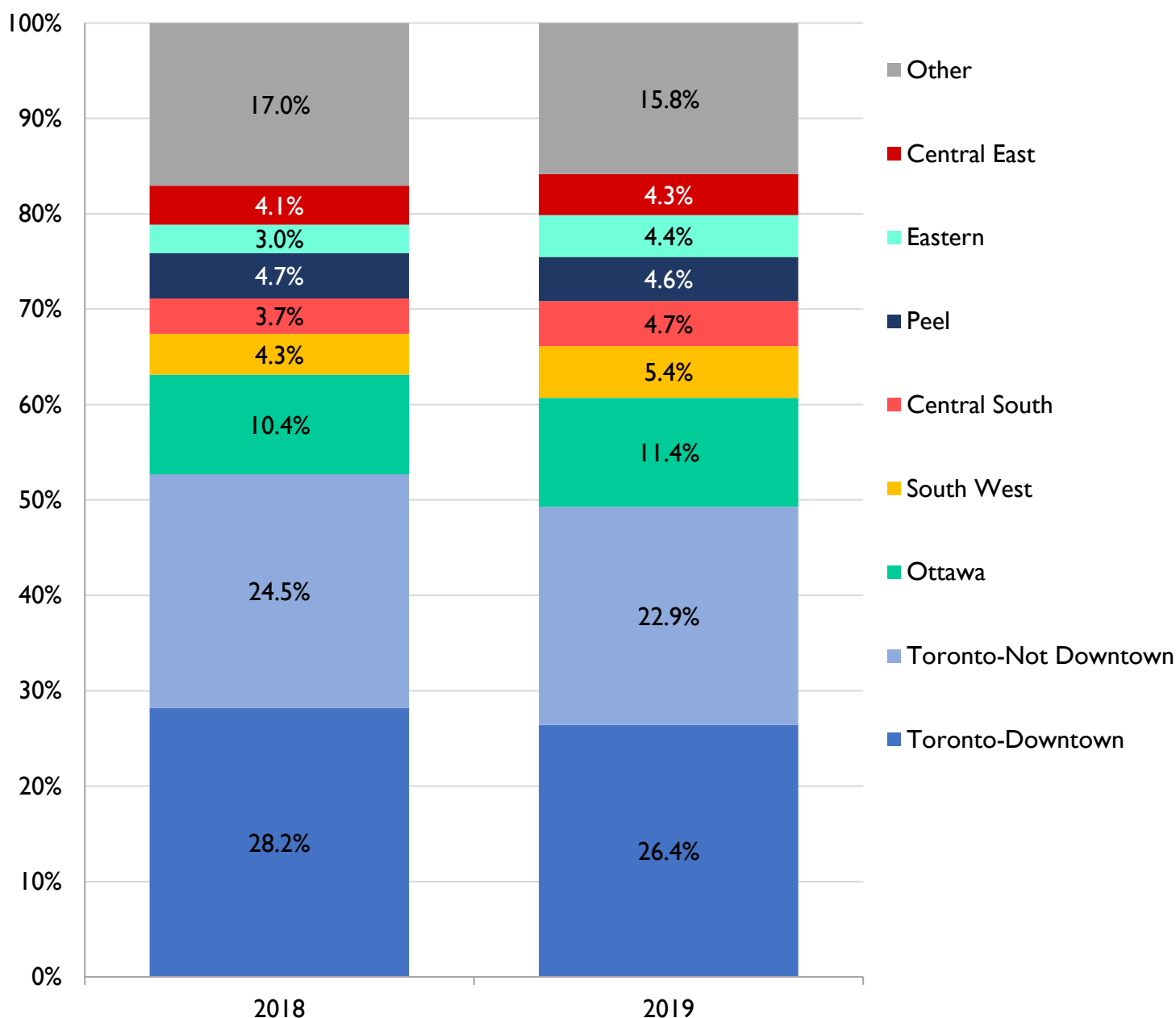


Trends

Between 2018 and 2019, the estimated number of physicians who prescribed PrEP increased across all regions except the North West and Durham regions. In both years, the largest number of physicians who prescribed PrEP were in the “Toronto – Downtown” region, followed by the “Toronto – Not Downtown” and Ottawa regions. The relative increases were greatest in the Erie-St. Clair and Eastern (both 94%) regions.

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in the year. PrEP = pre-exposure prophylaxis. Region based on prescribing physician’s primary work address. See technical notes for more information on the [Geographic regions](#). See **Table 9.1** for underlying data.

FIGURE 10.2 ESTIMATED PROPORTION OF PHYSICIANS WHO PRESCRIBED PREP BY REGION, ONTARIO, 2018 TO 2019 (ANNUAL)

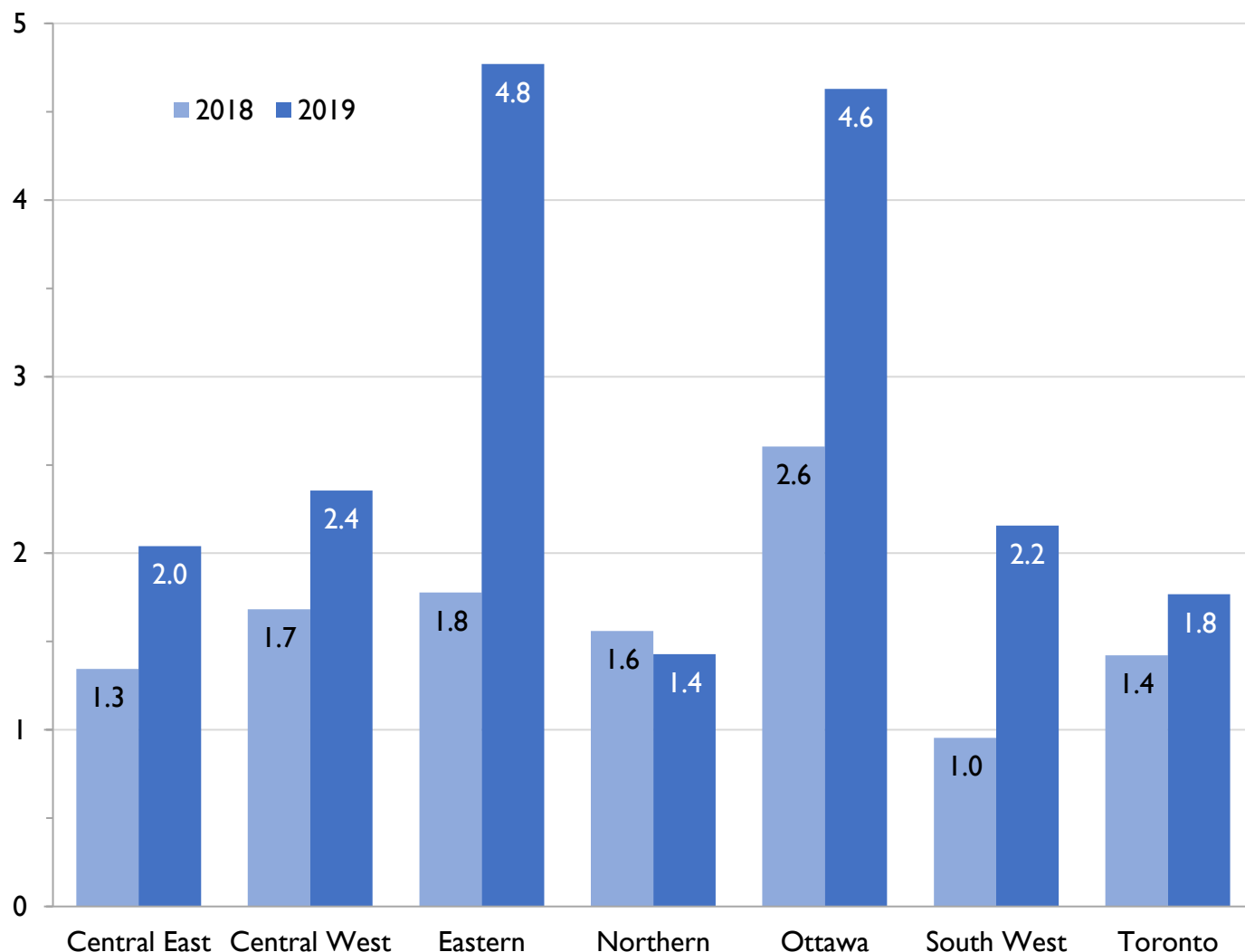


Trends

Between 2018 and 2019, the largest proportion of estimated physicians who prescribed PrEP were in the “Toronto – Downtown” region, followed by the “Toronto – Not Downtown” and Ottawa regions. In 2018, 63.1% of the estimated physicians who prescribed PrEP were in either Toronto or Ottawa, and this proportion decreased slightly to 60.7% in 2019. Notable increases in proportions were seen in South West (4.3% to 5.4%), Central South (3.7% to 4.7%) and Eastern (3.05 to 4.4%) regions. Of the 7 regions combined into the ‘other’ category, each accounted for less than 4% of estimated physicians who prescribed PrEP per year (together summing to 17.0% in 2018 and 15.8% in 2019).

