

HIV incidence and prevalence estimates for British Columbia and progress towards 90-90-90 HIV targets, 2020

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Human immunodeficiency virus (HIV) prevention remains a public health priority in British Columbia (BC). Incidence and prevalence are two measures of disease burden used to inform our response to the HIV epidemic. Incidence is the rate of new infections (both diagnosed and undiagnosed) that occur in an area over a specific time, whereas prevalence is the total number of people living with HIV in that area in a specific time, and may be presented as a proportion of the population at risk of HIV infection.

Routine surveillance of HIV, such as those reported in the BC HIV Annual Report [[HIV/AIDS Reports](#)] and British Columbia Centre for Disease Control's (BCCDC) Clinical Prevention Services quarterly surveillance report [[STI Reports](#)], is based on new diagnoses of HIV. However, because people can live with HIV for a long time before they are diagnosed, the number of new HIV diagnoses is only an approximation of HIV incidence. Similarly, accurate prevalence estimates need to account for people living with HIV who are not yet diagnosed, migration (i.e., people living with HIV who move into or out of BC) and death, which are not available through routine surveillance. For these reasons, mathematical models have been used to combine various sources of knowledge about the HIV epidemic to estimate HIV incidence and prevalence in a population and subpopulations disproportionately affected by HIV. In BC and Canada, populations disproportionately affected by HIV, that is subpopulations with a greater rate of HIV than that of the total population, have historically faced health inequities due to systemic and structural barriers from ongoing discrimination based on

homophobia, stigma, poverty, racism and colonialism. In presenting estimates of HIV incidence and prevalence among populations disproportionately affected by HIV, we hope to highlight the systematic inequalities and drive change [[BCOHRC](#)].

The Public Health Agency of Canada (PHAC) has released national estimates of HIV incidence and prevalence for 2020 based on multiple data sources, including routine HIV surveillance data [[Canadian estimates](#)]. Additionally, for the first time, PHAC has estimated Canada's progress towards meeting the 90-90-90 Target at the Provincial and Territorial levels [[Accelerating Our Response - Government of Canada Five-Year Action Plan on Sexually Transmitted and Blood-Borne Infections](#)]. Below we present a summary of PHAC's estimates for HIV incidence, prevalence, and the progress toward the 90-90-90 Target for BC in 2018 and 2020.

