COMMUNITIES AT THE CENTRE

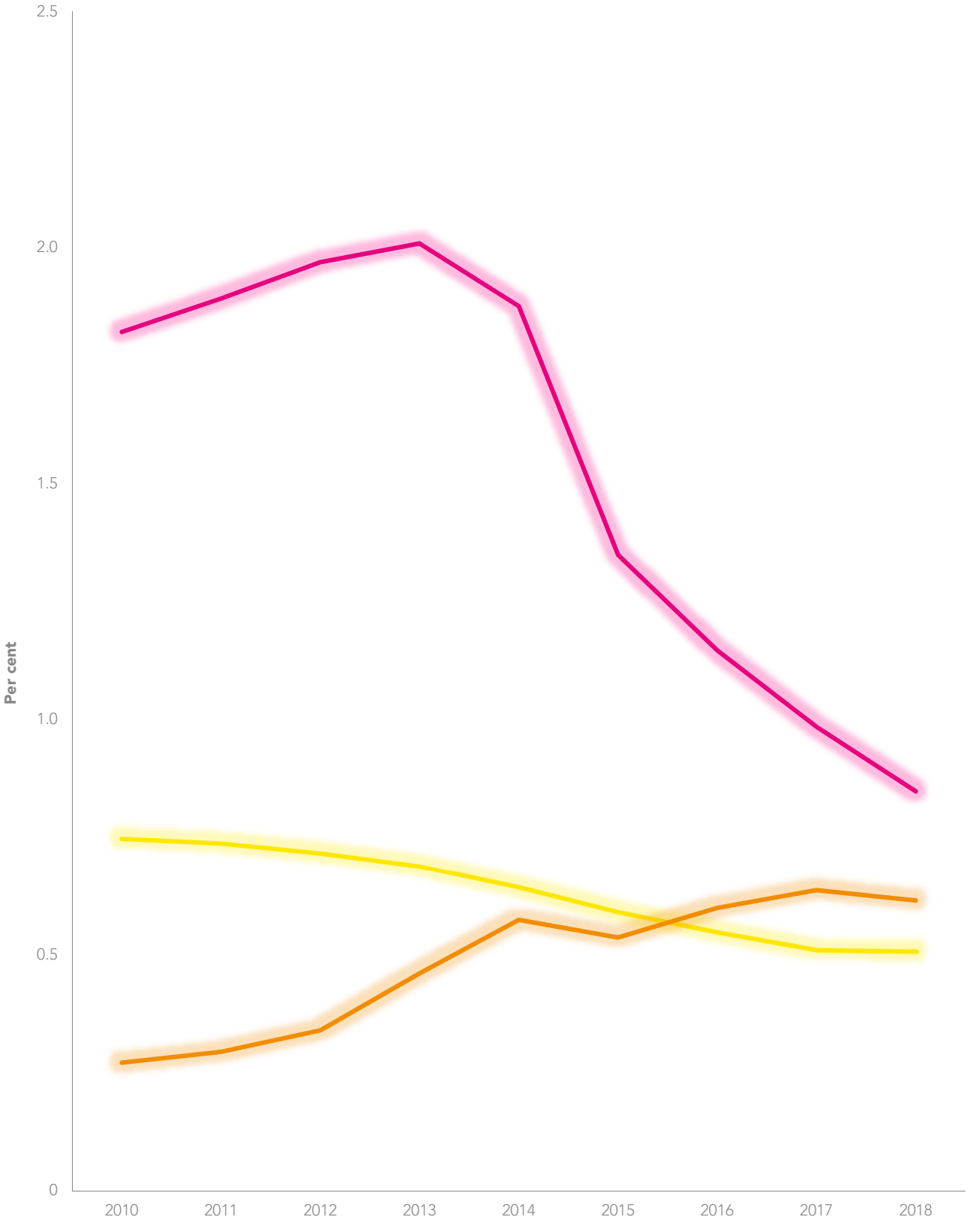
THE RESPONSE TO HIV IN EASTERN EUROPE AND CENTRAL ASIA

GLOBAL AIDS UPDATE 2019

Cover photo: An advertisement for pre-exposure prophylaxis in New York City, United States of America. Credit: UNAIDS.

CONTENTS

FIGURE 16.1 HIV incidence trends among key populations, eastern Europe and central Asia, 2010–2018



Note: Countries included are: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Tajikistan, Ukraine and Uzbekistan. Shadows indicate the uncertainty in the calculations which has not been estimated.

Source: UNAIDS special analysis, 2019.

EASTERN EUROPE AND CENTRAL ASIA

AT A GLANCE

The number people newly infected with HIV in eastern Europe and central Asia increased by 29% between 2010 and 2018. Key populations are disproportionately affected, and they lack access to the HIV services they need.

Despite expanded HIV testing services, antiretroviral therapy coverage in the region is lower than in most other regions. Large proportions of people diagnosed with HIV are not being linked to HIV treatment and care.

Both HIV incidence and prevalence remain high among people who inject drugs, and they are rising among gay men and other men who have sex with men.

Access to comprehensive harm reduction services is uneven, with need far outstripping availability in most of the region.

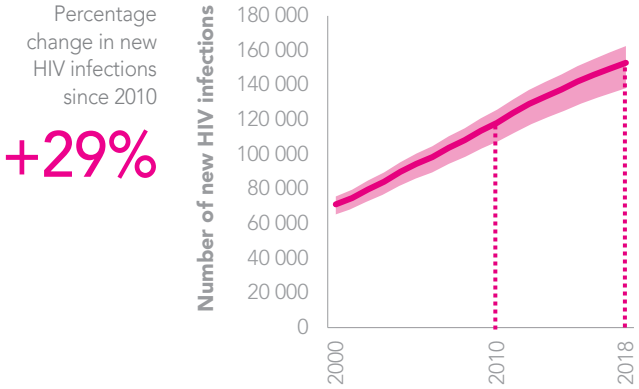
Four countries are providing HIV treatment to at least 70% of incarcerated people living with HIV, while eight countries distribute condoms and three offer sterile injecting equipment to prisoners.

Eastern Europe and central Asia is one of three regions in the world where the HIV epidemic continues to grow. HIV services are often delivered within hostile legal and social environments, and they are not accessible to substantial proportions of the populations who need them most. Civil society organizations are trying to fill some of the gaps, but in several countries they are limited by shrinking civic space and insufficient financial support.

A UNAIDS analysis indicates that while the incidence of HIV among people who inject drugs in 10 countries in the region has decreased since 2013, it remained high in 2018 at 0.9% (Figure 16.1). Among gay men and other men who have sex with men, HIV incidence has doubled since 2010, reaching 0.6% in 2018—a sign that the epidemic in this key population is being neglected by the HIV responses of many countries. ■

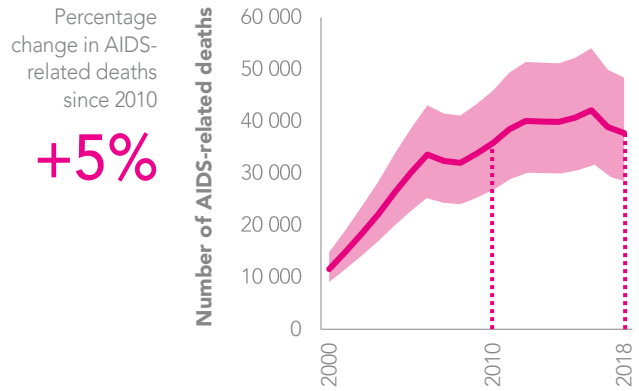
STATE OF THE EPIDEMIC

FIGURE 16.2 Number of new HIV infections, eastern Europe and central Asia, 2000–2018



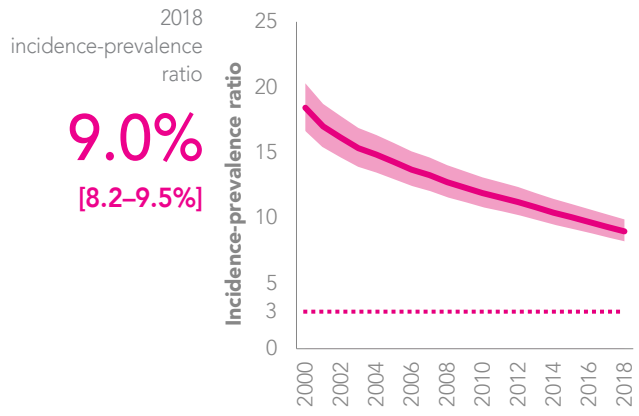
Source: UNAIDS 2019 estimates.

FIGURE 16.3 Number of AIDS-related deaths, eastern Europe and central Asia, 2000–2018



Source: UNAIDS 2019 estimates.

FIGURE 16.4 Incidence-prevalence ratio, eastern Europe and central Asia, 2000–2018



Source: UNAIDS 2019 estimates.

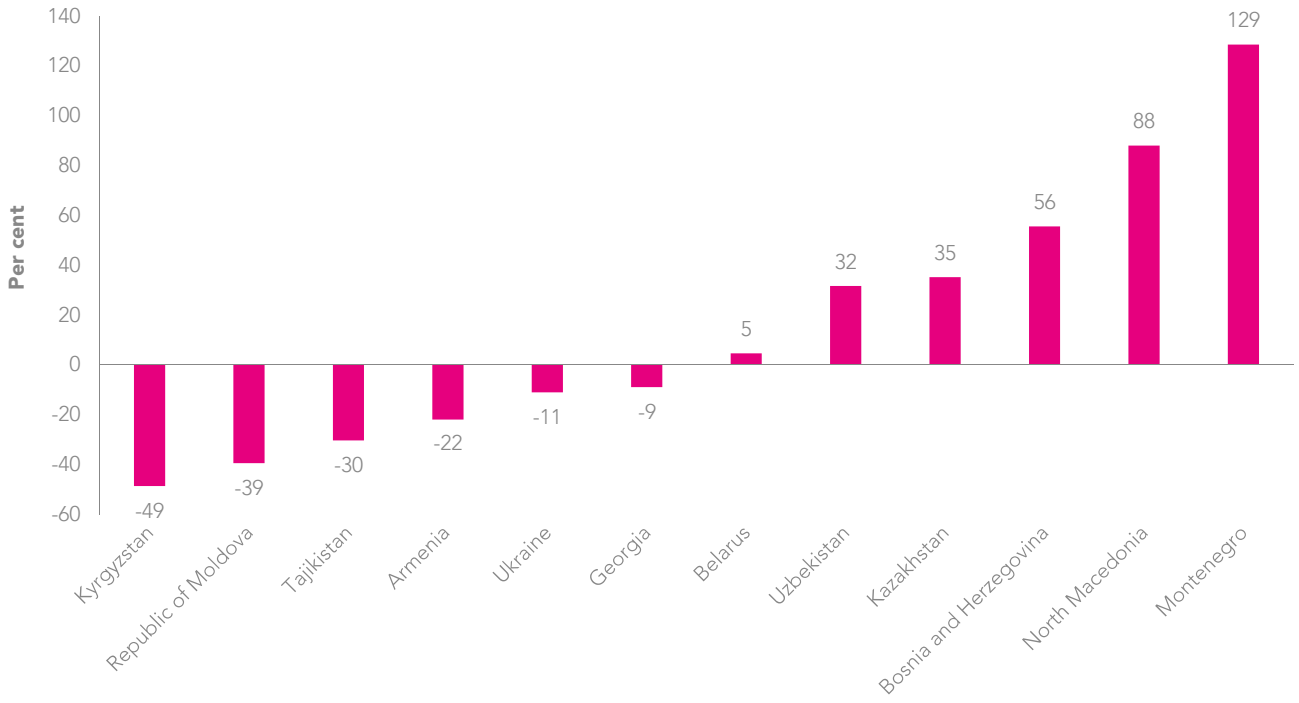
The region has the fastest growing HIV epidemic in the world. The annual number of new HIV infections was 29% higher than in 2010, reaching 150 000 [140 000–160 000] in 2018 (Figure 16.2). The vast majority of people acquiring HIV were in the Russian Federation and Ukraine, the two most populous countries in the region. Together, these countries account for 84% of all new infections in eastern Europe and central Asia. Excluding the Russian Federation from the region's trend analysis results in a 4% decline in new HIV infections between 2010 and 2018. Impressive declines in new infections of more than 35% since 2010 have been achieved in Kyrgyzstan and the Republic of Moldova (Figure 16.5).

Eastern Europe and central Asia is one of only two regions in the world where the annual number of AIDS-related deaths has increased since 2010, although that trend appears to have reversed within the past few years (Figure 16.3). The estimated 38 000 [28 000–48 000] people who died of AIDS-related causes in 2018 was 5% more than the 36 000 [27 000–46 000] deaths in 2010. The region's incidence-prevalence ratio was 9.0% [8.2–9.5%] in 2018. It has scarcely changed since 2015, and it was three times higher than the epidemic transition benchmark of 3.0% (Figure 16.4).

Most new infections in the region are among key populations, who must contend with punitive legal environments, social ostracization and discrimination. Almost two thirds (63%) of HIV infections in 2018 were among people who inject drugs and gay men and other men who have sex with men (Figure 16.7). Size estimates indicate that there are large populations at high risk of HIV infection (Table 16.1).

Surveys continue to reveal high HIV prevalence among these key populations (Figure 16.6). For instance, HIV prevalence was at least 10% among people who inject drugs in six of the 14 countries reporting data, and it exceeded 20% in three countries. Similarly, substantial proportions of gay men and other men who have sex with men are living with HIV: prevalence of HIV infection ranged from 5% to 10% in six countries reporting data to UNAIDS, and from 13% to 16% in a further two countries. Among sex workers, HIV prevalence ranged from under 1% in five countries to between 3% and 7% in five other countries, and among prisoners, it was 8% or higher in three countries. ■

FIGURE 16.5 Percentage change in new HIV infections, by country, eastern Europe and central Asia, 2010–2018

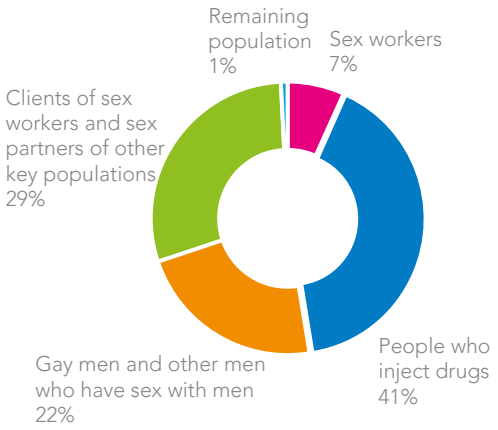


Source: UNAIDS 2019 estimates.

FIGURE 16.6 HIV prevalence among key populations, eastern Europe and central Asia, 2014–2018

Source: Global AIDS Monitoring, 2014–2018.

FIGURE 16.7 Distribution of new HIV infections (aged 15–49 years), by population group, eastern Europe and central Asia, 2018



Source: UNAIDS special analysis, 2019.

TABLE 16.1 Estimated size of key populations, eastern Europe and central Asia, 2018

Country	National adult population (15+)	Sex workers	Sex workers as per cent of adult population (15+)	Gay men and other men who have sex with men	Gay men and other men who have sex with men as per cent of adult population (15+)	People who inject drugs	People who inject drugs as per cent of adult population (15+)	Transgender people	Transgender people as per cent of adult population (15+)	Prisoners	Prisoners as per cent of adult population (15+)
Albania	2 432 000									3000	0.13
Armenia	2 345 000	4600	0.20	16 000	0.69	9000	0.38				
Azerbaijan	7 610 000	32 000	0.42	24 000	0.31	60 000	0.79				
Georgia	3 150 000			19 000	0.59						
North Macedonia	1 741 000					6800	0.39			2300	0.13
Tajikistan	5 889 000	18 000	0.30								
Ukraine	37 062 000	87 000		180 000	0.48	350 000	0.95				

National population size estimate Local population size estimate Insufficient data No data

The regions for which the local population size estimate refers are as follows:
Ukraine: All regions except Luhansk region and Sevastopol

Sources: Global AIDS Monitoring, 2018; United Nations, Department of Economic and Social Affairs, Population Division. World population prospects: the 2017 revision. 2018 (custom data acquired via website).