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in the three-month period. PrEP = pre-exposure prophylaxis. Region based on prescribing physician’s primary work address. See technical notes for more information on the [Geographic regions](#). See **Table 9.1** for underlying data.

FIGURE 10.3 ESTIMATED RATIO OF PHYSICIANS WHO PRESCRIBED PrEP TO FIRST-TIME HIV DIAGNOSES (“PrEP PRESCRIBER-TO-NEED RATIO”), BY REGION, ONTARIO, 2018 TO 2019 (ANNUAL)



Trends

The “PrEP prescriber-to-need ratio” is a calculated ratio of physicians who prescribed PrEP to first-time HIV diagnoses as an attempt to quantify PrEP provision relative to HIV burden among a population. Therefore, larger numbers may indicate more optimal HIV prevention efforts.

Between 2018 and 2019, the “PrEP prescriber-to-need ratio” increased across all regions except the Northern region. In 2019, Northern region had the lowest ratio (1.4), Toronto, Central East, Central West, and South West all had comparable intermediate ratios (ranging from 1.8 to 2.4) and Eastern and Ottawa had substantially higher ratios (4.8 and 4.6, respectively). The relative increases between 2018 and 2019 were greatest in the Eastern (2.7 times) and South West (2.3) regions. Provincewide, the overall ratio of physicians who prescribed PrEP to first-time HIV diagnoses increased from 1.5 in 2018 to 2.1 in 2019.

Notes: Prescriber data acquired from IQVIA. Annual data represents the number of unique physicians who prescribed PrEP at least once during the year. Region based on prescribing physician’s primary work address and are broader aggregations of previous smaller regions. First-time HIV diagnoses provided by Public Health Ontario (PHO). PrEP = pre-exposure prophylaxis. See technical notes for more information on the [Geographic regions](#) and [First-time HIV diagnoses](#). See **Table 9.2** for underlying data.

11. Number of PrEP prescriptions written by specialty and by region

Summary & Interpretation

While fewer than a quarter of family/general practitioners and internal medicine physicians wrote more than 22 PrEP prescriptions in 2019, a majority of infectious disease physicians who prescribed PrEP wrote more than 22, and nearly a third wrote more than 80 prescriptions. Infectious disease physicians were more likely to have written more PrEP prescriptions than those in other specialties.

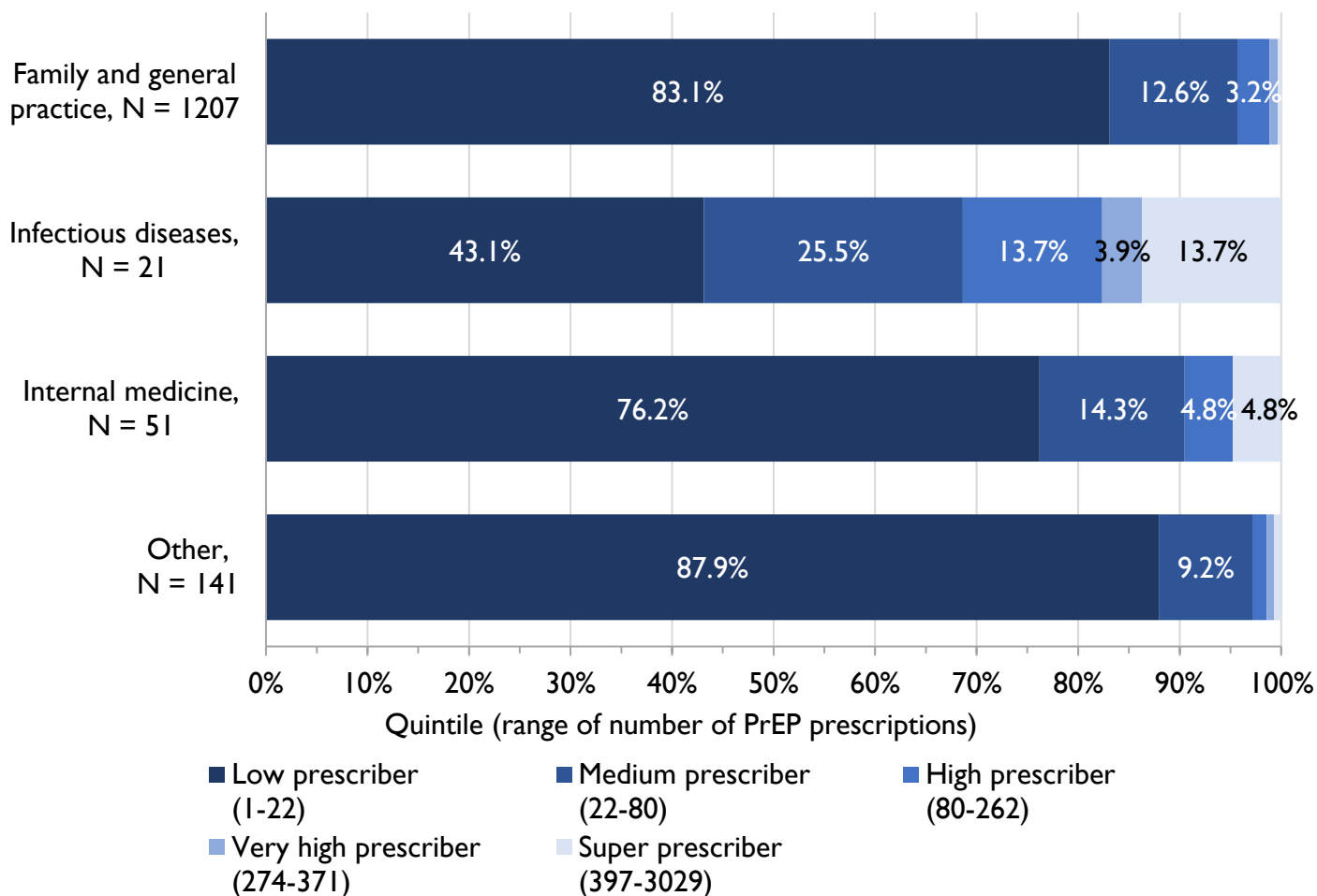
While lower PrEP-prescribing physicians were largely (more than three quarters) family/general practitioners, more than half (7 of 13) of super PrEP-prescribing physicians (defined as 397 or more prescriptions) were infectious disease physicians and only 4 (30.8%) were family/general practitioners.

Whereas approximately half of physicians who wrote 22 or fewer PrEP prescriptions were located in either Toronto or Ottawa, nearly 8 out of 10 physicians who wrote more than 22 PrEP prescriptions were located in these cities. Of the 13 super PrEP-prescribing physicians, nine were located in downtown Toronto, two in Ottawa, and two in the Central South region, which includes Hamilton.

In summary, infectious disease physicians are more likely than other specialists to have written higher numbers of PrEP prescriptions. The highest tier of PrEP prescribers was more likely to be infectious disease physicians whereas the lower tiers were predominantly family/general practitioners. Higher PrEP-prescribing physicians were predominately located in Toronto and Ottawa.