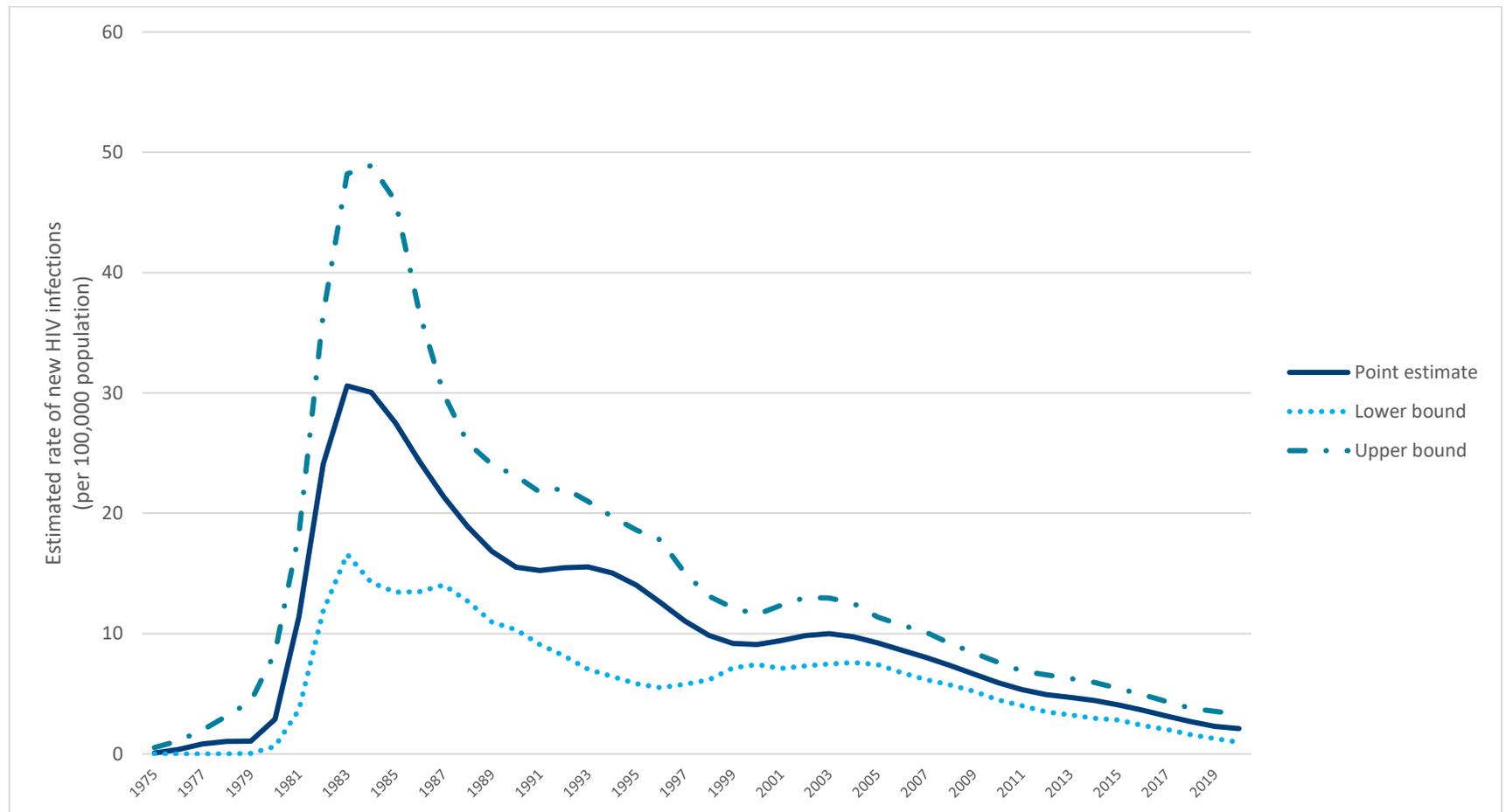
Note that the 2018 estimates presented below differ from those previously published on the SmartSexResource website [[SmartSexResource](#)]. This difference is due to the change in methodology for calculating HIV incidence and prevalence, which has been revised to incorporate additional data sources and updated HIV surveillance data due to late reporting. We present below the 2018 and 2020 estimates based on the new methodology.

Main Findings

The number of new HIV infections (incidence) has been decreasing

Overall, the incidence of HIV has decreased in BC since the mid-1980s (Figure 1).

Figure 1: Estimated rate of new HIV infections (incidence), and plausible range*, in British Columbia, 1975 to 2020



*Point estimate represents the “best”, or “most plausible” estimate of modelled incidence. Lower and upper bounds represent the 2.5th and 97.5th percentiles of modelled estimates, respectively.

In BC, the estimate of the total number of new HIV infections in 2020 was 108 (range 50-170), a decrease from 135 (range 80-190) in 2018 (Table 1). In 2020, incident HIV infections continued to be higher among males than females.

Gay, bisexual, or other men who have sex with men (GBMSM) continue to have the highest number of new HIV infections (56 infections; 51.8%), followed by people who acquired HIV through heterosexual contact (27 infections; 25.0%). The number of new HIV infections among people who inject drugs (PWID) increased to 25 (23.2%) in 2020 from 19 (14.1%) in 2018.