ROUND-THE-CLOCK SERVICES FOR SERVICES FOR SEX WORKERS IN UKRAINE

In Ukraine, the nongovernmental organization Convictus is bringing round-the-clock services to the estimated 10 000 sex workers who are active in and around the country's capital, Kyiv *(1)*. Convictus' long-standing work with sex workers of all genders has shown the need for HIV and health services that are convenient, comprehensive and match people's lives. To reduce the high HIV prevalence among sex workers (which is 5.2% nationally and up to 36% among sex workers who inject drugs), it developed a model for providing health services out of a small facility in the centre of the city and through mobile units that visit sex workers at hotels, saunas, truck stops, brothels and apartments *(2)*.

The consulting centre is open from 10 am until 6 pm. Supplementing it is a mobile team that hits the streets at 7 pm, using Convictus' contacts within the sex worker communities and monitoring social media to stay up to date on the sites where sex workers are congregating. The team usually stops work at 1 am, at which point a second mobile unit has already started doing its rounds of Kyiv and the surrounding areas where the most vulnerable sex workers, many of whom lack documentation and shun state-run services, are found.

The evidence clearly shows that community-led HIV services for sex workers can have a potent impact. A 2015 systematic review of HIV programmes among female sex workers in low- and middle-income countries found that interventions with strong empowerment elements increased the odds of consistent condom use with clients by more than 300% and reduced the odds of HIV infection by 32% *(3)*.

THE CASCADE FROM HIV TESTING TO VIRAL SUPPRESSION

Of the estimated 1.7 million [1.5 million–1.9 million] people living with HIV in eastern Europe and central Asia, only about 1.2 million knew their serostatus in 2018, and only 650 000 [571 000–674 000] or 38% [30–44%] were receiving HIV treatment (Figure 16.8). Linkage to treatment and care is particularly deficient: a little more than half of people diagnosed with HIV infection were accessing antiretroviral therapy in 2018. Only 29% [26–33%] of people living with HIV were virally suppressed in 2018.

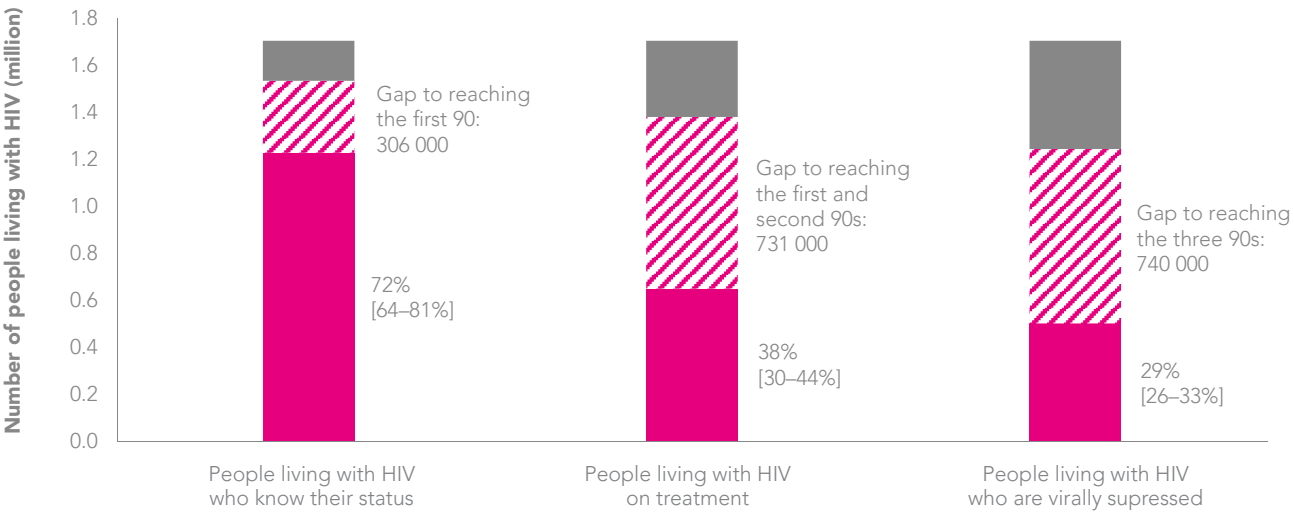
The region is a long way from reaching the 90–90–90 targets, with 72% [64–81%] of people living with HIV knowing their HIV status, 53% [45–56%] of people who knew their HIV status receiving treatment, and 77% [67–81%] of people receiving treatment having suppressed viral loads. The gap to the first 90 was 306 000 people who did not know they were living with HIV, while the gap to the first two 90s was 731 000 people living with HIV in need of treatment. Reaching all three 90s will require an additional 740 000 people living with HIV to achieve viral suppression.

Among the countries with high burdens of HIV infection, Montenegro, North Macedonia and Ukraine have reached one of the 90–90–90 targets (Table 16.2). Given that all but a small percentage of HIV infections in the region are among key populations and their sex partners, the low coverage speaks to a failure to reach at-risk, marginalized populations with the HIV services they need. Accessible, affordable and stigma-free care and treatment services, including access to viral load testing, must be made available to all people living with HIV.

Levels of HIV knowledge among key populations vary substantially across the region (Figure 16.10). Less than 20% of HIV-positive people who inject drugs in Azerbaijan—and only 37% in North Macedonia—knew their serostatus in 2018. The proportion of HIV-positive gay men and other men who have sex with men who knew their HIV status ranged from less than 40% in Ukraine to 87% in Kazakhstan. Only 16% of female sex workers living with HIV in Azerbaijan knew their serostatus, compared with more than 90% of their counterparts in Kazakhstan and Tajikistan.

Given the low levels of viral suppression in the region, a massive improvement in treatment services is needed. In most of the countries that reported data, men were much less likely to reach viral suppression than women. In Ukraine, for example, only 40% of men living with HIV were virally suppressed, compared to 62% of women (Figure 16.9). ■

FIGURE 16.8 **HIV testing and treatment cascade, eastern Europe and central Asia, 2018**



Source: UNAIDS special analysis, 2019; see annex on methods for more details.

TABLE 16.2 90–90–90 country scorecard, eastern Europe and central Asia, 2018

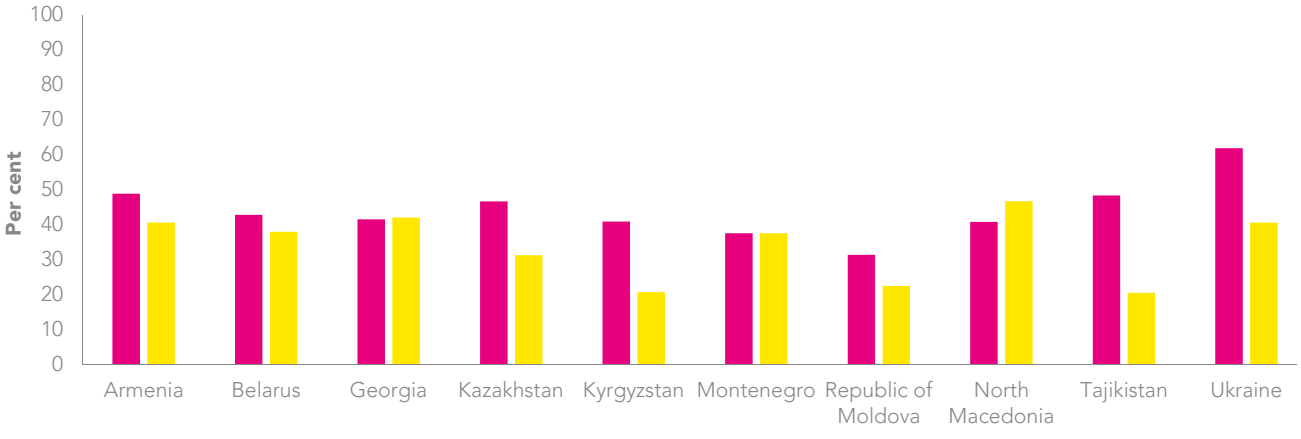
	First 90: percentage of people living with HIV who know their HIV status			Second 90: percentage of people living with HIV who know their status and who are on treatment			Third 90: percentage of people living with HIV on treatment who have suppressed viral loads			Viral load suppression: percentage of people living with HIV who are virally suppressed		
	All ages	Women (15 years and older)	Men (15 years and older)	All ages	Women (15 years and older)	Men (15 years and older)	All ages	Women (15 years and older)	Men (15 years and older)	All ages	Women (15 years and older)	Men (15 years and older)
Eastern Europe and central Asia	**72**	**85**	**65**	**53**	**54**	**51**	**77**	**78**	**77**	**29**	**36**	**25**
Albania				62	65	60						
Armenia	73	72	73	72	78	69	83	87	80	44	49	41
Azerbaijan				71			75					
Belarus	79	77	80	74	78	70	69	71	67	40	43	38
Bosnia and Herzegovina												
Georgia	59	50	62	84	95	80	85	87	85	42	41	42
Kazakhstan	88	>95	83	66	71	61	65	68	62	38	47	31
Kyrgyzstan	68	79	61	64	69	54	68	76	63	30	41	21
Montenegro	55	52	56	73	72	73	93	>95	92	38	38	38
Republic of Moldova	54	61	49	63	67	60	77	77	76	26	31	22
North Macedonia	59	41	61	91	>95	90	86	>95	85	46	41	47
Russian Federation												
Tajikistan	58	80	47	80	84	70	67	72	63	31	48	20
Turkmenistan												
Ukraine	71	89	59	73	75	72	93	93	93	48	62	40
Uzbekistan												

90–90–90: 90% and above | 85–89% | 70–84% | 50–69% | Less than 50%

Viral load suppression: 73% and above | 65–72% | 40–64% | 25–39% | Less than 25%

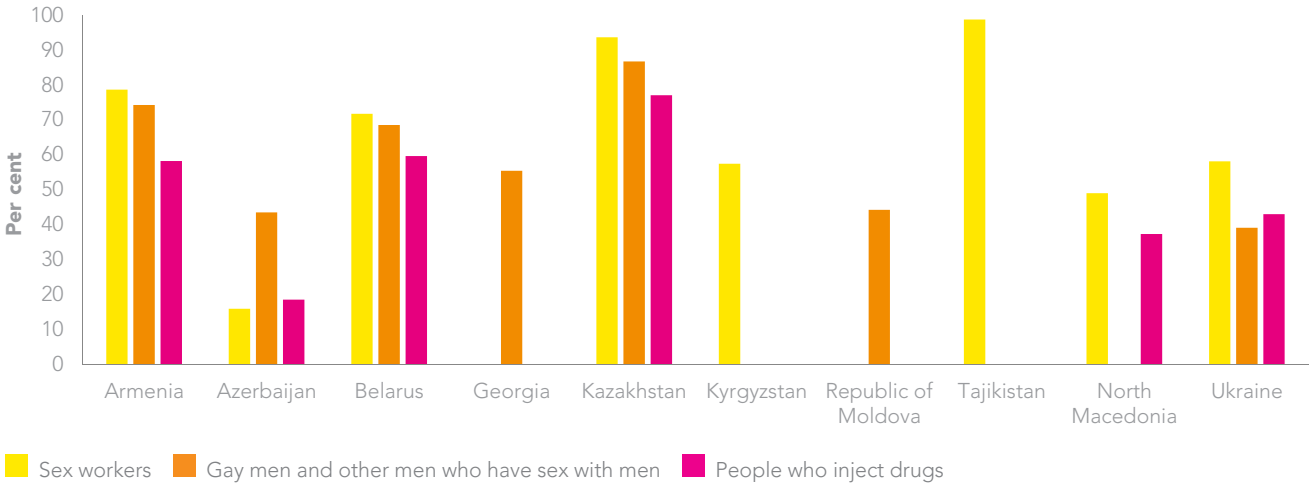
Source: UNAIDS special analysis, 2019.

FIGURE 16.9 Viral load suppression among adults (aged 15 years and older) living with HIV, by sex, eastern Europe and central Asia, 2018



Source: UNAIDS special analysis, 2019.

FIGURE 16.10 **Knowledge of status among key populations, eastern Europe and central Asia, 2016–2018**



Note: Data shown come from surveys, which are typically conducted in areas with high prevalence and needs and may not be nationally representative.

Source: Global AIDS Monitoring, 2016–2018.

HIV express testing services in St. Petersburg, Russian Federation, include mobile laboratories and clinics operated by community organizations.

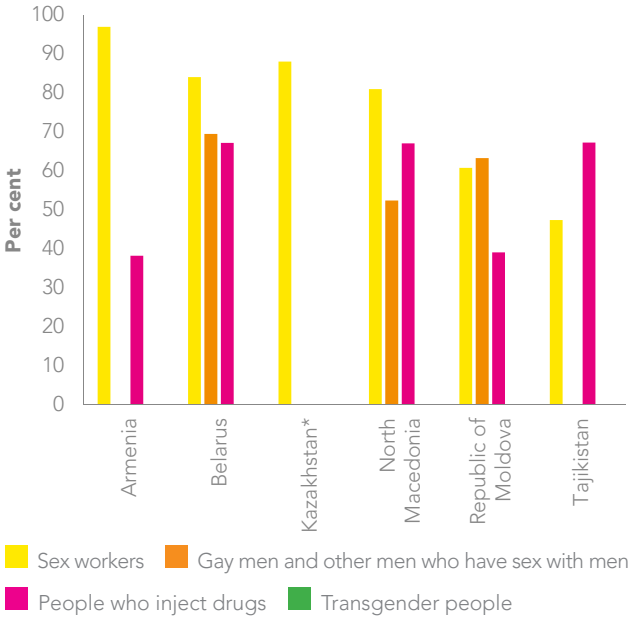
Credit: UNAIDS/Olga Rodionova

A COMBINATION APPROACH TO PREVENTION

The region is missing opportunities to reverse the upward trend in HIV infections. In addition to low viral suppression in the region, coverage of prevention services for key populations varied widely in the few countries with recently available data (Figure 16.11). In Belarus and Kazakhstan, more than 80% of female sex workers had received at least two HIV prevention services in the previous three months. Harm reduction services (such as needle–syringe programmes and opioid substitution therapy) were available at a large number of sites in Ukraine—and, to a lesser extent, Belarus—but they were either unavailable or highly restricted in several other countries, including some with large HIV epidemics among people who inject drugs *(4)*.

Elimination of mother to child transmission of HIV is a priority in the region. The World Health Organization has validated the elimination of mother-to-child transmission of HIV in both Armenia and Belarus, and several other countries are making progress towards the certification of elimination. ■

FIGURE 16.11 Percentage of key populations who reported receiving at least two prevention services in the past three months, eastern Europe and central Asia, 2016–2018



Note 1: The use of an asterisk (*) indicates that data for marked countries come from programme data (which tends to show higher values due to the use as a denominator of the number of key population members that are linked to the programme) and not from a survey.

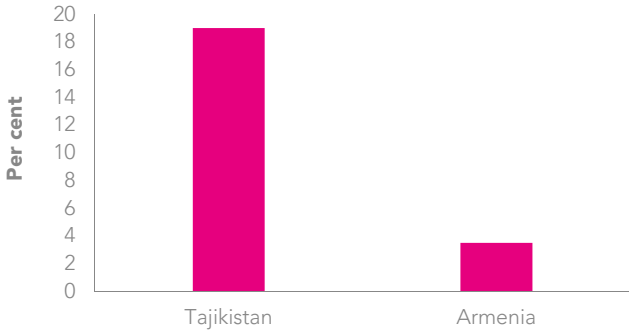
Note 2: Possible prevention services received among sex workers, gay men and other men who have sex with men and transgender people: condoms and lubricant, counselling on condom use and safe sex, and testing of STIs. Possible prevention services received among people who inject drugs: condoms and lubricant, counselling on condom use and safe sex, and clean needles or syringes.