A large proportion of PrEP prescriptions in 2019 were written by relatively few physicians, and these high-prescribing physicians were more likely to be infectious disease physicians. While the numbers of physicians who prescribed PrEP increased between 2018 and 2019 in nearly all regions, these high-prescribing physicians were predominantly located in Toronto and Ottawa in 2019.

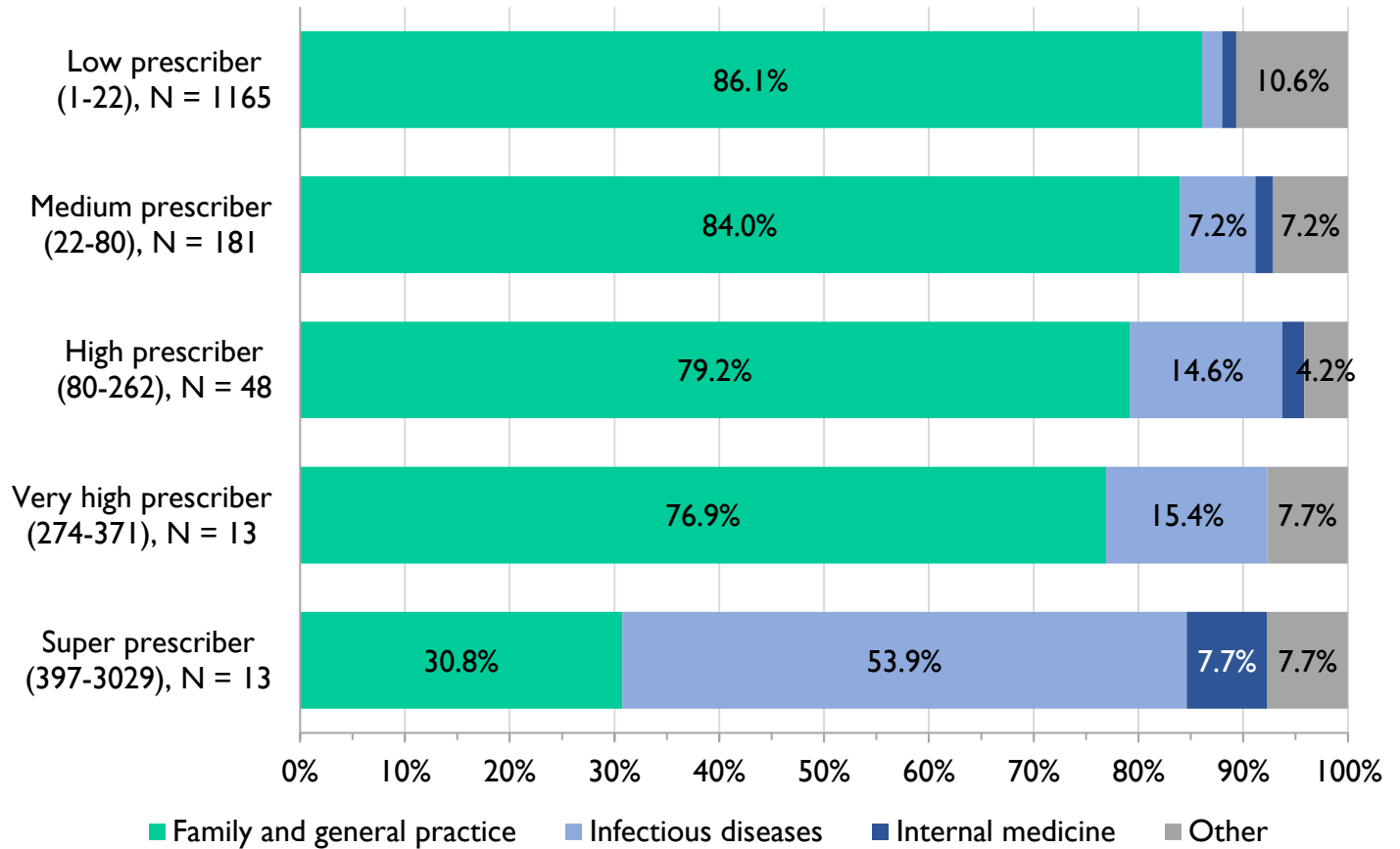
FIGURE 11.1 QUINTILES OF TOTAL NUMBER OF PrEP PRESCRIPTIONS WRITTEN BY SPECIALTY OF PHYSICIANS WHO PRESCRIBED PrEP, ONTARIO, 2019



Trends
 In 2019, among physicians who prescribed PrEP, 83.1% of family and general practitioners and 76.2% of internal medicine specialists were “low prescribers” (wrote between 1 and 22 PrEP prescriptions). In contrast, low prescribers made up only 43.1% of infectious disease specialists who prescribed PrEP. Considerably larger proportions of infectious disease specialists compared to other specialties were medium (25.5%), high (13.7%), very high (3.9%), or super (13.7%) prescribers.

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#). See **Table 10.1** for underlying data.

Figure 11.2 Physician’s specialty by quintiles of number of PrEP prescriptions written, Ontario, 2019

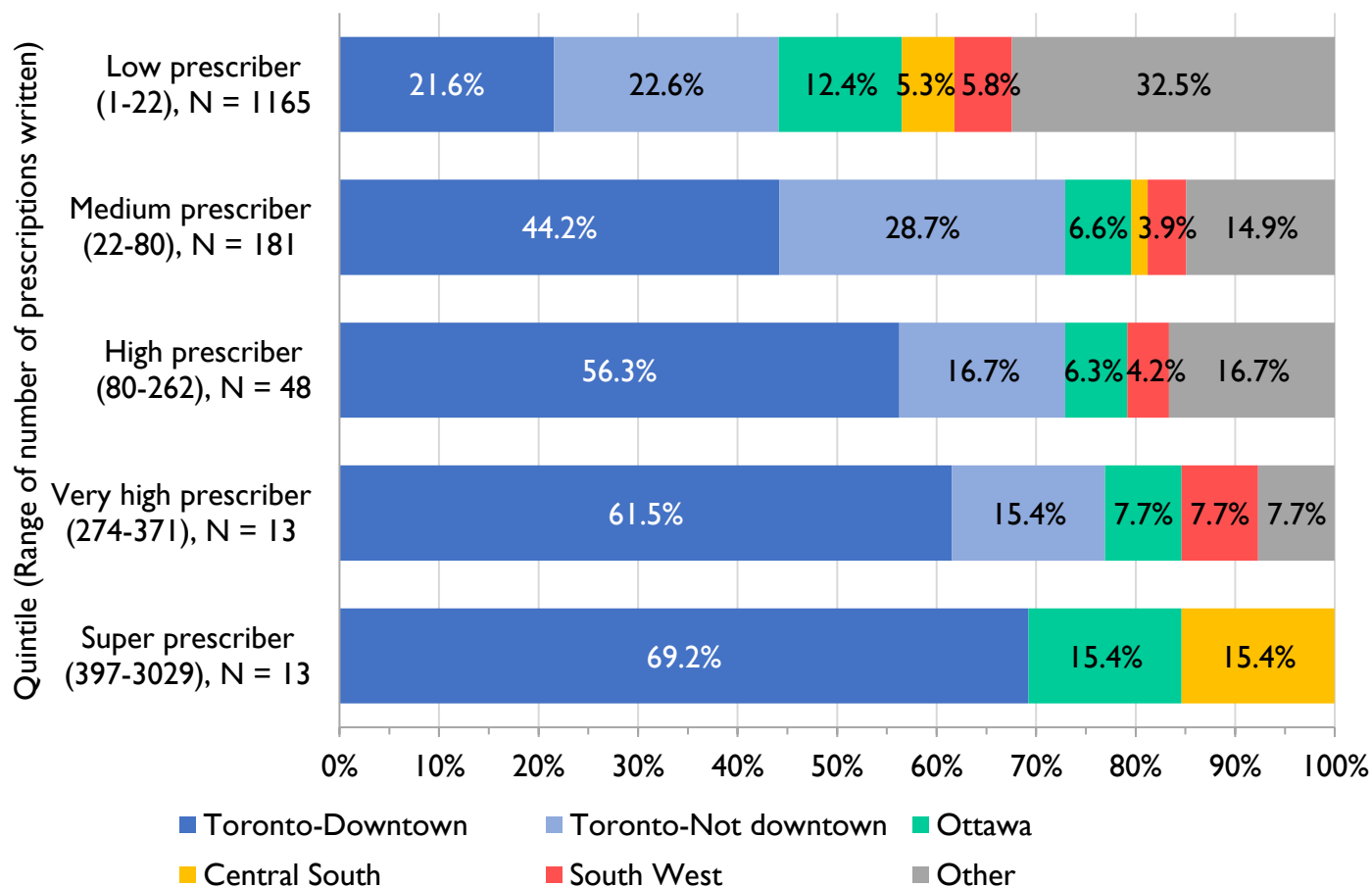


Trends

In 2019, large majorities (76.9%-86.1%) of low, medium, high, and very high PrEP prescribers were family or general practitioners. Conversely, among super prescribers (wrote between 397 and 3029 PrEP prescriptions), only 30.8% were family or general practitioners, and a majority (53.9%) were infectious disease specialists.