Table 1: Estimated number of HIV infections in British Columbia, 2018 and 2020

Group	Category	2020			2018			Percent change in point estimate
		Point estimate	Range**	Percentage	Point estimate	Range**	Percentage	
Priority Population*	GBMSM	56	30-85	51.8	87	50-120	64.4	-35.6
Priority Population*	PWID	25	10-40	23.2	19	10-25	14.1	31.6
Priority Population*	Heterosexual people	27	10-45	25.0	29	15-40	21.5	-6.9
Priority Population*	Other	<2	0-5	-	<2	0-5	-	-
Sex	Female	20	10-30	18.5	22	15-30	16.3	-9.1
Sex	Male	88	45-130	81.5	113	65-160	83.7	-22.1
Total	-	108	50-170	100.0	135	80-190	100.0	-20.0

***Priority Population**

Gay, bisexual and other men who have sex with men (GBMSM): Exposure during male-to-male sexual contact

People who inject drugs (PWID): Exposure during the use of injection drugs

Heterosexual people: Exposure during male and female sexual contact

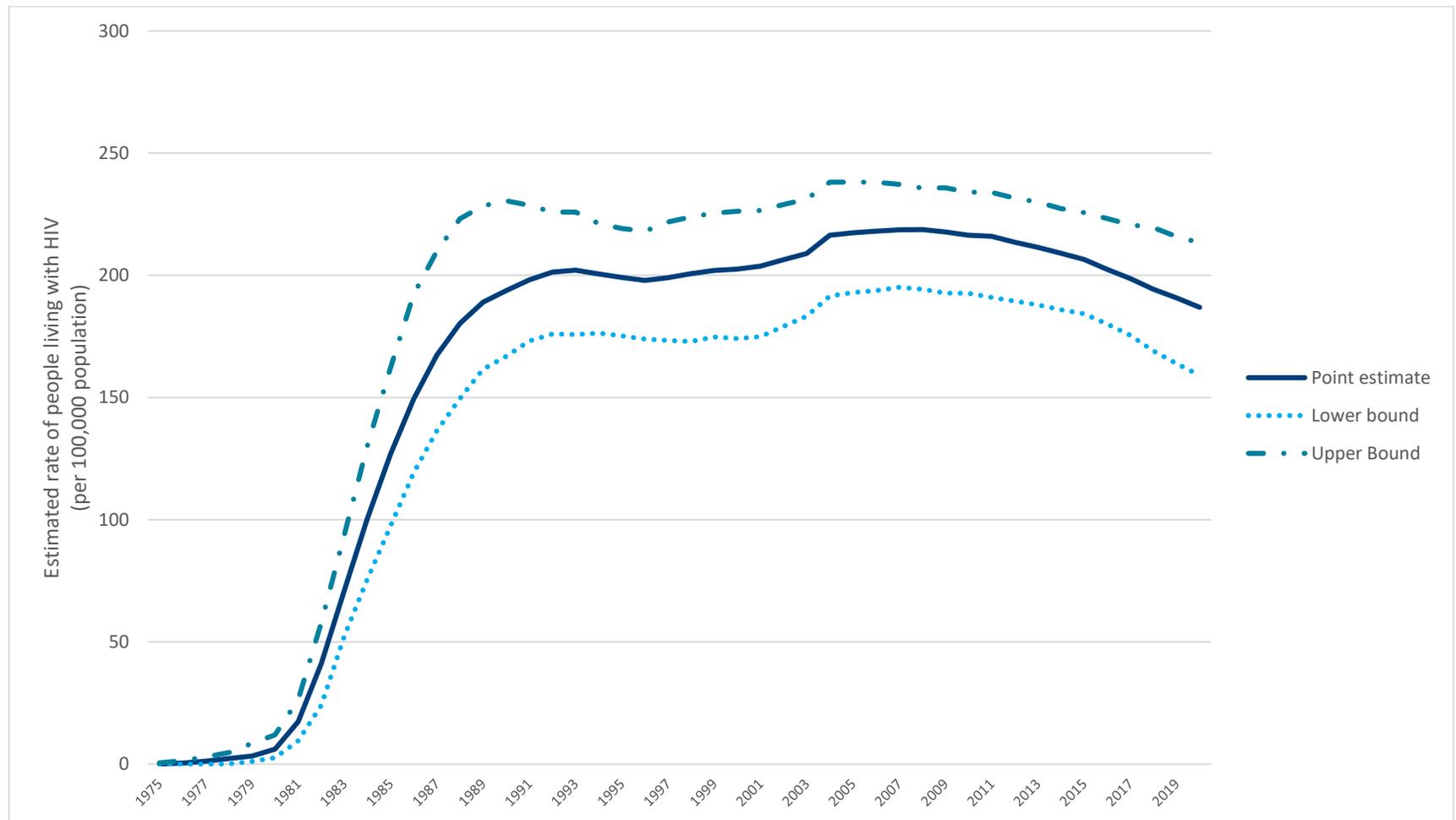
Other: Persons who were exposed by transfusion of blood or clotting factor, perinatal exposure, or occupational exposure