Source: Global AIDS Monitoring, 2016–2018.

CONFRONTING STIGMA AND DISCRIMINATION

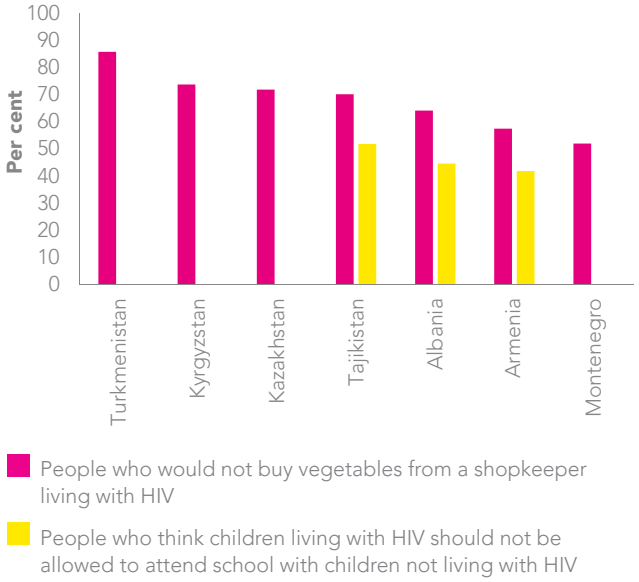
Population-based surveys reveal high levels of HIV-related stigma and discrimination in this region. At least 40% of survey respondents in three countries with data stated that children living with HIV should not attend the same schools as other children, and at least 70% of people in four countries said they would not buy vegetables from a shopkeeper who was living with HIV (Figure 16.13). ■

FIGURE 16.12 Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, eastern Europe and central Asia, most recent data, 2016–2017



Source: Population-based surveys, 2016–2017.

FIGURE 16.13 Percentage of men and women aged 15–49 years with discriminatory attitudes towards people living with HIV, eastern Europe and central Asia, 2013–2018



Note: Data for Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan are for female respondents only.

Source: Population-based surveys, 2013–2018, countries with available data.

A Convictus outreach worker provides condoms to a sex worker in Kyiv, Ukraine.
Credit: Convictus

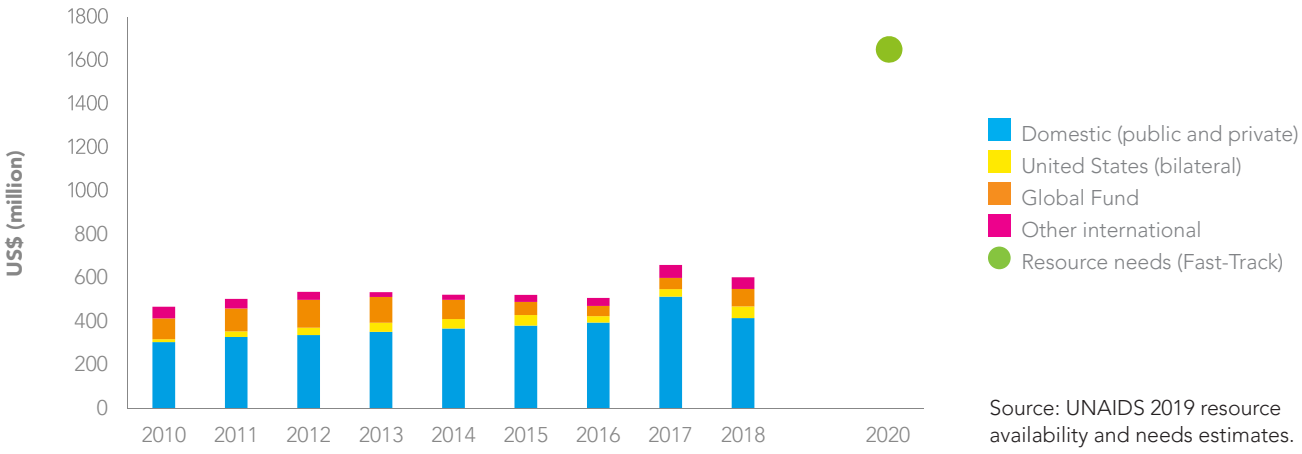
INVESTING TO END AN EPIDEMIC

Total HIV funding in the region, not including the Russian Federation, increased by 29% from 2010, reaching US$ 603 million in 2018 (in 2016 constant US dollars).[1] This represents a little more than one third of the resources needed to reach the region's 2020 Fast-Track Targets (Figure 16.14). Domestic resources increased by 36%, and there was a significant increase in bilateral resources from the Government of the United States of America (although that increase was from a very low level). Resources from the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund), however, decreased by 16% over the same period.[2]

More than two thirds (69%) of the region's HIV response is funded from domestic sources, a slightly larger share than in 2010. Bilateral funding from the United States accounted for 9% of resources available for HIV in 2018, while those from the Global Fund accounted for 13% and those from all other international contributors accounted for 9%.

Domestic resources available for HIV programmes in 2018 were 19% lower than in 2017 (in 2016 constant US dollars), while United States bilateral and Global Fund funding each increased by 56%. All other international donor funding decreased by 10%. The Russian Federation increased domestic financing of its response by 8% in 2018 (in national currency) over the previous year. ■

FIGURE 16.14 HIV resource availability, by source, eastern Europe and central Asia, 2010–2018, and projected resource needs by 2020



Source: UNAIDS 2019 resource availability and needs estimates.

Note: Data from the Russian Federation is not included in this analysis.

1 Details on the revised UNAIDS estimates for resource availability in low- and middle-income countries can be found in the Investing to End an Epidemic chapter.

2 The Global Fund disbursements to countries decreased by 20% in 2018 because most funding grants ended in 2017, hence the changes in the level of disbursements.

REFERENCES

1. Fast-Track Kyiv report 2017: system changes for 90–90–90. Kyiv (Ukraine): Kyiv City Administration Department of Health; 2017 (http:// www.fast-trackcities.org/sites/default/files/Fast%20Track%20Kyiv%20Report%202017-%20System%20Changes%20for%20 90%2090%20 90.pdf, accessed 20 June 2019).
2. Sazonova Y, Salyuk T; Alliance for Public Health. Main results of bio-behavioral surveillance among key populations. Kyiv (Ukraine): Alliance for Public Health; 2018 (http://aph.org.ua/wp-content/uploads/2018/10/OSNOVNY-REZULTATY-A4-ENG-site-version-16.10.2018_red.pdf, accessed 20 June 2019).
3. Kerrigan D, Kennedy CE, Morgan-Thomas R, Reza-Paul S, Mwangi P, Win KT et al. A community empowerment approach to the HIV response among sex workers: effectiveness, challenges, and considerations for implementation and scale-up. The Lancet. 2015;385:172-85.
4. Global state of harm reduction 2018. London: Harm Reduction International; 2018 (https://www.hri.global/files/2019/02/05/global-state-harm-reduction-2018.pdf, accessed 17 July 2019).

ARMENIA

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	<500 [<200– <500]	<200 [<200– <500]	<200 [<200– <500]
New HIV infections (0–14)	... [...–...]	... [...–...]	... [...–...]
New HIV infections (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (men, 15+)	<200 [<200– <200]	<200 [<100– <200]	<200 [<100– <500]
HIV incidence per 1000 population	0.08 [0.06–0.1]	0.06 [0.05–0.09]	0.06 [0.04–0.1]
AIDS-related deaths			
AIDS-related deaths (all ages)	<200 [<200– <200]	<200 [<100– <200]	<200 [<100– <200]
AIDS-related deaths (0–14)	... [...–...]	... [...–...]	... [...–...]
AIDS-related deaths (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (men, 15+)	<100 [<100– <200]	<100 [<100– <200]	<100 [<100– <200]
People living with HIV			
People living with HIV (all ages)	3300 [2800–4100]	3400 [2900–4100]	3500 [3000–4400]
People living with HIV (0–14)	... [...–...]	... [...–...]	... [...–...]
People living with HIV (women, 15+)	1100 [940–1400]	1100 [970–1400]	1200 [1000–1500]
People living with HIV (men, 15+)	2200 [1800–2700]	2200 [1900–2700]	2300 [1900–2800]
HIV prevalence (15–49)	0.2 [0.1–0.2]	0.2 [0.1–0.2]	0.2 [0.1–0.2]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 14 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

	2010	2016
Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	73	62.1
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months		
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent		

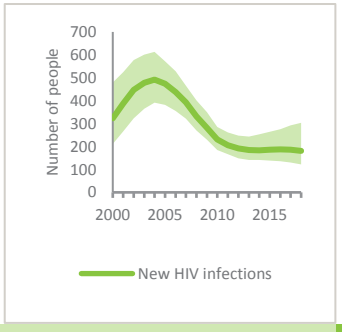
VIOLENCE

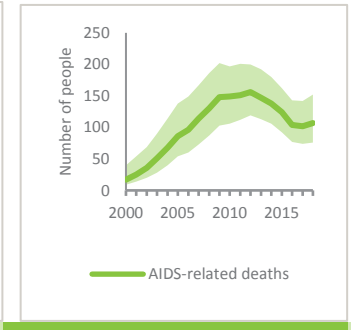
	2016
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	3.5

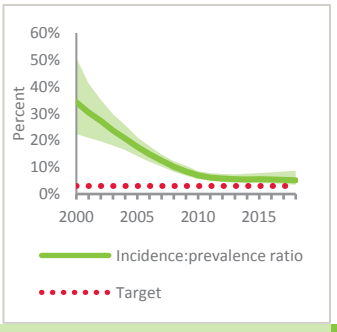
EXPENDITURES

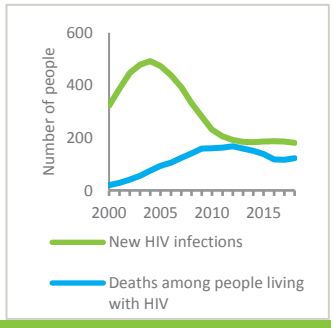
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2017	$291 989	$2 180 390	...	$2 070 964	$1 069 754	$5 613 096

EPIDEMIC TRANSITION METRICS







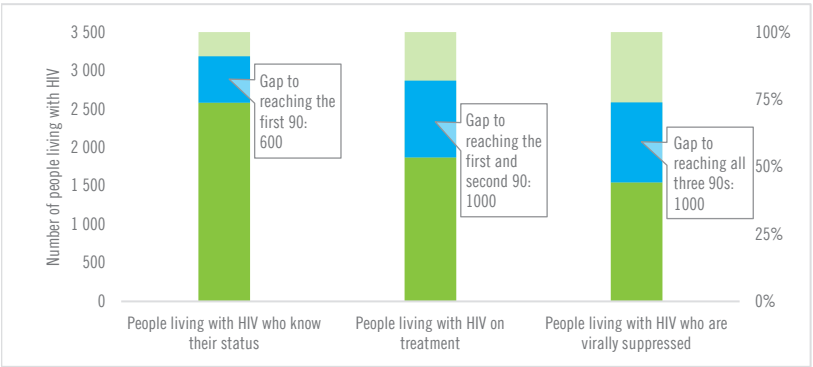


Change in new HIV infections since 2010	= -22%	Change in AIDS-related deaths since 2010	= -28%	Incidence: prevalence ratio	= 5%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	4600	16 000	9000	...	...
HIV prevalence	0.6%	1.9%	1.9%	2.0%	0.2%
Know their HIV status	78.7%	74.3%	58.3%	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	99.1%	69.7%	41.4%	...	
Coverage of HIV prevention programmes	96.9%	...	38.1%	...	
Avoidance of health care because of stigma and discrimination	9.3%	5.8%	36.4%	...	
Expenditures (2017)	$99 071	$73 669	$623 891		

HIV TESTING AND TREATMENT CASCADE



All ages	73% [61–90%]	53% [44–65%] 1900	44% [36–54%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	72% [61–88%]	56% [47–69%] 680	49% [41–60%]
Men (15+)	73% [60–89%]	51% [42–62%] 1200	41% [34–50%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	...% [...–...%]	...% [...–...%]
Early infant diagnosis	...% [...–...%]	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	75 [49–110]
People living with HIV who started TB preventive therapy (2017)	3.7%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	100%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	0%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	<0.1%
Knowledge of HIV prevention among young people aged 15–24 years (2016)	
— Women	20.2%
— Men	12.5%
Condom use at last sex with a non-marital, non-cohabiting partner (2016)	
— Women	54.1%
— Men	82%
Women aged 15–49 years who have their demand for family planning satisfied by modern methods (2016)	40.6%
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period (2018)	8
Harm reduction	
— Use of sterile injecting equipment at last injection (2018)	86.1%
— Needles and syringes distributed per person who injects (2018)	71
— Coverage of opioid substitution therapy (2018)	6.3%
— Naloxone available (2019)	No
— Safe injection rooms available (2019)	No

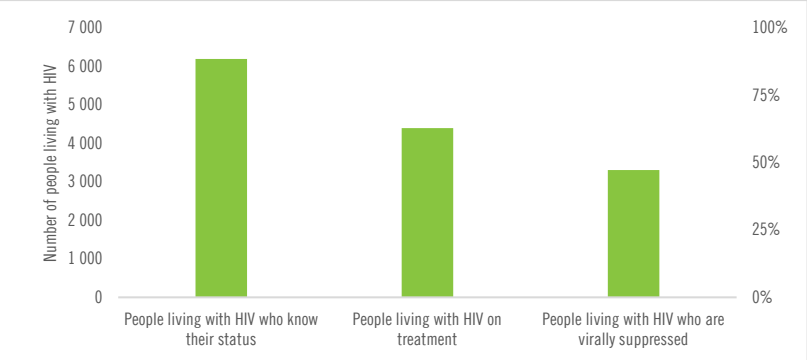
AZERBAIJAN

COUNTRY DATA

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	32 000	24 000	60 000	...	...
HIV prevalence	3.5%	1.1%	6.9%	...	1.9%
Know their HIV status	16.0%	43.6%	18.6%	...	
Antiretroviral therapy coverage	...	...	...	...	75.8%
Condom use	53.5%	68.8%	11.2%	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (0)	...	...	...		

HIV TESTING AND TREATMENT CASCADE



All ages	...% [...–...%]	...% [...–...%] 4400	...% [...–...%]
Children (0–14)	...% [...–...%]	...% [...–...%] 110	...% [...–...%]
Women (15+)	...% [...–...%]	...% [...–...%] 1400	...% [...–...%]
Men (15+)	...% [...–...%]	...% [...–...%] 2500	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	110 [71–160]
People living with HIV who started TB preventive therapy (2017)	52.1%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment	...
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	...
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2018)	80.6%
— Needles and syringes distributed per person who injects (2018)	109
— Coverage of opioid substitution therapy (2018)	1.5%
— Naloxone available (2019)	No
— Safe injection rooms available (2019)	No

EXPENDITURES

	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2014	...	$14 215 892	...	$6 177 985	$233 483	$20 627 360

Note: HIV epidemiological estimates were not available at the time of publication.