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#). See **Table 10.2** for underlying data.

Figure 11.3 Physician's region by quintiles of number of PrEP prescriptions written (where known), Ontario, 2019



Trends

In 2019, a majority (56.6%) of low PrEP prescribers (wrote between 1 and 22 PrEP prescriptions) were located in either Toronto or Ottawa; however, this majority increases to between 79.3% and 84.6% among the higher prescribing quintiles. With increased numbers of PrEP prescriptions per physician, there was a decrease in regional representation, culminating in the 13 super PrEP-prescribing physicians where nine were located in downtown Toronto, two in Ottawa, and two in the Central South region.

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. . See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#) or the [Geographic regions](#). Region based on prescribing physician's primary work address. See **Table 10.3** for underlying data.

TECHNICAL NOTES

Data source: 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 draws on over 2,100 pharmacies in Ontario, representing approximately 67% of all dispensed 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.

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

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 8% for generic products, based on the September 2020 data delivery).

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 and would then also fill their prescription close by.

Information on the individual's age was captured in the pharmacy profile which is created by the pharmacist during the first transaction at the pharmacy and is confirmed via the patient's record for the Ontario Drug Benefit (ODB) program or the private payer depending on the individual's coverage. The individual's gender is also captured in the pharmacy profile created by the pharmacist during the first transaction. This field is 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. Physician specialty family/GP does not include nurse practitioners.

Physicians who prescribed PrEP

The prescribing physician data for this report was also acquired from IQVIA and includes the estimated number of physicians or nurse practitioners who wrote one or more prescriptions for PrEP (TDF/FTC or TAF/FTC) as designated using the indication decision tree, between January 1st 2018 to December 31st 2019. Only PrEP prescriptions that were subsequently filled by patients and dispensed by pharmacies were included in this analysis. The physician's primary work address was used to assign geographic region. If the physician had multiple work locations, this data may not reflect the location where the physician wrote the PrEP prescription, and the geographic region could be misclassified if the work locations covered different geographic regions. Unless the number of prescriptions written is specified, the criteria for physician prescribers only required physicians to write one PrEP prescription over the course of the specified time period. There were no duplicates in the physician's prescription data (no physician or nurse practitioner was counted twice).

Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written

Quintiles (five groups of equal size) of physicians who prescribed PrEP were calculated by the distribution of total number of PrEP prescriptions written (dispensation events) over the full year of 2019. Therefore, each quintile/category wrote an approximately equal total number (one fifth) of PrEP prescriptions in 2019 (i.e. Q1 had few doctors who wrote many prescriptions and Q5 had many doctors who wrote few prescriptions). For ease of discussion and interpretation, this report labels these five quintiles as categories of PrEP prescribers, termed super, very high, high, medium, and low prescribers:

Quintile	Category of PrEP prescriber	Range of number of PrEP prescriptions written (2019)
Q1	Super prescriber	397 – 3029
Q2	Very high prescriber	274 – 371
Q3	High prescriber	80 – 262
Q4	Medium prescriber	22 – 80
Q5	Low prescriber	1 – 22

First-time HIV diagnoses

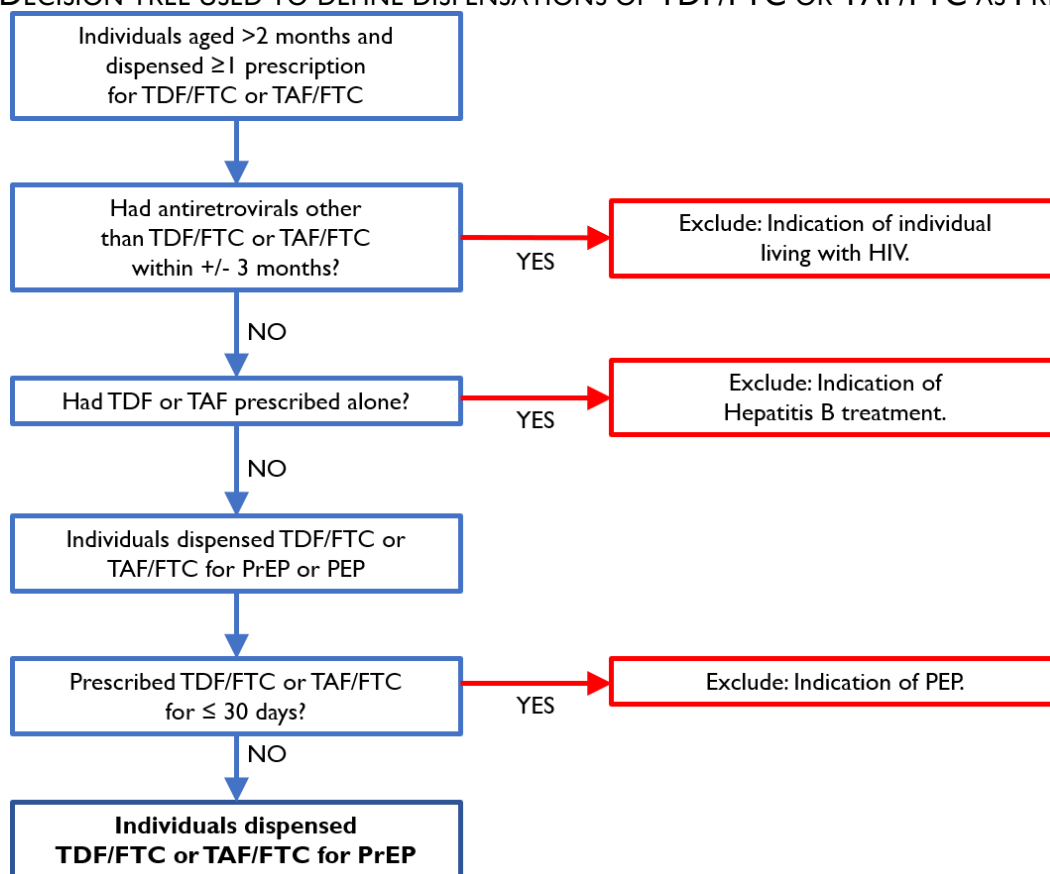
This report uses counts of first-time HIV diagnoses in 2019 in calculations of ratios of number of individuals dispensed PrEP to number of first-time HIV diagnoses (PrEP-to-need ratios) by sex and across seven regions defined by the Ontario HIV Epidemiology and Surveillance Initiative (OHESI). These 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](#)”.

Indication decision tree

For this report, we acquired the estimated number of individuals dispensed branded or generic TDF/FTC OR TAF/FTC and the estimated number of physicians who prescribed branded or generic TDF/FTC OR 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 or physician (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/physician prescribers. Sensitivity analyses could not be carried out on the underlying assumptions. The acquired dispensation data was stratified by indication and sex, age, prescriber specialty, payment type and geography (geographic region of dispensation). The acquired physician prescription data were stratified by sex, specialty, quintiles of number of PrEP prescriptions written and the physician’s primary address.