**Range estimates are rounded to the nearest five or ten.

The number of people living with HIV infection (prevalence) has been slowly decreasing in recent years

Overall, the proportion of people living with HIV has been slowly decreasing since 2008 (Figure 2).

Figure 2: Estimated rate of people living with HIV (prevalence), and plausible range*, in British Columbia, 1975 to 2020



*Point estimate represents the “best”, or “most plausible” estimate of modelled prevalence. Lower and upper bounds represent the 2.5th and 97.5th percentiles of modelled estimates, respectively.

The estimated number of people living with HIV in BC at the end of 2020 was 9,637 (range 8,200-11,000), a decrease from 9,736 (range 8,470-11,000) at the end of 2018 (Table 2). In 2020, the HIV prevalence continued to be higher among males than females, which follows the distribution of incident HIV infections between males and females in BC.

Among people living with HIV in 2020, GBMSM continued to comprise the greatest proportion of HIV prevalence (5,180 infections; range 4,400-6,000), followed by heterosexual persons (2,412 infections; range 2,000-2,800), then PWID (1,920 infections; range 1,600-2,240).

Table 2: Estimated number of prevalent HIV infections in British Columbia, 2018 and 2020

Group	Category	2020	2020	2020	2018	2018	2018	Percent change in point estimate
		Point estimate	Range**	Percentage	Point estimate	Range**	Percentage	
Priority Population*	GBMSM	5,180	4,400-6,000	53.8	5,250	4,560-5,940	53.9	-1.3
Priority Population*	PWID	1,920	1,600-2,240	19.9	1,986	1,700-2,270	20.4	-3.3
Priority Population*	Heterosexual people	2,412	2,000-2,800	25.0	2,370	2,060-2,680	24.4	1.8
Priority Population*	Other	125	90-160	1.3	130	110-150	1.3	-3.8

Group	Category	2020	2020	2020	2018	2018	2018	Percent change in point estimate
		Point estimate	Range**	Percentage	Point estimate	Range**	Percentage	
Sex	Female	1,645	1,400-1,900	17.1	1,668	1,450-1,890	17.1	-1.4
Sex	Male	7,992	6,800-9,200	82.9	8,068	7,000-9,120	82.9	-0.9
Total	-	9,637	8,200-11,000	100.0	9,736	8,470-11,000	100.0	-1.0

*Priority Population

Gay, bisexual and other men who have sex with men (GBMSM): Exposure during male-to-male sexual contact

People who inject drugs (PWID): Exposure during the use of injection drugs

Heterosexual people: Exposure during male and female sexual contact

Other: Persons who were exposed by transfusion of blood or clotting factor, perinatal exposure, or occupational exposure

**Range estimates are rounded to the nearest ten.

British Columbia’s progress toward meeting the 90-90-90 HIV Target by 2020

In BC, at the end of 2020, among the estimated 9,637 people living with HIV, 94% were diagnosed (9,059). Of these, 92% received treatment (8,374), and 95% of those on treatment had a suppressed viral load (7,987). BC met the 90-90-90 HIV Target by the end of 2020, with demonstrable improvements compared to 2018’s estimates (Table 3).