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	The law allows possession of a certain amount of drugs
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 16 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

VIOLENCE

Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

BELARUS

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	1900 [1500–2400]	2300 [1800–3200]	2000 [1400–3100]
New HIV infections (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (women, 15+)	780 [600–970]	960 [710–1300]	790 [550–1200]
New HIV infections (men, 15+)	1100 [820–1300]	1300 [1000–1900]	1200 [810–1800]
HIV incidence per 1000 population	0.21 [0.16–0.26]	0.26 [0.2–0.35]	0.22 [0.16–0.34]
AIDS-related deaths			
AIDS-related deaths (all ages)	<200 [<100– <500]	<500 [<200– <500]	<500 [<200– <500]
AIDS-related deaths (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	<100 [<100– <200]	<100 [<100– <200]	<100 [<100– <200]
AIDS-related deaths (men, 15+)	<100 [<100– <200]	<200 [<100– <500]	<200 [<100– <500]
People living with HIV			
People living with HIV (all ages)	12 000 [10 000–15 000]	22 000 [18 000–27 000]	27 000 [22 000–34 000]
People living with HIV (0–14)	<200 [<100– <200]	<500 [<200– <500]	<500 [<200– <500]
People living with HIV (women, 15+)	5200 [4300–6400]	9200 [7500–11 000]	11 000 [9200–15 000]
People living with HIV (men, 15+)	7200 [6000–8800]	12 000 [10 000–15 000]	15 000 [12 000–19 000]
HIV prevalence (15–49)	0.2 [0.2–0.3]	0.4 [0.3–0.5]	0.5 [0.4–0.6]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 14 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

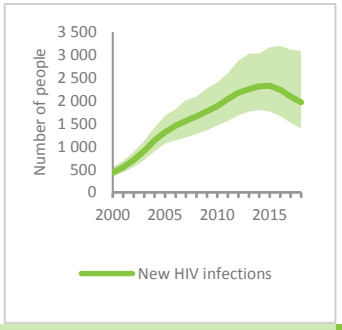
VIOLENCE

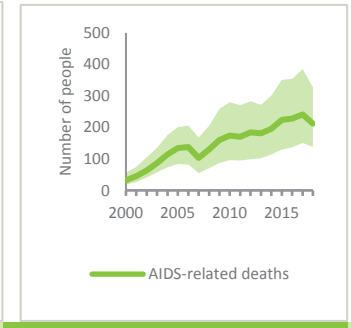
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

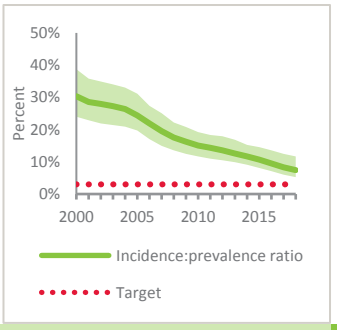
EXPENDITURES

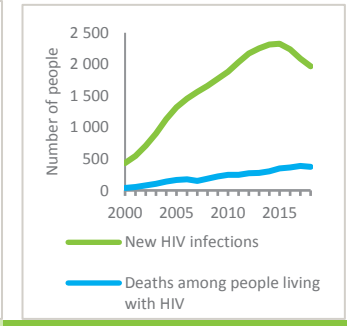
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2017	...	$16 302 125	...	$4 656 596	$41 526	$21 000 247

EPIDEMIC TRANSITION METRICS







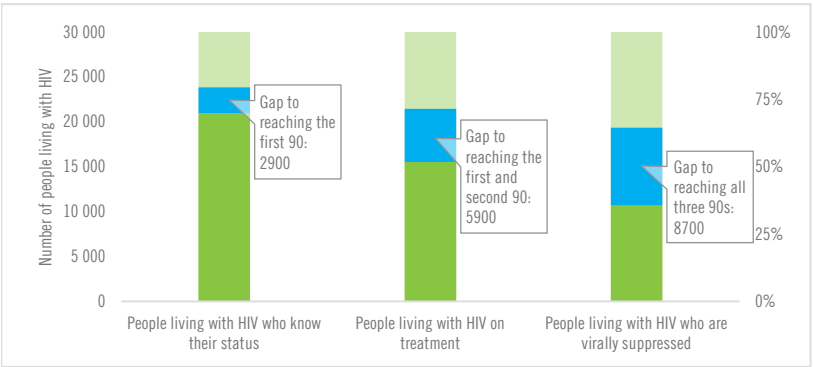


Change in new HIV infections since 2010	= 5%	Change in AIDS-related deaths since 2010	= 22%	Incidence: prevalence ratio	= 7%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	7.0%	9.8%	30.8%	...	8.5%
Know their HIV status	71.8%	68.6%	59.7%	...	
Antiretroviral therapy coverage	...	...	40.5%	...	69.9%
Condom use	85.0%	73.8%	51.5%	...	
Coverage of HIV prevention programmes	84.0%	69.4%	67.1%	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$398 774	$287 004	$1 239 188		

HIV TESTING AND TREATMENT CASCADE



All ages	79% [65– >95%]	59% [48–75%] 15 500	40% [33–52%]
Children (0–14)	88% [64– >95%]	88% [64– >95%] 220	79% [57– >95%]
Women (15+)	77% [63– >95%]	61% [49–78%] 6900	43% [35–55%]
Men (15+)	80% [66– >95%]	57% [46–73%] 8400	38% [31–49%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	62% [47–79%]	90% [67– >95%]
Early infant diagnosis	47.2% [36.9–61.7%]	92.3% [70.1– >95%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	270 [210–340]
People living with HIV who started TB preventive therapy (2017)	0%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	89.3%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	89.1%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.2%
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2017)	87.9%
— Needles and syringes distributed per person who injects (2018)	60
— Coverage of opioid substitution therapy (2018)	3.9%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

GEORGIA

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	780 [620–980]	740 [580–910]	710 [530–980]
New HIV infections (0–14)	... [...–...]	... [...–...]	... [...–...]
New HIV infections (women, 15+)	<500 [<200– <500]	<500 [<200– <500]	<500 [<200– <500]
New HIV infections (men, 15+)	540 [<500–680]	510 [<500–640]	<500 [<500–660]
HIV incidence per 1000 population	0.18 [0.14–0.22]	0.18 [0.14–0.22]	0.18 [0.13–0.24]
AIDS-related deaths			
AIDS-related deaths (all ages)	<100 [<100– <100]	<200 [<100– <500]	<500 [<200– <500]
AIDS-related deaths (0–14)	... [...–...]	... [...–...]	... [...–...]
AIDS-related deaths (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <200]
AIDS-related deaths (men, 15+)	<100 [<100– <100]	<100 [<100– <200]	<200 [<200– <500]
People living with HIV			
People living with HIV (all ages)	5600 [4500–6700]	8200 [7000–9700]	9400 [8100–11 000]
People living with HIV (0–14)	... [...–...]	... [...–...]	... [...–...]
People living with HIV (women, 15+)	1800 [1400–2100]	2600 [2200–3000]	3000 [2600–3500]
People living with HIV (men, 15+)	3800 [3000–4500]	5600 [4800–6600]	6300 [5400–7400]
HIV prevalence (15–49)	0.2 [0.2–0.2]	0.3 [0.3–0.4]	0.4 [0.3–0.4]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	No specific legislation
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 16 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

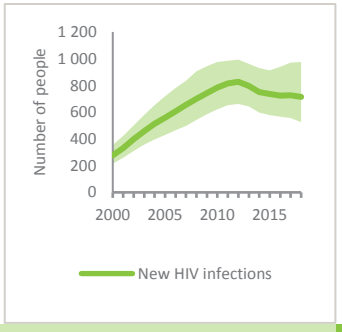
VIOLENCE

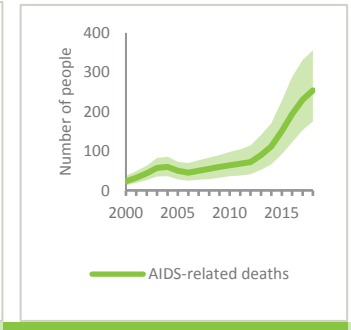
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

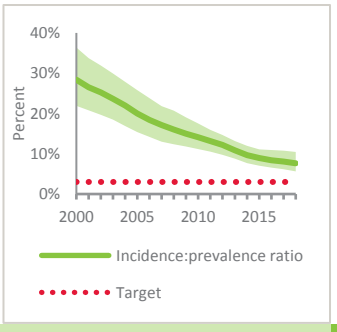
EXPENDITURES

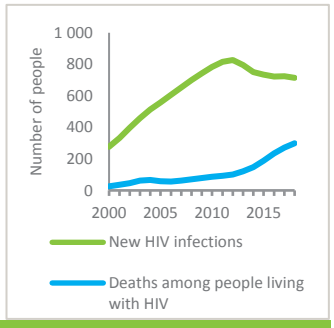
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2017	$376 292	$13 444 827	...	$6 040 729	$67 647	$19 929 496

EPIDEMIC TRANSITION METRICS







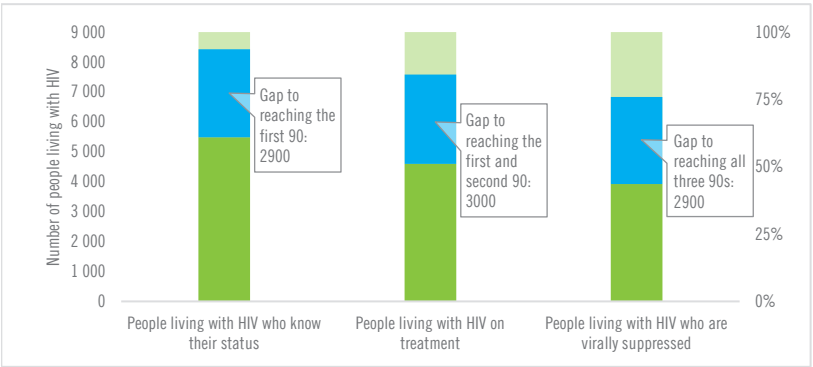


Change in new HIV infections since 2010	= -9%	Change in AIDS-related deaths since 2010	= 297%
Incidence: prevalence ratio	= 8%		

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	19 000	...	...	...
HIV prevalence	0.9%	16.2%	2.3%	...	0.2%
Know their HIV status	...	55.5%	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	93.4%	72.5%	36.5%	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$320 423	$522 225	$4 679 165		

HIV TESTING AND TREATMENT CASCADE



All ages	59% [51–68%]	49% [42–57%] 4600	42% [36–49%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	50% [43–59%]	48% [41–56%] 1400	41% [36–48%]
Men (15+)	62% [53–73%]	50% [43–58%] 3100	42% [36–49%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	...% [...–...%]	...% [...–...%]
Early infant diagnosis	...% [...–...%]	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	59 [49–70]
People living with HIV who started TB preventive therapy (2017)	19.7%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	92.5%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	28.6%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.2%
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period (2018)	121
Harm reduction	
— Use of sterile injecting equipment at last injection (2017)	90.4%
— Needles and syringes distributed per person who injects (2018)	72
— Coverage of opioid substitution therapy (2018)	48.7%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

KAZAKHSTAN

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	2000 [1900–2000]	2500 [2400–2600]	2600 [2500–2700]
New HIV infections (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (women, 15+)	670 [620–720]	850 [780–910]	880 [810–940]
New HIV infections (men, 15+)	1300 [1200–1300]	1600 [1500–1700]	1700 [1600–1800]
HIV incidence per 1000 population	0.12 [0.11–0.12]	0.14 [0.13–0.14]	0.14 [0.13–0.14]
AIDS-related deaths			
AIDS-related deaths (all ages)	<500 [<500– <500]	<500 [<500–540]	<500 [<500–530]
AIDS-related deaths (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	<100 [<100– <200]	<200 [<100– <200]	<100 [<100– <200]
AIDS-related deaths (men, 15+)	<200 [<200– <500]	<500 [<500– <500]	<500 [<500– <500]
People living with HIV			
People living with HIV (all ages)	11 000 [10 000–11 000]	20 000 [18 000–21 000]	26 000 [24 000–27 000]
People living with HIV (0–14)	<200 [<200– <200]	<200 [<200– <500]	<500 [<500– <500]
People living with HIV (women, 15+)	3800 [3500–4000]	7000 [6500–7500]	9200 [8600–9800]
People living with HIV (men, 15+)	6900 [6400–7400]	13 000 [12 000–13 000]	16 000 [15 000–17 000]
HIV prevalence (15–49)	0.1 [<0.1–0.1]	0.2 [0.2–0.2]	0.2 [0.2–0.2]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Sex work is not subject to punitive regulations or is not criminalized
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as non-criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 18 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

	2011	2015
Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV *(2015 refers to women only)*	64.8	71.9

	2015
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	17.6
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	22.9

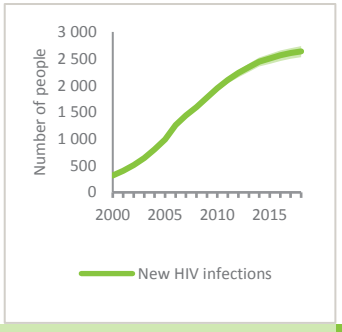
VIOLENCE

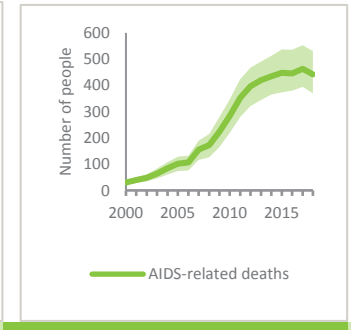
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months

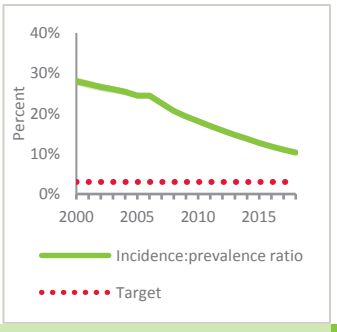
EXPENDITURES

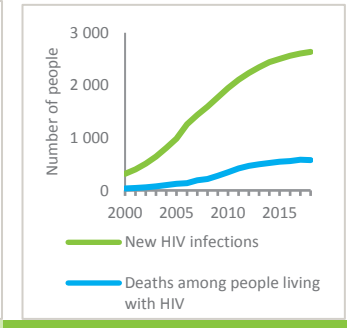
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2018	$0	$31 104 180	$1 392 742	$889 291	$207 825	$33 594 038

EPIDEMIC TRANSITION METRICS







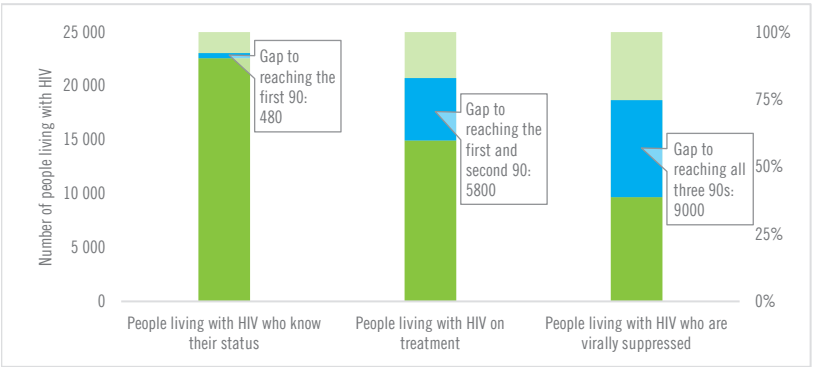


Change in new HIV infections since 2010	= 35%	Change in AIDS-related deaths since 2010	= 56%	Incidence: prevalence ratio	= 10%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	1.9%	6.2%	7.9%	...	3.5%
Know their HIV status	93.7%	86.8%	77.1%	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	92.3%	77.8%	51.8%	...	
Coverage of HIV prevention programmes	88.0%	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$1 466 971	$620 739	$3 150 493		

HIV TESTING AND TREATMENT CASCADE



All ages	88% [81–94%]	58% [54–62%] 15 000	38% [35–40%]
Children (0–14)	>95% [86– >95%]	>95% [>95– >95%] 430	>95% [>95– >95%]
Women (15+)	>95% [90– >95%]	69% [64–73%] 6400	47% [43–50%]
Men (15+)	83% [76–89%]	51% [46–55%] 8100	31% [29–34%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	...% [...–...%]	...% [...–...%]
Early infant diagnosis	...% [...–...%]	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	530 [340–750]
People living with HIV who started TB preventive therapy (2017)	44%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	86.9%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	4.3%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.1%
Knowledge of HIV prevention among young people aged 15–24 years (2015)	
— Women	26.7%
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2018)	52.6%
— Needles and syringes distributed per person who injects (2018)	95
— Coverage of opioid substitution therapy (2018)	0.4%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