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 classified as PrEP and the second 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 or number of physicians who prescribed PrEP and first-time HIV diagnoses (“PrEP-to-need ratio” or “PrEP Prescriber-to-need ratio”, respectively) provide some measure of PrEP uptake relative to HIV diagnoses (a proxy measure of HIV incidence), though these also do not reflect PrEP appropriateness on the level of the individual. The association between PrEP uptake and PrEP indication per the Canadian guidelines is reported on for GBT2Q men from the Sex Now 2019 data (Section 8).

Data source: Sex Now 2019

GBT2Q men and PrEP Uptake

Information on PrEP uptake among gay, bisexual, transgender, Two-Spirit, and queer (GBT2Q) men in this report was acquired from the Sex Now 2019 research study. Sex Now is a Canada-wide online survey of GBT2Q men’s health. First executed in 2002, Sex Now is the principal initiative of the Community-Based Research Centre (CBRC). Recent iterations of the survey have been completed in 2014, 2018, 2019, and 2020. Often referred to as “the gay census”, Sex Now has become an essential source of data on the health and well-being of GBT2Q men in Canada, and is widely used by community, public health, research, and policy stakeholders. For more information on Sex Now and the CBRC please visit www.cbrc.net/sex_now.

PrEP uptake was measured with the questionnaire item that asked “Have you ever used PrEP?” with response options “No / Yes, but I stopped / Yes, I’m taking PrEP now! / I prefer not to answer”. Analyses in this report restricted findings to eligible participants who reported either “No” or one of the “Yes” responses to this question, were living in Ontario and had never been diagnosed with HIV.

Eligibility criteria

Participants were considered eligible for the Sex Now 2019 survey if they met the following criteria:

- Man living in Canada (cisgender or transgender)
- Non-straight sexual identity or straight and reported sex with another man in past five years

Canadian guidelines for PrEP

In 2017, comprehensive guidelines for the recommendation of PrEP in Canada were published by a consortium of authors representing the Biomedical HIV Prevention Working Group of the Canadian Institutes for Health Research (CIHR) Canadian HIV Trials Network⁵. These guidelines can be found [here](#).

For men who have sex with men (MSM) and transgender women, PrEP is recommended for individuals who report condomless anal sex within the last six months and who have any of the following:

- a) Infectious syphilis or rectal bacterial sexually transmitted infection (STI), particularly if diagnosed in the preceding 12 months;
- b) Recurrent use of nonoccupational postexposure prophylaxis (nPEP) (more than once);
- c) Ongoing sexual relationship with HIV-positive partner with substantial risk of transmissible HIV;
or
- d) HIV incidence risk index (HIRI)-MSM risk score ≥ 11 (*a validated 7-item screening tool developed to help service providers quantify HIV risk and identify PrEP candidates*).

This report uses Sex Now 2019 data to best approximate these criteria where possible. For criterion (a), anatomic site of the bacterial STI diagnosis in the past year was not available in the Sex Now questionnaire and therefore any diagnosis of Chlamydia, Gonorrhea, or Syphilis in the past year was used for this indicator. Sex Now 2019 did not contain any indicators of criteria (b) or (c) and thus they are not included in these analyses. Unpublished work at the OHTN has demonstrated that these criteria are relatively very small contributors to the proportion of MSM for whom PrEP is clinically indicated. The full HIRI-MSM questionnaire is included in the Sex Now 2019 questionnaire and scores could therefore be assigned to participants. The item related to use of poppers ("In the last 6 months, have you used poppers (amyl nitrate)?") was not included in HIRI score calculations due to growing consensus favouring its exclusion.

In this report, PrEP indication as per the Canadian guidelines is defined as condomless anal sex in the past six months and either a bacterial STI diagnosis at any anatomic site in the past year or a minimum HIRI-MSM score where the item pertaining to poppers use is not included. The minimum HIRI-MSM score used is either 11 (as per the published guidelines above) or a hypothetical value of 25 (an alternative documented cut-off value used to define MSM at especially increased HIV risk).

⁵ Tan, Darrell HS, et al. "Canadian guideline on HIV pre-exposure prophylaxis and nonoccupational postexposure prophylaxis." *CMAJ* 189.47 (2017): E1448-E1458.

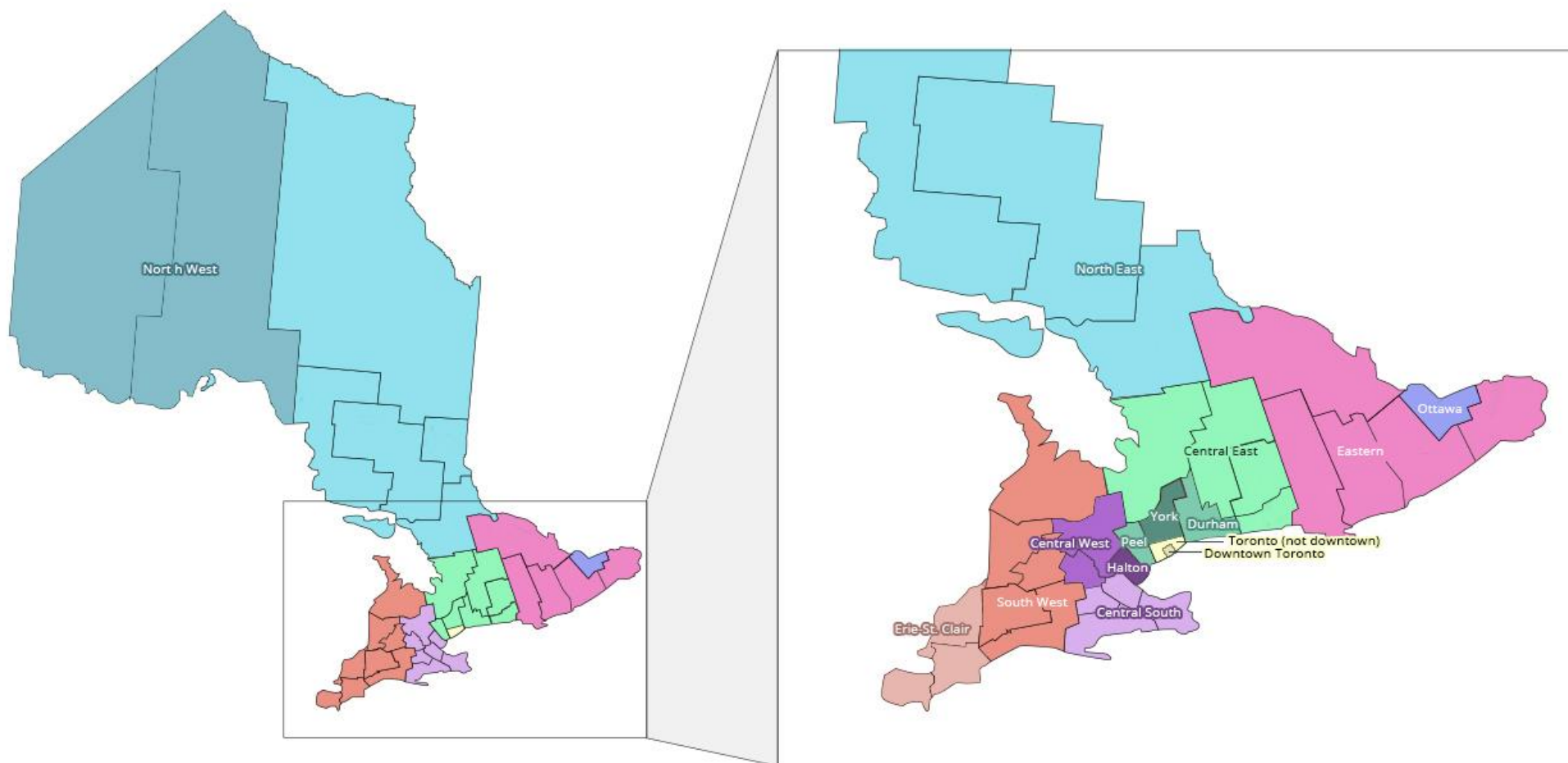
Geographic regions

Often, geographic regions are presented first as “Toronto – Downtown, Toronto – Not Downtown, Ottawa, Central South, South West, and ‘other’”, and then the ‘other’ region is broken down separately for a more comprehensive summary. The “Toronto – Downtown” and “Toronto – Not Downtown” regions were grouped together when estimating the rates per 100,00 people. Ratios pertaining to first-time HIV diagnoses by region (PrEP-to-need ratios and PrEP prescriber-to-need ratios) are reported by larger OHESI health regions.