Table 3: Estimated number and percentage of people living with HIV, diagnosed, on treatment, and virally suppressed in British Columbia, 2018 and 2020

Measure	2020	2018
Estimated HIV Incidence	108	135
Estimated HIV Prevalence	9,637	9,736
First 90: People living with HIV who are diagnosed		
Estimated percent diagnosed	94%	93%
Estimated number living with diagnosed HIV	9,059	9,065
Second 90: People diagnosed with HIV who are on treatment		
Estimated percent on treatment	92%	91%
Estimated number on treatment	8,374	8,256
Third 90: People on treatment who have suppressed viral load		
Estimated percent suppressed viral load	95%	94%

Measure	2020	2018
Estimated number with suppressed viral load	7,987	7,728

Some disparities arise in BC’s progress toward meeting the 90-90-90 Target when sex-specific results are examined (Table 4). The proportion of people living with HIV diagnosed and proportion of people diagnosed with HIV who are on treatment were similar among females and males at the end of 2020. However, the proportion of people on treatment who have suppressed viral load was higher among males compared with females (98%; 6,829 for males vs. 81%; 1,158 for females).

Table 4: Estimated number of people living with HIV, diagnosed, on treatment, and virally suppressed in British Columbia, by sex, 2020

Measure	Male	Female
Estimated HIV Incidence	88	20
Estimated HIV Prevalence	7,992	1,645
First 90: People living with HIV who are diagnosed		
Estimated percent diagnosed	94%	94%
Estimated number living with diagnosed HIV	7,512	1,547
Second 90: People diagnosed with HIV who are on treatment		
Estimated percent on treatment	93%	92%
Estimated number on treatment	6,950	1,424

Measure	Male	Female
Third 90: People on treatment who have suppressed viral load		
Estimated percent suppressed viral load	98%	81%
Estimated number with suppressed viral load	6,829	1,158

PHAC HIV estimates compared to routine HIV surveillance in BC

The estimates of HIV incidence released by PHAC and the BCCDC HIV surveillance data both show a decreasing trend in the number of new HIV diagnoses and GBMSM continuing to comprise the greatest number of new HIV diagnoses in BC. Additionally, the increased proportion of incident HIV among heterosexual people is also supported by BCCDC’s HIV surveillance data. The recent decline in HIV prevalence may reflect the lower number of new HIV diagnoses each year and older people living with HIV passing away from causes that are not related to HIV, with a noted decline in acquired immunodeficiency syndrome-related deaths since 2010 [[The Path to End AIDS: 2023 UNAIDS global AIDS update](#)].

These estimates of HIV incidence and prevalence complement routine HIV surveillance data to help monitor the HIV epidemic in BC and measure the progress towards ensuring people living with HIV are diagnosed in a timely manner and are engaged and retained in care. These include addressing HIV-related stigma, intimate partner violence and sexual abuse [[Challenges and Successes in Linking HIV-Infected Women to Care in the United States, Violence against Women](#)], and improving access to prevention, testing, and treatment services that are both culturally safe and appropriate.

Further information

National estimates are presented in more detail in [Estimates of HIV incidence, prevalence and Canada’s progress on meeting the 90-90-90 HIV targets](#) on the Government of Canada website.

Provincial HIV surveillance data are shown in the [HIV/AIDS Reports](#) section on the BCCDC website.

Previously published provincial estimates for 2016 and 2018 are described in the blog [HIV incidence and prevalence estimates for British Columbia and Canada in 2018](#) on the SmartSexResource website.

Acknowledgements

Public Health Agency of Canada (PHAC)