KYRGYZSTAN

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	1100 [840–1500]	770 [510–1200]	570 [<500–970]
New HIV infections (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (women, 15+)	<500 [<500– <500]	<500 [<200– <500]	<200 [<100– <500]
New HIV infections (men, 15+)	760 [560–1000]	520 [<500–780]	<500 [<500–660]
HIV incidence per 1000 population	0.2 [0.15–0.28]	0.13 [0.08–0.2]	0.09 [0.05–0.16]
AIDS-related deaths			
AIDS-related deaths (all ages)	<200 [<100– <200]	<200 [<100– <500]	<200 [<200– <500]
AIDS-related deaths (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (men, 15+)	<100 [<100– <200]	<200 [<100– <200]	<200 [<100– <500]
People living with HIV			
People living with HIV (all ages)	4100 [3200–5500]	7600 [5900–10 000]	8500 [6500–12 000]
People living with HIV (0–14)	<200 [<200– <200]	<500 [<500– <500]	<500 [<500– <500]
People living with HIV (women, 15+)	1200 [950–1600]	2300 [1800–3100]	2700 [2100–3700]
People living with HIV (men, 15+)	2700 [2200–3700]	4900 [3800–6700]	5400 [4100–7500]
HIV prevalence (15–49)	0.1 [<0.1–0.2]	0.2 [0.2–0.3]	0.2 [0.2–0.3]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 18 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

	2006	2014
Percentage of women aged 15–49 years who report discriminatory attitudes towards people living with HIV	83.4	73.7

	2015
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	9.1
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	31.3

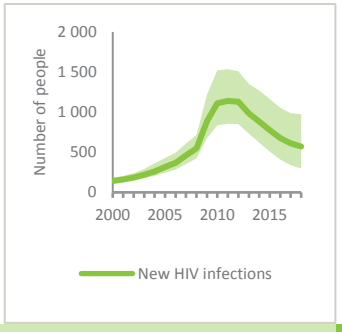
VIOLENCE

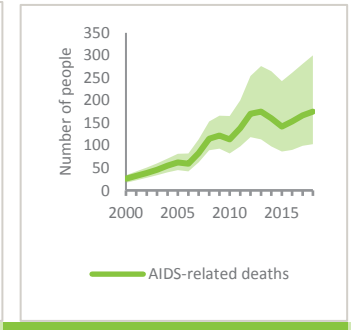
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months

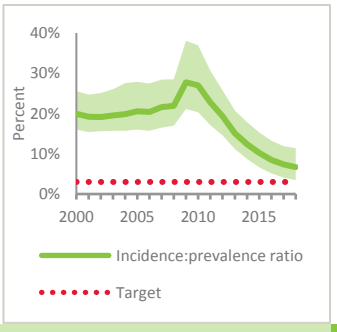
EXPENDITURES

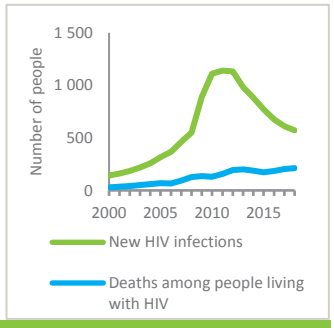
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2018	...	$2 456 267	...	...	...	$9 961 526

EPIDEMIC TRANSITION METRICS







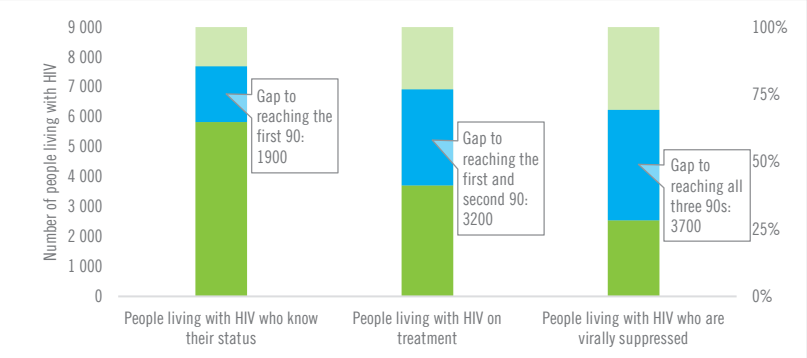


Change in new HIV infections since 2010	= -49%	Change in AIDS-related deaths since 2010	= 55%
Incidence: prevalence ratio	= 7%		

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	2.0%	6.6%	14.3%	...	11.3%
Know their HIV status	57.5%	...	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	97.2%	...	58.8%	...	
Coverage of HIV prevention programmes	...	37.8%	40.4%	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$552 714	$791 769	$2 776 249		

HIV TESTING AND TREATMENT CASCADE



All ages	68% [52–92%]	43% [33–59%] 3700	30% [22–40%]
Children (0–14)	>95% [81– >95%]	>95% [>95– >95%] 450	78% [65– >95%]
Women (15+)	79% [60– >95%]	54% [41–73%] 1500	41% [31–55%]
Men (15+)	61% [46–84%]	33% [25–46%] 1800	21% [16–29%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	76% [55– >95%]	88% [69– >95%]
Early infant diagnosis	<1% [<1– <1%]	82.1% [61.4– >95%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	310 [250–370]
People living with HIV who started TB preventive therapy (2017)	94.4%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	94.1%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	23.8%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.1%
Knowledge of HIV prevention among young people aged 15–24 years (2014)	
— Women	19.8%
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period (2018)	2
Harm reduction	
— Use of sterile injecting equipment at last injection (2017)	80.9%
— Needles and syringes distributed per person who injects (2018)	170
— Coverage of opioid substitution therapy (2018)	4.4%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

MONTENEGRO

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (0–14)	... [...–...]	... [...–...]	... [...–...]
New HIV infections (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (men, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
HIV incidence per 1000 population	0.03 [0.03–0.04]	0.06 [0.05–0.07]	0.08 [0.06–0.1]
AIDS-related deaths			
AIDS-related deaths (all ages)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (0–14)	... [...–...]	... [...–...]	... [...–...]
AIDS-related deaths (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (men, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
People living with HIV			
People living with HIV (all ages)	<200 [<200– <200]	<500 [<500– <500]	<500 [<500– <500]
People living with HIV (0–14)	... [...–...]	... [...–...]	... [...–...]
People living with HIV (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
People living with HIV (men, 15+)	<200 [<200– <200]	<500 [<500– <500]	<500 [<500– <500]
HIV prevalence (15–49)	<0.1 [<0.1– <0.1]	<0.1 [<0.1– <0.1]	0.1 [<0.1–0.1]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	No specific legislation
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as non-criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 18 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

	2006	2013
Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV *(2006 refers to women only)*	59.6	52
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months		
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent		

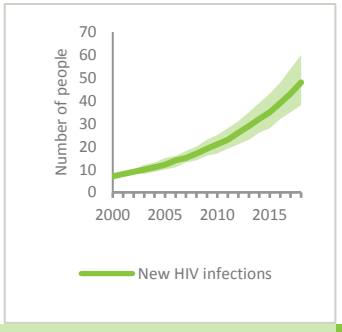
VIOLENCE

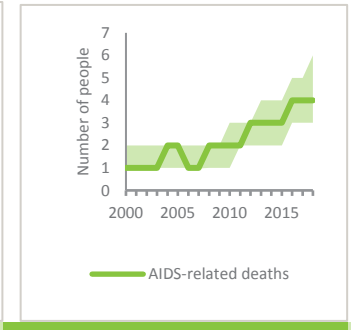
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months

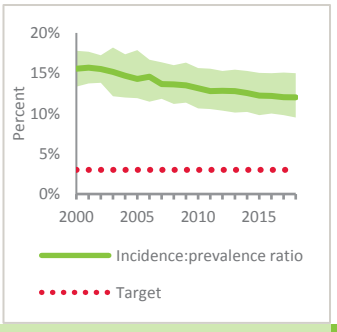
EXPENDITURES

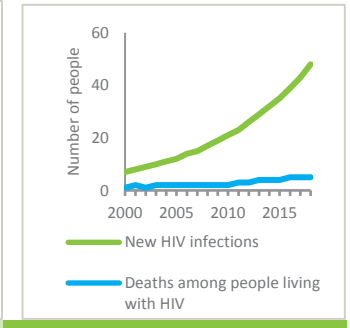
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2009	...	...	...	$830 121	...	$830 121

EPIDEMIC TRANSITION METRICS







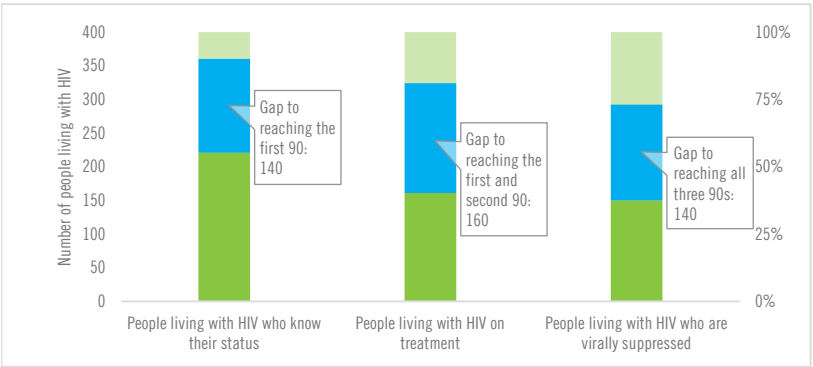


Change in new HIV infections since 2010	= 129%	Change in AIDS-related deaths since 2010	= 100%	Incidence: prevalence ratio = 12%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	0.5%	12.5%	0.5%	...	0.0%
Know their HIV status	...	...	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	82.8%	...	63.5%	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$0	$0	$0		

HIV TESTING AND TREATMENT CASCADE



All ages	55% [46–64%]	40% [34–46%] 160	38% [31–43%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	52% [44–61%]	38% [32–44%] 20	38% [32–44%]
Men (15+)	56% [46–67%]	41% [33–49%] 140	38% [31–45%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	...% [...–...%]	...% [...–...%]
Early infant diagnosis	...% [...–...%]	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	0 [0–0]
People living with HIV who started TB preventive therapy (2017)	0%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	100%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	0%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	<0.1%
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2014)	92%
— Needles and syringes distributed per person who injects (2017)	144
— Coverage of opioid substitution therapy	...
— Naloxone available (2019)	No
— Safe injection rooms available (2019)	No

REPUBLIC OF MOLDOVA

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	1700 [1100–2600]	1100 [750–1700]	1000 [670–1600]
New HIV infections (0–14)	<100 [<100– <200]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (women, 15+)	580 [<500–910]	<500 [<500–610]	<500 [<500–550]
New HIV infections (men, 15+)	1000 [680–1600]	690 [<500–1100]	620 [<500–960]
HIV incidence per 1000 population	0.39 [0.26–0.6]	0.27 [0.18–0.42]	0.25 [0.16–0.38]
AIDS-related deaths			
AIDS-related deaths (all ages)	740 [510–1100]	700 [<500–1100]	570 [<500–860]
AIDS-related deaths (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	<500 [<200– <500]	<200 [<200– <500]	<200 [<100– <500]
AIDS-related deaths (men, 15+)	<500 [<500–650]	<500 [<500–710]	<500 [<500–570]
People living with HIV			
People living with HIV (all ages)	16 000 [12 000–20 000]	17 000 [14 000–22 000]	17 000 [14 000–23 000]
People living with HIV (0–14)	<500 [<500– <500]	<500 [<500– <500]	<500 [<500– <500]
People living with HIV (women, 15+)	5600 [4500–7300]	6500 [5300–8500]	6900 [5600–9000]
People living with HIV (men, 15+)	9800 [7700–13 000]	10 000 [8100–13 000]	10 000 [8100–13 000]
HIV prevalence (15–49)	0.5 [0.4–0.7]	0.6 [0.5–0.8]	0.6 [0.5–0.8]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	No specific legislation
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as non-criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 18 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	No

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

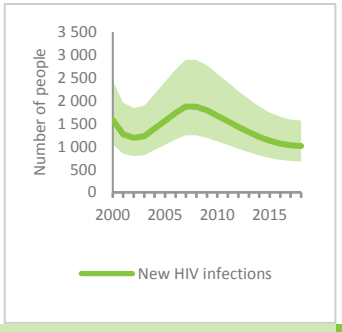
VIOLENCE

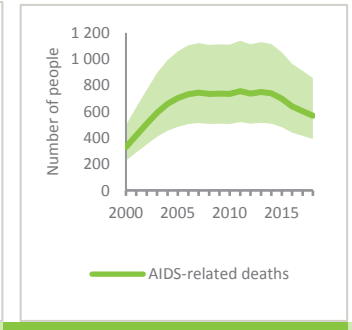
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

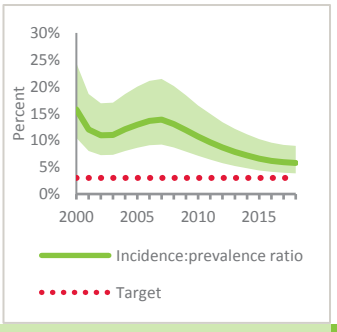
EXPENDITURES

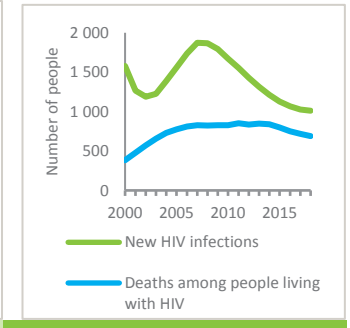
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2018	...	$4 167 839	...	$3 046 943	$1 005 771	$8 220 554

EPIDEMIC TRANSITION METRICS







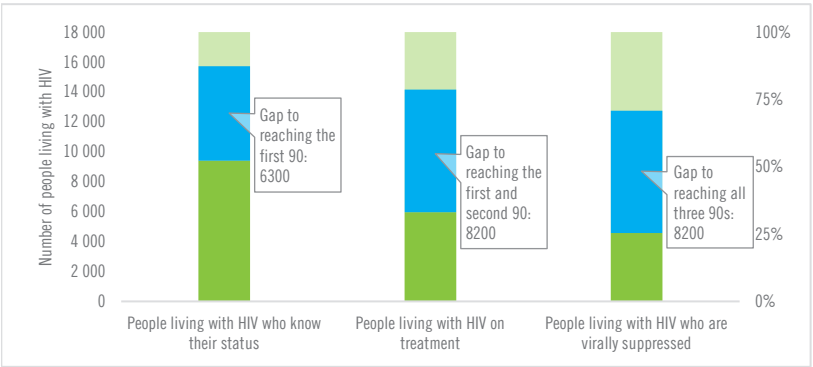


Change in new HIV infections since 2010	= -39%	Change in AIDS-related deaths since 2010	= -23%	Incidence: prevalence ratio	= 6%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	3.9%	9.0%	13.9%	...	3.8%
Know their HIV status	...	44.3%	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	88.2%	61.2%	...	...	
Coverage of HIV prevention programmes	60.7%	63.2%	39.0%	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$320 510	$246 250	$1 644 081		