Regions used in this report	OHESI regions used in ratios to first-time HIV diagnoses and Sex Now PrEP uptake	Corresponding public health unit (or FSAs in Toronto)
Toronto – Downtown	Toronto	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	Ottawa
North West	Northern	Northwestern, Thunder Bay
North East		Algoma, North Bay Parry Sound, Porcupine, Sudbury, Timiskaming
Eastern	Eastern	Eastern Ontario; Hastings and Prince Edward Counties; Kingston, Frontenac, Lennox & Addington; Leeds, Grenville and Lanark; Renfrew
Durham	Central East	Durham
Peel		Peel
York		York
Central East		Haliburton, Kawartha, Pine Ridge; Peterborough; Simcoe Muskoka
Central West	Central West	Waterloo, Wellington-Dufferin-Guelph
Central South		Brant, Haldimand-Norfolk, Hamilton, Niagara
Halton		Halton
South West	South West	Grey Bruce, Elgin-St. Thomas, Huron, Middlesex-London, Oxford, Perth
Erie-St. Clair		Chatham-Kent, Lambton, Windsor-Essex

Notes: Individuals dispensed PrEP assigned to region based on address of dispensing pharmacy. Physicians who prescribed PrEP assigned to region based on primary work address. FSA = forward sortation area.

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



DATA TABLES

Uptake of PrEP

1. Overall and by sex

TABLE I.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP, OVERALL AND BY SEX, ONTARIO, 2016 TO 2019 (ANNUAL)

Year	Overall	Males		Females	
		n	Row %	n	Row %
2016	1,451	1,396	96.3%	54	3.7%
2017	3,000	2,905	96.9%	92	3.1%
2018	6,428	6,230	97.2%	179	2.8%
2019	9,633	9,354	97.4%	254	2.6%

TABLE I.2 ESTIMATED NUMBER OF INDIVIDUALS DISPENSED PrEP, OVERALL AND BY SEX, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

Year	Quarter	Overall	Males	Females	Unknown sex
2019	Jan-Mar	5,515	5,363	133	19
	Apr-Jun	6,426	6,253	155	18
	Jul-Sep	6,780	6,585	179	16
	Oct-Dec	6,885	6,703	166	16
2020	Jan-Mar	8,096	7,865	203	28

TABLE I.3 PrEP UPTAKE AMONG GBT2Q MEN NEVER DIAGNOSED WITH HIV, ONTARIO, SEX NOW 2019, N = 1,958

	n	%
Ever on PrEP	460	23.5%
Currently on PrEP	366	18.7%

Notes: PrEP dispensation data acquired from IQVIA. 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. Sex Now 2019 data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information.

TABLE I.4 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), OVERALL AND BY SEX, ONTARIO, 2016 TO 2019 (ANNUAL)

Year	Overall	Males	Females
2016	2.0	2.5	0.4
2017	4.3	5.1	0.7
2018	8.7	10.8	1.1
2019	14.0	18.2	1.5

Notes: PrEP dispensation data acquired from IQVIA. 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 Canadian guidelines for PrEP (GBT2Q men)

TABLE 2.1 GBT2Q MEN: PrEP UPTAKE AMONG PrEP INDICATION CATEGORIES, DEFINED BY RECENT CAS AND EITHER RECENT STI OR MINIMUM HIRI-MSM SCORE, ONTARIO, SEX NOW 2019

	Among those where PrEP NOT indicated with HIRI ≥ 11	Among those where PrEP indicated with HIRI ≥ 11	Among those where PrEP indicated with HIRI ≥ 25
Total in category (N)	971	816	349
Number currently on PrEP (n)	56	294	190
Proportion currently on PrEP (n/N)	5.8%	36.0%	54.4%

TABLE 2.2 GBT2Q MEN: PrEP INDICATION (DEFINED BY RECENT CONDOMLESS ANAL SEX AND EITHER A RECENT STI OR MINIMUM HIRI-MSM SCORE) AMONG PrEP UPTAKE CATEGORIES, ONTARIO, SEX NOW 2019

	PrEP indicated (recent condomless anal sex and either a recent STI or a HIRI-MSM score ≥ 11)			PrEP indicated (recent condomless anal sex and either a recent STI or a HIRI-MSM score ≥ 25)		
	Currently on PrEP	Previously on PrEP	Never on PrEP	Currently on PrEP	Previously on PrEP	Never on PrEP
Total in category (N)	350	88	1,349	350	88	1,349
Number where PrEP indicated (a)	294	55	467	190	31	128
Proportion where PrEP indicated (a/N)	84.0%	62.5%	34.6%	54.3%	35.2%	9.5%
Number where PrEP NOT indicated (b)	56	33	882	160	57	1,220
Proportion where PrEP NOT indicated (b/N)	16.0%	37.5%	65.4%	45.7%	64.8%	90.5%

Notes: Data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP indication is defined here as condomless anal sex in the past six months and either a bacterial sexually transmitted infection (STI) diagnosis at any anatomic site in the past year or a minimum HIRI-MSM score where the criterion pertaining to poppers use is not included. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) and [Canadian guidelines for PrEP](#) for more information.

3. By age

TABLE 3.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, MALES, ONTARIO, 2016 TO 2019 (ANNUAL)

	<20		20-29		30-39		40-49		50-59		60+	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2016	<5	0.3%	200	14.3%	549	39.3%	350	25.1%	227	16.3%	66	4.7%
2017	9	0.3%	476	16.4%	1,138	39.2%	719	24.8%	419	14.4%	144	5.0%
2018	83	1.3%	1,456	23.4%	2,203	35.4%	1,369	22.0%	830	13.3%	289	4.6%
2019	144	1.5%	2,388	25.5%	3,133	33.5%	1,975	21.1%	1,251	13.4%	463	4.9%

TABLE 3.2 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, MALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

		<20		20-29		30-39		40-49		50-59		60+	
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2019	Jan-Mar	62	1.2%	1,224	22.8%	1,867	34.8%	1,219	22.7%	748	13.9%	243	4.5%
	Apr-Jun	66	1.1%	1,377	22.0%	2,165	34.6%	1,417	22.7%	900	14.4%	328	5.2%
	Jul-Sep	76	1.2%	1,419	21.5%	2,280	34.6%	1,501	22.8%	942	14.3%	367	5.6%
	Oct-Dec	78	1.2%	1,405	21.0%	2,297	34.3%	1,555	23.2%	994	14.8%	374	5.6%
2020	Jan-Mar	112	1.4%	1,737	22.1%	2,768	35.2%	1,724	21.9%	1,118	14.2%	406	5.2%

Notes: Data acquired from IQVIA. 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 3.3 GBT2Q men: PrEP uptake among age groups, Ontario, Sex Now 2019

	<20	20-29	30-39	40-49	50-59	60+
Total in age group (N)	48	501	544	329	535	183
Number currently on PrEP (n)	<5	77	124	93	60	11
Proportion currently on PrEP (n/N)	4.2%	15.4%	22.8%	28.3%	17.0%	6.0%

TABLE 3.4 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, FEMALES, ONTARIO, 2016 TO 2019 (ANNUAL)

	<20		20-29		30-39		40-49		50-59		60+	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2016	<5	0.0%	10	18.5%	26	48.1%	7	13.0%	9	16.7%	<5	3.7%
2017	<5	2.2%	17	18.5%	37	40.2%	15	16.3%	16	17.4%	5	5.4%
2018	12	6.7%	57	31.8%	55	30.7%	22	12.3%	26	14.5%	7	3.9%
2019	14	5.5%	75	29.5%	81	31.9%	46	18.1%	30	11.8%	8	3.1%

TABLE 3.5 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PREP BY AGE, FEMALES, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

		<20		20-29		30-39		40-49		50-59		60+	
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
2019	Jan-Mar	9	6.8%	35	26.3%	43	32.3%	16	12.0%	24	18.0%	6	4.5%
	Apr-Jun	8	5.2%	49	31.6%	47	30.3%	27	17.4%	20	12.9%	<5	2.6%
	Jul-Sep	6	3.4%	55	30.7%	65	36.3%	25	14.0%	22	12.3%	6	3.4%
	Oct-Dec	7	4.2%	42	25.3%	57	34.3%	28	16.9%	26	15.7%	6	3.6%
2020	Jan-Mar	8	3.9%	59	29.1%	64	31.5%	40	19.7%	28	13.8%	<5	2.0%

Notes: PrEP dispensation data acquired from IQVIA. 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. Sex Now 2019 data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information.