HIV TESTING AND TREATMENT CASCADE



All ages	54% [43–70%]	34% [27–45%] 6000	26% [21–34%]
Children (0–14)	41% [30–56%]	40% [30–55%] 130	32% [23–44%]
Women (15+)	61% [50–80%]	41% [33–53%] 2800	31% [25–41%]
Men (15+)	49% [39–64%]	29% [23–38%] 3000	22% [18–29%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	45% [33–61%]	73% [54– >95%]
Early infant diagnosis	49.8% [36.3–66.7%]	74.2% [54.1– >95%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	330 [280–390]
People living with HIV who started TB preventive therapy (2017)	9.5%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment	...
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.4%
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period (2018)	1
Harm reduction	
— Use of sterile injecting equipment at last injection	...
— Needles and syringes distributed per person who injects (2018)	79
— Coverage of opioid substitution therapy (2017)	3.2%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

TAJIKISTAN

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	1200 [1000–1500]	1100 [820–1400]	840 [590–1200]
New HIV infections (0–14)	<200 [<100– <200]	<200 [<100– <200]	<100 [<100– <100]
New HIV infections (women, 15+)	<500 [<500– <500]	<500 [<200– <500]	<200 [<200– <500]
New HIV infections (men, 15+)	840 [670–1100]	740 [560–960]	600 [<500–870]
HIV incidence per 1000 population	0.16 [0.13–0.19]	0.12 [0.09–0.16]	0.09 [0.06–0.13]
AIDS-related deaths			
AIDS-related deaths (all ages)	<500 [<500–560]	500 [<500–650]	<500 [<500– <500]
AIDS-related deaths (0–14)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	<100 [<100– <200]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (men, 15+)	<500 [<200– <500]	<500 [<500–500]	<500 [<500– <500]
People living with HIV			
People living with HIV (all ages)	9200 [7500–11 000]	12 000 [9700–14 000]	13 000 [11 000–16 000]
People living with HIV (0–14)	<500 [<500– <500]	<500 [<500–550]	540 [<500–630]
People living with HIV (women, 15+)	2300 [1800–2700]	3000 [2500–3700]	3500 [2900–4200]
People living with HIV (men, 15+)	6600 [5400–8100]	8300 [6800–10 000]	8900 [7200–11 000]
HIV prevalence (15–49)	0.2 [0.2–0.2]	0.2 [0.2–0.3]	0.2 [0.2–0.3]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 18 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women aged 15–49 years who report discriminatory attitudes towards people living with HIV	**2017** 75.3
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	**2015** 21.1
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	**2015** 20.1

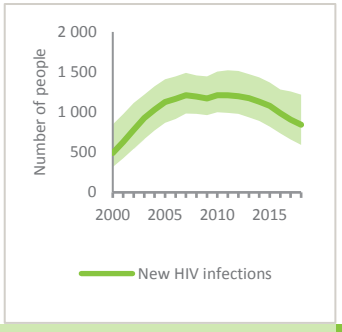
VIOLENCE

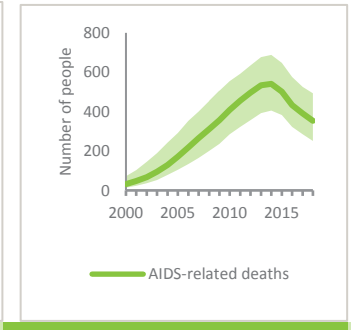
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	**2012** 15.2	**2017** 19

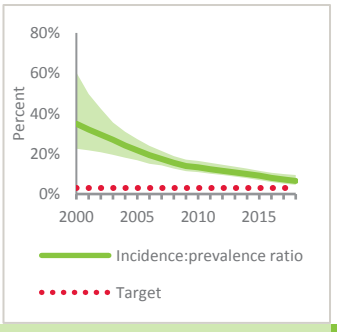
EXPENDITURES

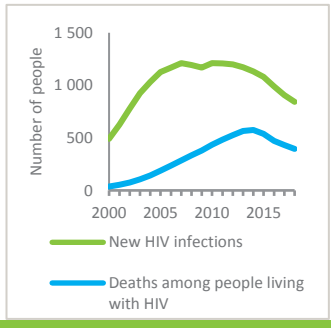
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2018	...	$823 242	$443 594	$2 535 123	$638 030	$4 439 989

EPIDEMIC TRANSITION METRICS







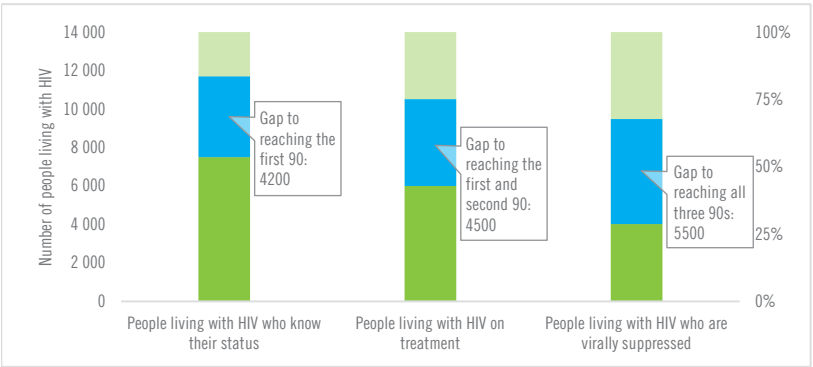


Change in new HIV infections since 2010	=	-30%		
Change in AIDS-related deaths since 2010	=	-14%		
Incidence: prevalence ratio	=	7%		

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	18 000	...	...	...	...
HIV prevalence	2.9%	2.3%	12.1%	...	...
Know their HIV status	98.8%	...	...	...	
Antiretroviral therapy coverage	74.4%	...	57.7%	...	82.8%
Condom use	76.6%	78.5%	36.6%	80.5%	
Coverage of HIV prevention programmes	47.3%	...	67.2%	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$904 513	$786 423	$2 627 652		

HIV TESTING AND TREATMENT CASCADE



All ages	58% [47–70%]	46% [38–56%] 6000	31% [25–38%]
Children (0–14)	>95% [81– >95%]	>95% [>95– >95%] 750	92% [78– >95%]
Women (15+)	80% [67– >95%]	67% [56–81%] 2300	48% [40–59%]
Men (15+)	47% [38–57%]	32% [26–40%] 2900	20% [16–25%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	12% [10–15%]	46% [39–56%]
Early infant diagnosis	2.3% [1.9–2.9%]	29.1% [24.3–35.1%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	280 [180–400]
People living with HIV who started TB preventive therapy (2017)	47.2%
Women who tested positive for HIV among those screened for cervical cancer (programme data) (2017)	40.9%
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	90.5%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.1%
Knowledge of HIV prevention among young people aged 15–24 years (2017)	
— Women	13.8%
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner (2017)	
— Women	42.6%
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods (2017)	52.2%
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2018)	55.6%
— Needles and syringes distributed per person who injects (2018)	200
— Coverage of opioid substitution therapy (2018)	2.7%
— Naloxone available (2019)	Yes
— Safe injection rooms available (2019)	No

THE REPUBLIC OF NORTH MACEDONIA

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (0–14)	... [...–...]	... [...–...]	... [...–...]
New HIV infections (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
New HIV infections (men, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
HIV incidence per 1000 population	0.01 [0.01–0.01]	0.02 [0.02–0.02]	0.02 [0.02–0.03]
AIDS-related deaths			
AIDS-related deaths (all ages)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (0–14)	... [...–...]	... [...–...]	... [...–...]
AIDS-related deaths (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
AIDS-related deaths (men, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
People living with HIV			
People living with HIV (all ages)	<200 [<200– <200]	<500 [<500– <500]	<500 [<500–520]
People living with HIV (0–14)	... [...–...]	... [...–...]	... [...–...]
People living with HIV (women, 15+)	<100 [<100– <100]	<100 [<100– <100]	<100 [<100– <100]
People living with HIV (men, 15+)	<200 [<200– <200]	<500 [<500– <500]	<500 [<500– <500]
HIV prevalence (15–49)	<0.1 [<0.1– <0.1]	<0.1 [<0.1– <0.1]	<0.1 [<0.1– <0.1]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	...
Criminalization of sex work among consenting adults	...
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	...
Criminalization of transgender people	...
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	...
Spousal consent for married women to access sexual and reproductive health services	...
Mandatory HIV testing for marriage, work or residence permits or for certain groups	...

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV

Percentage of people living with HIV denied health services because of their HIV status in the last 12 months

Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent

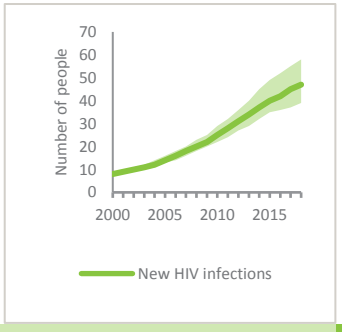
VIOLENCE

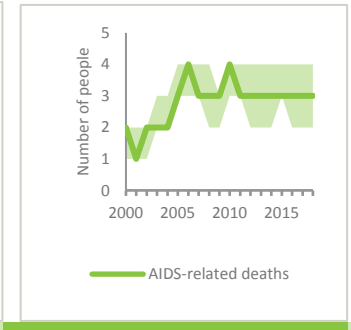
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months

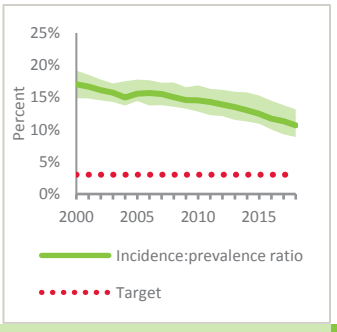
EXPENDITURES

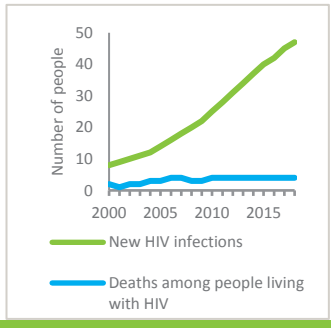
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2010	$41 378	$2 366 290	...	$1 723 215	$171 120	$4 764 351

EPIDEMIC TRANSITION METRICS







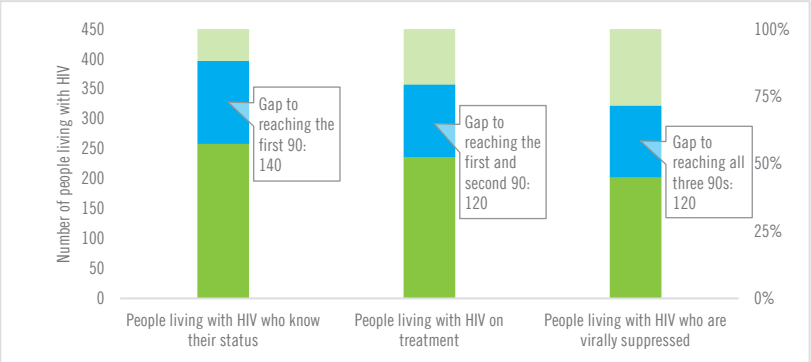


Change in new HIV infections since 2010	= 88%	Change in AIDS-related deaths since 2010	= -25%	Incidence: prevalence ratio	= 11%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	6800	...	2300
HIV prevalence	0.0%	5.4%	0.0%	...	0.0%
Know their HIV status	49.1%	...	37.4%	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	90.0%	51.3%	39.8%	...	
Coverage of HIV prevention programmes	80.9%	52.3%	67.0%	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (0)	...	...	...		

HIV TESTING AND TREATMENT CASCADE



All ages	59% [51–69%]	54% [47–63%] 240	46% [40–54%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	41% [36–48%]	41% [36–48%] 20	41% [36–48%]
Men (15+)	61% [54–72%]	55% [48–65%] 210	47% [41–55%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	% [–%]	...% [...–...%]
Early infant diagnosis	...% [...–...%]	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	0 [0–0]
People living with HIV who started TB preventive therapy (2017)	...
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	100%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	0%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	<0.1%
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2017)	94.6%
— Needles and syringes distributed per person who injects (2018)	62
— Coverage of opioid substitution therapy (2018)	26.6%
— Naloxone available (2019)	...
— Safe injection rooms available (2019)	...

RUSSIAN FEDERATION

COUNTRY DATA

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	...	...	26.0%	...	...
Know their HIV status	...	...	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	...	...	...	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2017)	$230 355	$196 265	$881 820		

HIV TESTING AND TREATMENT CASCADE

All ages	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Men (15+)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	18 000 [12 000 –26 000]
People living with HIV who started TB preventive therapy (2017)	97%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment	...
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	...
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection	...
— Needles and syringes distributed per person who injects	...
— Coverage of opioid substitution therapy	...
— Naloxone available (2019)	...
— Safe injection rooms available (2019)	...

EXPENDITURES

	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2017	$7 966 202	$694 996 044	...	...	...	$703 043 888

Note: HIV epidemiological estimates were not available at the time of publication.

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	...
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	...
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 14 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

VIOLENCE

Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

TURKMENISTAN

COUNTRY DATA

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	...	...	...	...	...
Know their HIV status	...	...	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	...	...	...	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (0)	...	...	...		

HIV TESTING AND TREATMENT CASCADE

All ages	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Children (0–14)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Women (15+)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]
Men (15+)	...% [...–...%]	...% [...–...%] ...	...% [...–...%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	130 [60–230]
People living with HIV who started TB preventive therapy (2017)	...
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment	...
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	...
Knowledge of HIV prevention among young people aged 15–24 years (2015)	
— Women	25.4%
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection	...
— Needles and syringes distributed per person who injects	...
— Coverage of opioid substitution therapy	...
— Naloxone available (2019)	...
— Safe injection rooms available (2019)	...

EXPENDITURES

	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report:	...	...	...	...	...	...

Note: HIV epidemiological estimates were not available at the time of publication.

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	...
Criminalization of same-sex sexual acts	Yes, imprisonment (up to 14 years)
Drug use or possession for personal use is an offence	...
Criminalization of transgender people	...
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	...
Spousal consent for married women to access sexual and reproductive health services	...
Mandatory HIV testing for marriage, work or residence permits or for certain groups	...

STIGMA AND DISCRIMINATION

	2006	2016
Percentage of women aged 15–49 years who report discriminatory attitudes towards people living with HIV	81.1	85.8
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months		
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent		

VIOLENCE

Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

UKRAINE

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	14 000 [12 000–16 000]	13 000 [11 000–15 000]	12 000 [10 000–15 000]
New HIV infections (0–14)	<200 [<200– <200]	<200 [<100– <200]	<100 [<100– <100]
New HIV infections (women, 15+)	4400 [3600–5200]	4000 [3200–4800]	3900 [3200–4600]
New HIV infections (men, 15+)	9500 [8000–11 000]	8800 [7300–10 000]	8500 [7000–10 000]
HIV incidence per 1000 population	0.31 [0.26–0.35]	0.29 [0.24–0.34]	0.28 [0.23–0.34]
AIDS-related deaths			
AIDS-related deaths (all ages)	12 000 [10 000–15 000]	7800 [6300–9900]	6100 [4700–8000]
AIDS-related deaths (0–14)	<200 [<100– <200]	<100 [<100– <200]	<100 [<100– <100]
AIDS-related deaths (women, 15+)	3100 [2600–3800]	1400 [1000–1900]	1000 [740–1500]
AIDS-related deaths (men, 15+)	9100 [7800–11 000]	6300 [5100–7700]	5000 [3900–6400]
People living with HIV			
People living with HIV (all ages)	230 000 [220 000–250 000]	230 000 [220 000–250 000]	240 000 [220 000–260 000]
People living with HIV (0–14)	1100 [960–1300]	990 [850–1100]	850 [750–980]
People living with HIV (women, 15+)	74 000 [70 000–78 000]	81 000 [76 000–86 000]	86 000 [80 000–93 000]
People living with HIV (men, 15+)	160 000 [150 000–170 000]	150 000 [140 000–160 000]	150 000 [140 000–160 000]
HIV prevalence (15–49)	0.9 [0.9–0.9]	0.9 [0.9–1]	1 [0.9–1]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Laws penalizing same-sex sexual acts have been decriminalized or never existed
Drug use or possession for personal use is an offence	Possession of drugs for personal use or drug use and/or consumption are specified as criminal offences
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	Yes
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 14 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV

Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	**2013** 11
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	**2013** 23

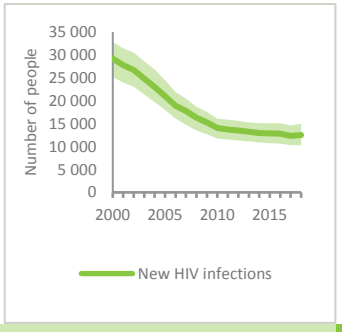
VIOLENCE

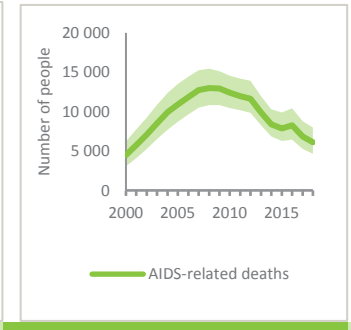
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months

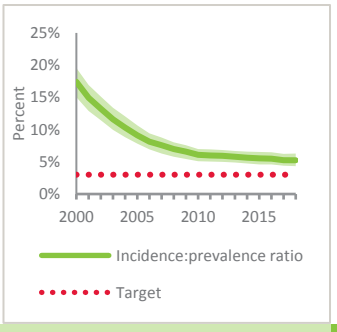
EXPENDITURES

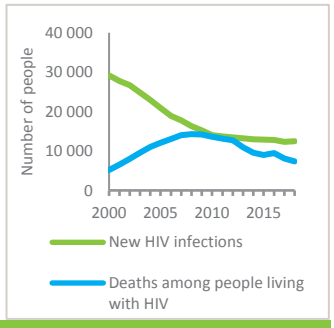
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2016	$1 678 330	$24 018 249	$14 275 590	$54 687 109	$9 515 912	$104 175 192

EPIDEMIC TRANSITION METRICS







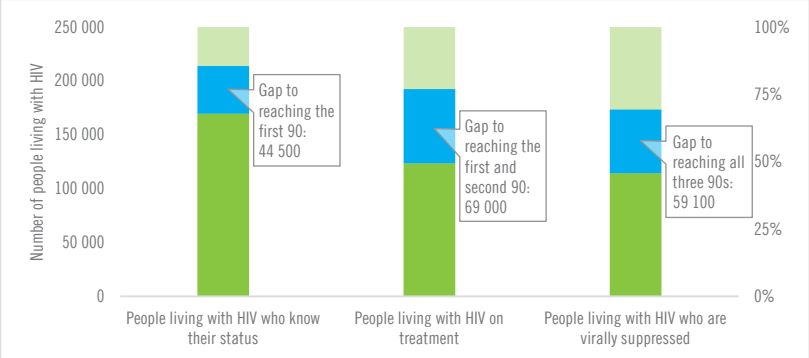


Change in new HIV infections since 2010	= -11%	Change in AIDS-related deaths since 2010	= -51%	Incidence: prevalence ratio	= 5%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	87 000	180 000	350 000	...	...
HIV prevalence	5.2%	7.5%	22.6%	...	8.0%
Know their HIV status	58.2%	39.2%	43.1%	...	
Antiretroviral therapy coverage	29.0%	46.3%	37.9%	...	82.9%
Condom use	93.9%	77.7%	43.9%	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (2016)	$848 928	$818 534	$9 184 763		

HIV TESTING AND TREATMENT CASCADE



All ages	71% [66–77%]	52% [48–56%] 124 000	48% [45–52%]
Children (0–14)	>95% [>95– >95%]	>95% [84– >95%] 820	87% [76– >95%]
Women (15+)	89% [83– >95%]	67% [62–72%] 58 100	62% [58–67%]
Men (15+)	59% [55–64%]	43% [40–46%] 64 600	40% [37–43%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	>95% [85– >95%]	>95% [89– >95%]
Early infant diagnosis	82.8% [68.9– >95%]	65.0% [56.0–73.6%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	8000 [5200 –11 000]
People living with HIV who started TB preventive therapy (2017)	...
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment (2018)	65.4%
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment (2018)	7.7%

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	0.3%
Knowledge of HIV prevention among young people aged 15–24 years (2014)	
— Women	21%
— Men	25%
Condom use at last sex with a non-marital, non-cohabiting partner (2017)	
— Women	...
— Men	82.9%
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period (2018)	125
Harm reduction	
— Use of sterile injecting equipment at last injection (2017)	96.6%
— Needles and syringes distributed per person who injects (2018)	57
— Coverage of opioid substitution therapy (2018)	3.8%
— Naloxone available (2019)	No
— Safe injection rooms available (2019)	Yes

UZBEKISTAN

COUNTRY DATA

EPIDEMIC ESTIMATES

	2010	2015	2018
New HIV infections			
New HIV infections (all ages)	4100 [4000–4200]	5000 [4900–5100]	5400 [5200–5500]
New HIV infections (0–14)	800 [780–810]	1000 [950–1100]	990 [940–1000]
New HIV infections (women, 15+)	990 [910–1100]	1200 [1100–1300]	1300 [1200–1400]
New HIV infections (men, 15+)	2300 [2200–2400]	2800 [2700–2900]	3100 [2900–3200]
HIV incidence per 1000 population	0.14 [0.14–0.14]	0.16 [0.15–0.16]	0.16 [0.16–0.17]
AIDS-related deaths			
AIDS-related deaths (all ages)	1800 [1700–1900]	1800 [1600–2000]	1300 [1100–1500]
AIDS-related deaths (0–14)	580 [560–590]	<500 [<500–510]	<500 [<500– <500]
AIDS-related deaths (women, 15+)	<500 [<500– <500]	<500 [<500– <500]	<100 [<100– <200]
AIDS-related deaths (men, 15+)	910 [820–1000]	1000 [960–1100]	830 [720–940]
People living with HIV			
People living with HIV (all ages)	30 000 [27 000–32 000]	42 000 [38 000–45 000]	52 000 [48 000–56 000]
People living with HIV (0–14)	2700 [2600–2800]	4300 [4100–4500]	6000 [5600–6300]
People living with HIV (women, 15+)	8700 [7900–9600]	13 000 [11 000–14 000]	16 000 [15 000–17 000]
People living with HIV (men, 15+)	18 000 [16 000–20 000]	25 000 [22 000–28 000]	30 000 [28 000–33 000]
HIV prevalence (15–49)	0.1 [0.1–0.2]	0.2 [0.2–0.2]	0.2 [0.2–0.2]

LAWS AND POLICIES

Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Yes
Criminalization of sex work among consenting adults	Any criminalization or punitive regulation of sex work
Criminalization of same-sex sexual acts	Yes, imprisonment (up to 14 years)
Drug use or possession for personal use is an offence	...
Criminalization of transgender people	Neither criminalized nor prosecuted
Laws or policies restricting the entry, stay and residence of people living with HIV	No
Parental consent for adolescents to access HIV testing	Yes, for adolescents younger than 16 years
Spousal consent for married women to access sexual and reproductive health services	No
Mandatory HIV testing for marriage, work or residence permits or for certain groups	Yes

STIGMA AND DISCRIMINATION

Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV	
Percentage of people living with HIV denied health services because of their HIV status in the last 12 months	
Percentage of people living with HIV who reported a health-care professional told others about their HIV status without their consent	

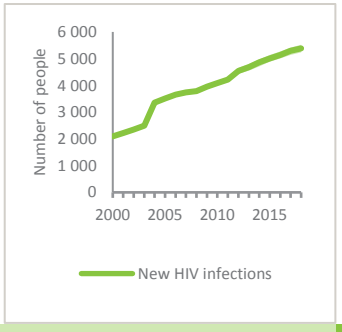
VIOLENCE

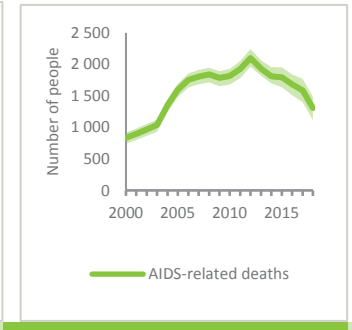
Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months	

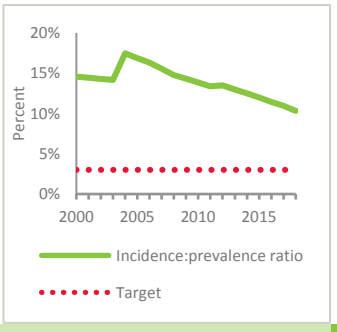
EXPENDITURES

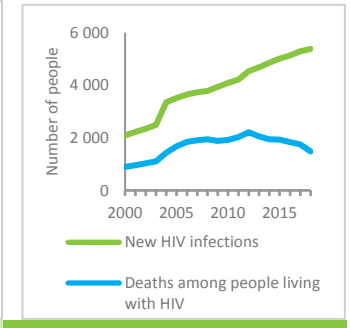
	Financing sources					
	Domestic private	Domestic public	International: PEPFAR	International: Global Fund	International: all others	Total
Last available report: 2014	...	$11 631 595	...	$7 130 099	$351 422	$19 113 116

EPIDEMIC TRANSITION METRICS







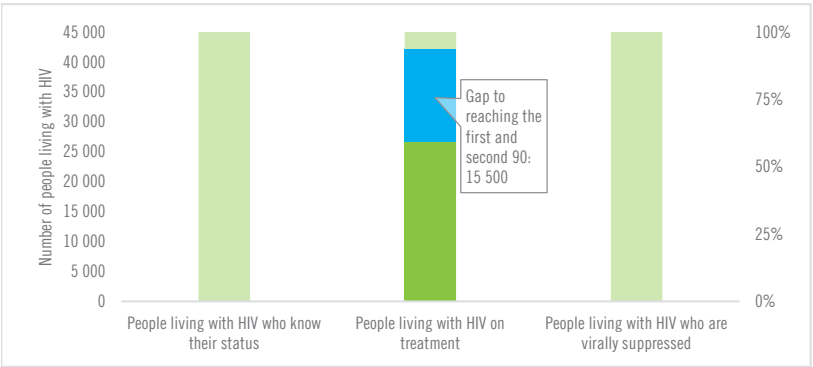


Change in new HIV infections since 2010	= 32%	Change in AIDS-related deaths since 2010	= -28%	Incidence: prevalence ratio = 10%

KEY POPULATIONS

	Sex workers	Gay men and other men who have sex with men	People who inject drugs	Transgender people	Prisoners
Estimated size of population	...	...	...	...	...
HIV prevalence	3.2%	3.7%	5.1%	...	0.5%
Know their HIV status	...	...	...	...	
Antiretroviral therapy coverage	...	...	...	...	...
Condom use	51.7%	94.6%	45.1%	...	
Coverage of HIV prevention programmes	...	...	...	...	
Avoidance of health care because of stigma and discrimination	...	...	...	...	
Expenditures (0)	...	...	...		

HIV TESTING AND TREATMENT CASCADE



All ages	...% [...–...%]	51% [47–55%] 26 700	...% [...–...%]
Children (0–14)	...% [...–...%]	93% [87– >95%] 5500	...% [...–...%]
Women (15+)	...% [...–...%]	68% [63–73%] 10 700	...% [...–...%]
Men (15+)	...% [...–...%]	34% [31–38%] 10 500	...% [...–...%]

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

	2010	2018
Percentage of pregnant women living with HIV accessing antiretroviral medicines	82% [73–93%]	35% [33–38%]
Early infant diagnosis	4.1% [3.6–4.6%]	31.3% [29.3–33.4%]

HIV COMORBIDITIES

Estimated number of incident tuberculosis cases among people living with HIV (2017)	1200 [750–1700]
People living with HIV who started TB preventive therapy (2017)	63.7%
Cervical cancer screening of women living with HIV	...
People coinfected with HIV and hepatitis B virus receiving combined treatment	...
People coinfected with HIV and hepatitis C virus starting hepatitis C treatment	...

HIV PREVENTION

Adults aged 15+ years with unsuppressed viral load	...
Knowledge of HIV prevention among young people aged 15–24 years	
— Women	...
— Men	...
Condom use at last sex with a non-marital, non-cohabiting partner	
— Women	...
— Men	...
Women aged 15–49 years who have their demand for family planning satisfied by modern methods	...
Men aged 15–49 years who are circumcised	Not applicable
Voluntary medical male circumcisions performed according to national standards	Not applicable
People who received PrEP at least once during the reporting period	...
Harm reduction	
— Use of sterile injecting equipment at last injection (2015)	85.1%
— Needles and syringes distributed per person who injects (2018)	105
— Coverage of opioid substitution therapy	...
— Naloxone available (2019)	No
— Safe injection rooms available (2019)	No

ANNEX ON METHODS

METHODS FOR DERIVING UNAIDS HIV ESTIMATES

INTRODUCTION

UNAIDS annually provides revised global, regional and country-specific modelled estimates using the best available epidemiological and programmatic data to track the HIV epidemic. Modelled estimates are required because it is impossible to count the exact number of people living with HIV, people who are newly infected with HIV or people who have died from AIDS-related causes in any country: doing so would require regularly testing every person for HIV and investigating all deaths, which is logistically impossible and ethically problematic. Modelled estimates—and the lower and upper bounds around these estimates—provide a scientifically appropriate way of describing HIV epidemic levels and trends.

PARTNERSHIPS IN DEVELOPING METHODS FOR UNAIDS ESTIMATES

Country teams use UNAIDS-supported software to develop estimates annually. The country teams are primarily comprised of demographers, epidemiologists, monitoring and evaluation specialists, and technical partners.

The software used to produce the estimates is Spectrum, which is developed by Avenir Health, and the Estimates and Projections Package, which is developed by the East–West Center.[1] The UNAIDS Reference Group on Estimates, Modelling and Projections provides technical guidance on the development of the HIV component of the software.[2]

1 More information on Avenir Health can be found at www.avenirhealth.org. The East–West Center website can be found at www.eastwestcenter.org.

2 For more on the UNAIDS Reference Group on Estimates, Modelling and Projections, please visit www.epidem.org.

A BRIEF DESCRIPTION OF METHODS USED BY UNAIDS TO CREATE ESTIMATES[3]

For countries where HIV transmission is high enough to sustain an epidemic in the general population, available epidemiological data typically consist of HIV prevalence results from pregnant women attending antenatal clinics and from nationally representative population-based surveys. Many countries have historically conducted HIV sentinel surveillance among women attending antenatal clinics, which requires collecting data from a selection of clinics for a few months every few years. More recently, a number of countries have stopped conducting sentinel surveillance among pregnant women and are now using the data from the routine HIV tests conducted when pregnant women attend antenatal clinics and are tested for HIV. These data avoid the need to conduct a separate surveillance effort, and they provide a complete set of data from all clinics across the country instead of samples from specific sites.

The trends from pregnant women at antenatal clinics, whether done through surveillance or routine data, can be used to inform estimates of national prevalence trends, whereas data from population-based surveys—which are conducted less frequently but have broader geographical coverage and also include men—are more useful for informing estimates of national HIV prevalence levels. Data from these surveys also contribute to estimating age- and sex-specific HIV prevalence and incidence levels and trends. For a few countries in sub-Saharan Africa that have not conducted population-based surveys, HIV prevalence levels are adjusted based on comparisons of antenatal clinic surveillance and population-based survey data from other countries in the region. HIV prevalence trends and numbers of people on antiretroviral therapy are then used to derive an estimate of HIV incidence trends.

Historically, countries with high HIV transmission have produced separate HIV prevalence and incidence trends for rural and urban areas when there are well-established geographical differences in prevalence. To better describe and account for further geographical heterogeneity, an increasing number of countries have produced subnational estimates (e.g., at the level of the province or state) that, in some cases, also account for rural and urban differences. These subnational or rural–urban estimates and trends are then aggregated to obtain national estimates.