4. By race/ethnicity (GBT2Q men)

TABLE 4.1 GBT2Q MEN: PrEP UPTAKE AMONG RACE/ETHNICITY CATEGORIES, ONTARIO, SEX NOW 2019

	African, Caribbean, or Black	East or Southeast Asian	Indigenous	White	Other/Mixed
Total in category (N)	86	86	79	1,450	207
Number currently on PrEP (n)	19	17	9	269	44
Proportion currently on PrEP (n/N)	22.1%	19.8%	11.4%	18.6%	21.3%

Notes: Sex Now 2019 data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information.

5. By prescriber specialty

TABLE 5.1 ESTIMATED NUMBER AND PROPORTION (AMONG KNOWN) OF INDIVIDUALS DISPENSED PREP BY PRESCRIBER SPECIALTY, ONTARIO, 2015 TO 2020 (ANNUAL)

	Family and general practice		Infectious diseases		Internal medicine		Nurse practitioners		Public health and preventive medicine		Other		Unknown
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n
2016	908	68.5%	265	20.0%	83	6.3%	<5	0.3%	5	0.4%	60	4.5%	128
2017	1,846	69.0%	513	19.2%	124	4.6%	<5	0.0%	13	0.5%	181	6.8%	328
2018	3,793	66.3%	891	15.6%	441	7.7%	52	0.9%	137	2.4%	409	7.1%	792
2019	5,185	61.2%	1,553	18.3%	874	10.3%	92	1.1%	186	2.2%	584	6.9%	1302

TABLE 5.2 ESTIMATED NUMBER AND PROPORTION (AMONG KNOWN) OF INDIVIDUALS DISPENSED PREP BY PRESCRIBER SPECIALTY, ONTARIO, JAN-MAR 2019 TO JAN-MAR 2020 (QUARTERLY)

		Family and general practice		Infectious diseases		Internal medicine		Nurse practitioners		Public health and preventive medicine		Other		Unknown
		n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n
2019	Jan-Mar	3,208	64.6%	864	17.4%	452	9.1%	46	0.9%	142	2.9%	257	5.2%	549
	Apr-Jun	3,656	63.6%	1,111	19.3%	518	9.0%	38	0.7%	143	2.5%	285	5.0%	677
	Jul-Sep	3,805	62.3%	1,179	19.3%	615	10.1%	57	0.9%	108	1.8%	342	5.6%	675
	Oct-Dec	3,783	61.2%	1,207	19.5%	652	10.5%	63	1.0%	113	1.8%	365	5.9%	707
2020	Jan-Mar	4,278	60.2%	1,426	20.1%	757	10.7%	116	1.6%	100	1.4%	430	6.1%	982

Notes: Data acquired from IQVIA. 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.

6. By payment type, by income, and by education

TABLE 6.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP BY PAYMENT TYPE, ONTARIO, 2016 TO 2020 (ANNUAL)

	Private		Public	
	n	Row %	n	Row %
2016	1,257	86.7%	193	13.3%
2017	2,574	85.8%	426	14.2%
2018	4,854	75.5%	1,573	24.5%
2019	7,295	75.7%	2,339	24.3%

TABLE 6.2 GBT2Q MEN: PrEP UPTAKE AMONG ANNUAL INCOME CATEGORIES, ONTARIO, SEX NOW 2019

	<\$30,000	\$30,000- \$39,999	\$40,000- \$49,999	\$50,000- \$59,999	\$60,000- \$69,999	\$70,000 or more
Total in category (N)	559	159	180	152	138	580
Number currently on PrEP (n)	56	24	33	35	33	162
Proportion currently on PrEP (n/N)	10.0%	15.1%	18.3%	23.0%	23.9%	27.9%

TABLE 6.3 GBT2Q MEN: PrEP UPTAKE AMONG EDUCATION CATEGORIES, ONTARIO, SEX NOW 2019

	High school or did not finish high school	Post-secondary school (e.g. certificate, diploma)	Bachelor's degree	Above a Bachelor's degree (e.g., masters, doctorate)
Total in category (N)	386	83	616	458
Number currently on PrEP (n)	25	83	142	115
Proportion currently on PrEP (n/N)	6.5%	17.2%	23.1%	25.1%

Notes: PrEP dispensation data acquired from IQVIA. Annual data represents the number of unique individuals dispensed PrEP at least once during the year. Sex Now 2019 data acquired from the CBRC. Findings restricted to study-eligible participants who reported either “No” or one of the “Yes” responses to “Have you ever used PrEP?”, were living in Ontario, and who had never been diagnosed with HIV. PrEP = pre-exposure prophylaxis. GBT2Q = gay, bisexual, transgender, Two-Spirit, or queer. See [Data source: Sex Now 2019](#) for more information.

7. By region

TABLE 7.1 ESTIMATED NUMBER AND PROPORTION OF INDIVIDUALS DISPENSED PrEP BY REGION, ONTARIO, 2016 TO 2020 (ANNUAL)

Region	2016		2017		2018		2019	
	n	Col %	n	Col %	n	Col %	n	Col %
Central East	11	0.8%	36	1.2%	95	1.5%	146	1.5%
Central South	86	6.0%	170	5.7%	319	4.9%	523	5.3%
Central West	26	1.8%	70	2.3%	214	3.3%	290	3.0%
Durham	9	0.6%	33	1.1%	66	1.0%	101	1.0%
Eastern	12	0.8%	38	1.3%	104	1.6%	152	1.6%
Erie-St. Clair	15	1.0%	58	1.9%	134	2.0%	176	1.8%
Halton	8	0.6%	19	0.6%	51	0.8%	129	1.3%
North East	15	1.0%	20	0.7%	25	0.4%	58	0.6%
North West	22	1.5%	37	1.2%	52	0.8%	68	0.7%
Ottawa	110	7.6%	259	8.6%	560	8.6%	873	8.9%
Peel	20	1.4%	47	1.6%	124	1.9%	216	2.2%
South West	45	3.1%	111	3.7%	289	4.4%	420	4.3%
Toronto - Downtown	846	58.7%	1,645	54.9%	3,449	52.7%	5,072	51.8%
Toronto - Not Downtown	201	13.9%	424	14.1%	972	14.9%	1,428	14.6%
York	16	1.1%	31	1.0%	89	1.4%	145	1.5%

Notes: Data acquired from IQVIA. 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.

Table 7.2 Estimated number of individuals dispensed PrEP by region, Ontario, Jan-Mar 2019 to Jan-Mar 2020 (quarterly)

Region	2019				2020
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
Central East	105	122	107	94	87
Central South	299	359	355	402	418
Central West	165	166	218	201	244
Durham	53	66	82	77	110
Eastern	81	91	100	124	144
Erie-St. Clair	106	105	117	121	115
Halton	46	120	129	63	57
North East	35	47	47	53	46
North West	51	57	46	45	51
Ottawa	495	559	638	599	684
Peel	115	139	158	162	186
South West	247	265	269	292	325
Toronto - Downtown	2,798	3,383	3,385	3,568	4,435
Toronto - Not Downtown	794	863	988	974	1,117
York	101	87	112	106	124

Notes: Data acquired from IQVIA. Quarterly data represents the number of unique individuals dispensed PrEP at least once during the three-month period. Region based on address of dispensing pharmacy. See technical notes for detailed information on the [Geographic regions](#). PrEP = pre-exposure prophylaxis.

Table 7.3 Estimated rate of individuals dispensed PrEP per 100,000 people by region, Ontario, 2016 to 2019 (annual)

Region	2016	2017	2018	2019
Central East	1.2	4.0	10.4	15.7
Central South	6.8	13.2	24.4	39.5
Central West	3.1	8.1	24.2	32.1
Durham	1.4	4.9	9.6	14.5
Eastern	1.4	4.4	12.0	17.3
Erie-St. Clair	2.3	8.9	20.3	26.4
Halton	1.4	3.3	8.7	21.6
North East	2.7	3.5	4.4	10.2
North West	9.3	15.6	21.8	28.4
Ottawa	11.4	26.3	55.7	84.9
Peel	1.4	3.2	8.3	14.0
South West	4.6	11.1	28.3	40.4
Toronto	37.1	72.2	151.4	219.2
York	1.4	2.7	7.7	12.3

TABLE 7.4 ESTIMATED RATIO OF INDIVIDUALS DISPENSED PREP TO FIRST-TIME HIV DIAGNOSES (“PREP-TO-NEED RATIO”), BY REGION, ONTARIO, 2016 TO 2019 (ANNUAL)

Region	2016	2017	2018	2019
Central East	0.6	1.5	3.2	6.2
Central West	1.4	4.0	9.3	15.2
Eastern	0.6	3.8	5.8	11.7
Northern	2.6	4.1	3.1	4.5
Ottawa	1.9	5.1	13.0	24.9
South West	0.7	2.3	6.4	11.7
Toronto	3.0	5.4	11.1	16.4

Notes: PrEP dispensation data acquired from IQVIA. 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 6.3. Regions in Table 6.4 are collapsed OHESI regions. See technical notes for detailed information on the [Geographic regions](#) and [First-time HIV diagnoses](#). PrEP = pre-exposure prophylaxis.

Prescribing PrEP

8. Overall, by specialty, and by number of PrEP prescriptions written

TABLE 8.1 ESTIMATED NUMBER OF PHYSICIANS WHO PRESCRIBED PrEP, ONTARIO, 2018 TO 2019 (ANNUAL)

Year	Number of physicians
2018	1,074
2019	1,420

TABLE 8.2 ESTIMATED NUMBER AND PROPORTION OF PHYSICIANS WHO PRESCRIBED PrEP BY SPECIALTY, ONTARIO, 2018 TO 2019 (ANNUAL)

Prescriber Specialty	2018		2019	
	n	Col %	n	Col %
Family and general practice	929	86.5%	1,207	85.0%
Infectious diseases	46	4.3%	51	3.6%
Internal medicine	18	1.7%	21	1.5%
Resident	32	3.0%	81	5.7%
Other	49	4.6%	60	4.2%

TABLE 8.3 ESTIMATED NUMBER AND PROPORTION (AMONG KNOWN) OF PHYSICIANS WHO PRESCRIBED PrEP BY QUINTILES OF TOTAL NUMBER OF PrEP PRESCRIPTIONS WRITTEN, ONTARIO, 2019

Quintile (range of prescriptions)	n	Col %
Low (1-22)	1,165	82.0%
Medium (22-80)	181	12.7%
High (80-262)	48	3.4%
Very high (274-371)	13	0.9%
Super (397-3,029)	13	0.9%

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#).

9. By region

TABLE 9.1 ESTIMATED NUMBER AND PROPORTION OF PHYSICIANS WHO PRESCRIBED PrEP BY REGION, ONTARIO, 2018 TO 2019 (ANNUAL)

Region	2018		2019	
	n	Col %	n	Col %
Central East	44	4.1%	61	4.3%
Central South	40	3.7%	67	4.7%
Central West	41	3.8%	51	3.6%
Durham	20	1.9%	18	1.3%
Eastern	32	3.0%	62	4.4%
Erie-St. Clair	17	1.6%	33	2.3%
Halton	25	2.3%	28	2.0%
North East	28	2.6%	29	2.0%
North West	11	1.0%	11	0.8%
Ottawa	112	10.4%	162	11.4%
Peel	51	4.7%	66	4.6%
South West	46	4.3%	77	5.4%
Toronto - Downtown	303	28.2%	375	26.4%
Toronto - Not Downtown	263	24.5%	325	22.9%
York	41	3.8%	55	3.9%

TABLE 9.2 ESTIMATED RATIO OF PHYSICIANS WHO PRESCRIBED PrEP TO FIRST-TIME HIV DIAGNOSES (“PrEP PRESCRIBER-TO-NEED RATIO”), BY REGION, ONTARIO, 2018 TO 2019 (ANNUAL)

Region	2018	2019
Central East	1.3	2.0
Central West	1.7	2.4
Eastern	1.8	4.8
Northern	1.6	1.4
Ottawa	2.6	4.6
South West	1.0	2.2
Toronto	1.4	1.8

Notes: Prescriber data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in the year. Region based on prescribing physician’s primary work address. First-time HIV diagnoses provided by Public Health Ontario (PHO). See technical notes for more information the [Geographic regions](#). PrEP = pre-exposure prophylaxis.

10. Contingencies between specialty, region, and number of PrEP prescriptions written

TABLE 10.1 QUINTILES OF TOTAL NUMBER OF PrEP PRESCRIPTIONS WRITTEN (WHERE KNOWN) BY SPECIALTY OF PHYSICIANS WHO PRESCRIBED PrEP, ONTARIO, 2019

Specialty	Quintile (range of prescriptions)									
	Low (1-22)		Medium (22-80)		High (80-262)		Very high (274-371)		Super (397-3,029)	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
Family and general practice (N = 1207)	1,003	83.1%	152	12.6%	38	3.2%	10	0.8%	4	0.3%
Infectious diseases (N = 21)	22	43.1%	13	25.5%	7	13.7%	2	3.9%	7	13.7%
Internal medicine (N = 51)	16	76.2%	3	14.3%	1	4.8%	0	0.0%	1	4.8%
Other (N = 141)	124	87.9%	13	9.2%	2	1.4%	1	0.7%	1	0.7%

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#).

Table 10.2 Quintiles of total number of PrEP prescriptions written (where known) by specialty of physicians who prescribed PrEP, Ontario, 2019

Quintile (range of prescriptions)	Specialty							
	Family and general practice		Infectious diseases		Internal medicine		Other	
	n	Row %	n	Row %	n	Row %	n	Row %
Low (1-22) (N = 1,165)	1,003	86.1%	22	1.9%	16	1.4%	124	10.6%
Medium (22-80) (N = 181)	152	84.0%	13	7.2%	3	1.7%	13	7.2%
High (80-262) (N = 48)	38	79.2%	7	14.6%	1	2.1%	2	4.2%
Very high (274-371) (N = 13)	104	76.9%	2	15.4%	0	0.0%	1	7.7%
Super (397-3,029) (N = 13)	4	30.8%	7	53.9%	1	7.7%	1	7.7%

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. PrEP = pre-exposure prophylaxis. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#).

Table 10.3 Physician's region by quintiles of number of PrEP prescriptions written (where known), Ontario, 2019

Quintile (range of prescriptions)	Region											
	Toronto – Downtown		Toronto – Not downtown		Ottawa		Central South		South West		Other	
	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %	n	Row %
Low (1-22) (N = 1,165)	251	21.6%	263	22.6%	144	12.4%	62	5.3%	67	5.8%	378	32.5%
Medium (22-80) (N = 181)	80	44.2%	52	28.7%	12	6.6%	3	1.7%	7	3.9%	27	14.9%
High (80-262) (N = 48)	27	56.3%	8	16.7%	3	6.3%	0	0.0%	2	4.2%	8	16.7%
Very high (274-371) (N = 13)	8	61.5%	2	15.4%	1	7.7%	0	0.0%	1	7.7%	1	7.7%
Super (397-3,029) (N = 13)	9	69.2%	0	0.0%	2	15.4%	2	15.4%	0	0.0%	0	0.0%

Notes: Data acquired from IQVIA. Data represents the number of unique physicians who prescribed PrEP at least once in 2019. See technical notes for more information on [Quintiles of physicians who prescribed PrEP by number of PrEP prescriptions written](#) or the [Geographic regions](#). Region based on prescribing physician's primary work address. PrEP = pre-exposure prophylaxis.