In the remaining countries, where HIV transmission occurs largely among key populations at higher risk of HIV and the epidemic can be described as low-level, the estimates are derived from either surveillance among key populations and the general, low-risk population, or from HIV case reporting data, depending on which data are most reliable in a particular country. In countries with high-quality HIV surveillance data among the key populations, the data from repeated HIV prevalence studies that are focused on key populations are used to derive national estimates and trends. Estimates of the size of key populations are increasingly derived empirically in each country; when studies are not available, they are derived based on regional values and consensus among experts. Other data sources—including HIV case reporting data, population-based surveys and surveillance among pregnant women—are used to estimate the HIV prevalence in the general, low-risk population. The HIV prevalence curves and numbers of people on antiretroviral therapy are then used to derive national HIV incidence trends.

For most countries in western and central Europe and North America—and many countries in Latin America, the Caribbean, and the Middle East and North Africa that have insufficient HIV surveillance or survey data, but that have robust disease reporting systems—HIV case reporting and AIDS-related mortality data from vital registration systems are directly used to inform trends and levels in national HIV prevalence and incidence. These methods also allow countries to take into account evidence of underreporting or reporting delays in HIV case report data, as well as the misclassification of deaths from AIDS-related causes.

In all countries where UNAIDS supports the development of estimates, assumptions about the effectiveness of HIV programme scale-up and patterns of HIV transmission and disease progression are used to obtain the following age- and sex-specific estimates of people living with HIV, people newly infected with HIV, people dying from AIDS-related illness and other important indicators (including treatment programme coverage statistics). These assumptions are based on

3 A full description of the methods used for the 2019 estimates is available in the July 2019 supplement of the journal AIDS.

systematic literature reviews and analyses of raw study data by scientific experts. Demographic population data, including fertility estimates, are derived from the United Nations Population Division's World Population Prospects 2017 data files.

Selected inputs into the model—including the number of people on antiretroviral therapy and the number of women accessing services for the prevention of mother-to-child transmission of HIV by type of regimen—are reviewed and validated in partnership with the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the Government of the United States of America, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and other partners.

Final country-submitted files containing the modelled outputs are reviewed at UNAIDS to ensure that the results are comparable across regions and countries and over time.

In 2019, sub-national estimates were created and used by more than 25 countries for internal planning purposes. The methods for producing robust sub-national estimates varies by country and depends primarily on the availability of sub-national data. Four methods were used (Mathematical modelling, Model-based geo-statistics, small area estimation and direct estimates from prevalence surveys) to derive the sub-national estimates. The methods to generate robust sub-national estimates are still being refined.

UNCERTAINTY BOUNDS AROUND UNAIDS ESTIMATES

The estimation software calculates uncertainty bounds around each estimate. These bounds define the range within which the true value lies (if it can be measured). Narrow bounds indicate that an estimate is precise, while wide bounds indicate greater uncertainty regarding the estimate.

In countries using HIV surveillance data, the quantity and source of the data available partly determine the precision of the estimates: countries with more HIV surveillance data have smaller ranges than countries with less surveillance data or smaller sample sizes. Countries in which a national population-based survey has been conducted generally have smaller ranges around estimates than countries where such surveys have not been conducted. Countries producing subnational estimates at the provincial level have wider ranges. In countries using HIV case reporting and AIDS-related mortality data, the number of years of data and the magnitude of the cases reported or AIDS-related deaths observed will contribute to determining the precision of the estimate.

The assumptions required to arrive at the estimate also contribute to the extent of the ranges around the estimates: in brief, the more assumptions, the wider the uncertainty range, since each assumption introduces additional uncertainties. For example, the ranges around the estimates of adult HIV prevalence are smaller than those around the estimates of HIV incidence among children, which require additional data on prevalence among pregnant women and the probability of mother-to-child HIV transmission that have their own additional uncertainty.

UNAIDS is confident that the actual numbers of people living with HIV, people who are newly infected with HIV or people who have died from AIDS-related causes lie within the reported ranges. Over time, more and better data from countries will steadily reduce uncertainty.

IMPROVEMENTS INCLUDED IN THE 2019 UNAIDS ESTIMATES MODEL

Country teams create new Spectrum files every year. The files may differ from one year to the next for two reasons. First, new surveillance and programme data are entered into the model; this can change HIV prevalence and incidence trends over time or antiretroviral therapy coverage rates, including for past years. Second, improvements are incorporated into the model based on the latest available science and statistical methods, which leads to the creation of more accurate trends in HIV incidence. Due to these improvements to the model and the addition of new data to create the estimates, the results from previous years cannot be compared with the results from this year. A full historical set of estimates are created each year, however, enabling a description of trends over time.

Between the 2018 estimates and the 2019 estimates, the following changes were applied to the model

under the guidance of the UNAIDS Reference Group on Estimates, Modelling and Projections and based on the latest scientific evidence.

New incidence estimation model for generalized epidemics

In 2019, a new model (R-hybrid) was introduced that uses an improved function to estimate the rate of HIV infection during different phases of the HIV epidemic. For estimating infections early in the epidemic, when data were relatively sparse, the new model has a simple structure that follows the consistent pattern across countries of exponential growth, peak and decline. For more recent years the model has more flexibility to follow the increased amount of data to shape the trends in new infections. This new model improves the fit to existing prevalence data, especially for recent routine testing data from antenatal clinics.

The previous incidence estimation model used in generalized epidemics assumed HIV prevalence stabilized at the last observed value. The impact of adopting the R-hybrid model will be minimal in countries with substantial historical surveillance data and recent surveys, but in countries with few data points early in the epidemic or in recent years, the R-hybrid model should improve the fit to available data.

Mortality among people not receiving treatment

Assumptions of the risk of mortality among people not receiving treatment were reduced based on high quality vital registration data where fewer AIDS-related deaths among the untreated HIV positive adults were recorded than predicted by Spectrum.

The impact of this change is lower mortality rates among people not receiving treatment and fewer AIDS-related deaths overall.

Mortality among people receiving antiretroviral therapy

Previously, the model assumed that mortality rates following antiretroviral therapy initiation are constant over time, conditional on age, sex, baseline CD4 count and duration on treatment. However, recent studies have shown that these rates have declined over time, even after controlling for temporal changes in baseline CD4 count and treatment duration. A temporal reduction in mortality was included in the model as estimated from the IeDEA cohort data.

IeDEA data were also reanalysed for Latin America, North America, and Asia and the Pacific with improved assumptions about mortality among those lost to follow-up. This resulted in substantially lower mortality rates than previously estimated. In countries with high-quality mortality data, on- and off-treatment mortality were adjusted to match AIDS-related deaths. An option to specify allocation of treatment disproportionately to either those with low CD4 counts or according to eligibility criteria was introduced to better match the low number of AIDS-related mortality data observed in western and central Europe.

Fertility among women living with HIV

The 2019 Spectrum model included updated parameters about the fertility of women living with HIV who were not receiving antiretroviral therapy. The new parameters led to higher fertility among women living with HIV early in the epidemic, before treatment was provided to HIV-positive pregnant women. This adjustment increased historical estimates of children living with HIV.

In the 2019 model, HIV prevalence data from routine testing among pregnant women at antenatal clinics were used to calibrate the estimated births to women living with HIV. This increased the estimates in some countries and decreased the values in others. There is still some work to be done to ensure the country programme data used for this calibration are robust.

Breastfeeding among women living with HIV

New analysis of survey data done in early 2019 found that women who were living with HV before widespread HIV testing and treatment had shorter breastfeeding duration. The model previously assumed that women who did not know their HIV status had similar breastfeeding patterns as women who were HIV-negative.

In 2019, eight high-burden countries in eastern southern Africa with household surveys from the early 2000s adjusted the breastfeeding duration among

undiagnosed women living with HIV to reflect the new analysis. The impact of this change is reduced mother–to–child transmission during breastfeeding.

Probability of mother-to-child transmission

Analysis conducted for the UNAIDS Reference Group on Estimates, Modelling and Projections found minor updated transmission probabilities based on the latest published literature about the impact of different antiretroviral regimens on mother-to-child transmission. This had minimal impact on the child HIV estimates.

Updated age at initiation of antiretroviral therapy for children

The average age of children starting antiretroviral therapy has changed over the years as children are diagnosed earlier. Data from the IeDEA and CIPHER networks provide data on the average age of children starting antiretroviral therapy in multiple regions around the world. These data are available for each calendar year from 2002 through 2016. The most recent update of these data suggested an increase in the proportion of children under two years of age starting on treatment and a small reduction to the proportion of children older than 10 years of age starting on treatment. This has a small impact on both the number of children living with HIV and on AIDS-related deaths among children.

Retention on treatment of pregnant women

Many countries do not have robust data available on the retention of women on treatment during pregnancy. An analysis conducted for the UNAIDS Reference Group on Estimates, Modelling and Projections suggested that at the time of delivery, only 80% of women were retained on treatment. This estimate was used as a default value for women already on treatment before the pregnancy and for those women who started treatment during the pregnancy. Most of the high-burden countries in eastern and southern Africa updated this assumption to reflect available data. Previously, the default assumption was that 75% of women were retained on treatment at delivery before the pregnancy.

Changes to case surveillance and vital registration model

The age range of requested model inputs of new diagnoses, CD4 count at diagnosis and AIDS-related mortality was changed from all ages to 15 years and older. It was recommended that AIDS-related death estimates (adjusted for incomplete reporting and misclassification) rather than raw AIDS-related deaths from the vital registration system be used in the fitting process. A new function was added to estimate new diagnosis based on age, sex and year. Also, a new r-logistic fitting approach was added. Complementing this new model is another function that provides the user with the ability to determine which model best fits the inputs.

Surveillance data entered into the model

In 2018, Nigeria conducted a large household survey to improve the precision of the estimate of HIV prevalence in the country. The Nigeria AIDS Indicator and Impact Survey (NAIIS) found lower HIV prevalence than previous household surveys. The new survey estimates were included in the Nigeria Spectrum models and previous survey data were removed, resulting in a shift in HIV prevalence to a lower level over the full history of the epidemic. This change also shifted the estimated prevalence in western and central Africa to slightly lower levels.

At the global level, trends in new HIV infections, AIDS-related deaths and people living with HIV are similar to previous estimates, although there are shifts within regions. The number of AIDS-related deaths has shifted downward in all regions due to changes in the models. New HIV infections are slightly flatter than estimated in 2018 in Asia and the Pacific and in eastern Europe and central Asia. Lower estimates of people living with HIV in western and central Africa were offset by higher estimates in Asia and the Pacific.

More detailed information on revisions to the 2019 model and Spectrum generally can be found at www.epidem.org.

PUBLICATION OF COUNTRY-SPECIFIC ESTIMATES

UNAIDS aims to publish estimates for all countries with populations of 250 000 or more ((according to the United Nations Population Division 2017 World Population Prospects). For the countries with populations of 250 000 or more that did not submit estimates, UNAIDS developed estimates using the Spectrum software based on published or otherwise available information. These estimates contributed to regional and global totals but were not published as country-specific estimates.

In countries with low-level epidemics, the number of pregnant women living with HIV is difficult to estimate. Many women living with HIV in these countries are sex workers or people who use drugs—or they are the sexual partners of people who use drugs or gay men and other men who have sex with men—making them likely to have different fertility levels than the general population. UNAIDS does not present estimates of mother-to-child HIV transmission, including estimates related to children in some countries that have concentrated epidemics, unless adequate data are available to validate these estimates. UNAIDS also does not publish estimates related to children for countries where the estimated number of pregnant women living with HIV is less than 50.

With regard to reporting incidence trends, if there are not enough historical data to state with confidence whether a decline in incidence has occurred, UNAIDS will only publish data for the most recent year. This is done to prevent users from making inaccurate inferences about trends. Specifically, incidence trends are not published if there are fewer than four data points for the key population or if there have been no data for the past four years for countries using repeated survey or routine testing data. Trends prior to 2000 are not published for countries using case surveillance models if there are no early case surveillance or mortality data available.

Finally, UNAIDS does not publish country estimates when further data or analyses are needed to produce justifiable estimates. More information on the UNAIDS estimates and the individual Spectrum files for most countries can be found in the UNAIDS website. Data from the estimates can be found in the AIDSinfo section of the UNAIDS website (http://aidsinfo.unaids.org). ■

METHODS FOR DERIVING THE 90–90–90 TARGETS

INTRODUCTION

Since 2015, UNAIDS has reported estimates of global, regional and country-specific progress against the 90–90–90 targets. Progress toward these targets is monitored using three basic indicators:

- Indicator 1 (the first 90): The percentage of people living with HIV who know their HIV status.
- Indicator 2 (the second 90): The percentage of people living with HIV who know their status and are accessing treatment.
- Indicator 3 (the third 90): The percentage of people living with HIV on treatment who have suppressed viral loads.

Indicators 2 and 3 can also be expressed as a percentage of all people living with HIV. When numbers or coverage of the treatment target are expressed relative to the total number of people living with HIV, this is called "the HIV testing and treatment cascade."—therapy Annual estimates of antiretroviral therapy coverage among people living with HIV are available from the time when treatment was first introduced in countries.

DATA SOURCES FOR CONSTRUCTING COUNTRY MEASURES

Country-level progress against the 90–90–90 targets was constructed using reported data from Spectrum, the Global AIDS Monitoring tool and (for selected countries in western and central Europe)) the Dublin Declaration monitoring process. Estimates are published for all people and separately, by sex, for children (0 to 14 years) and for adults (15 years and older). Upper and lower ranges of uncertainty for country-level estimates were calculated from the range of estimated numbers of people living with HIV. This range may not fully capture uncertainty in the reported estimates.

A description of the target-related indicators that countries report against is provided in the UNAIDS 2019 Global AIDS Monitoring guidelines *(1)*. Data sources are also briefly described. A summary of the number of countries that are publicly reporting on each measure is provided in Table 18.1, organized by region.

The final set of country measures of progress against the 90–90–90 targets for 2015 through 2018 are available at http://aidsinfo.unaids.org. Not all countries were able to report against all three prongs of the 90–90–90 targets: complete treatment cascades are published for 60 countries in 2018, up from 23 in 2015.

Estimates of people living with HIV

All progress measures in this report are based on UNAIDS global, regional and country-specific modelled estimates from Spectrum of the numbers of people living with HIV. Estimates of people living with HIV in 2018 were available for 170 of 193 countries and territories and published for 137. Estimates of people living with HIV are developed for all countries with populations above 250 000.

More details about how UNAIDS derives estimates and uncertainty bounds around the number of people living with HIV can be found in Part 1 of this annex. Published country estimates of people living with HIV (available http://aidsinfo.unaids.org)the) represent 79% of the total global estimated number of people living with HIV in 2018.

Knowledge of HIV status among people living with HIV

Estimates of the number of people living with HIV who know their status were derived using the most recent HIV surveillance, programme data and nationally representative population-based survey data, and from modelled 2018 estimates for 102 countries. Where data were available separately for children (aged 0–14 years) and adults (aged 15 years and older, by sex), the age- and sex-specific measures were first calculated and then aggregated to produce a national measure.

For 74 countries in 2018—primarily outside of eastern and southern Africa and western and central Africa—the number of people living with HIV who knew their HIV status is based on HIV surveillance case notification data, programme registers or modelled estimates derived from case surveillance data. If the estimate from these sources was lower than the number of people accessing antiretroviral therapy, the reported value was excluded. For countries using HIV surveillance or programme data, a country should have included this measure only if the HIV surveillance system had been functioning since at least 2013 and people who have died, emigrated or who otherwise have been lost to follow-up are removed.

Although HIV surveillance systems, including those based on programme registers, can be a reasonably robust source of data to estimate the number of people living with HIV who know their status, biases in the reported numbers may still exist. For example, a country's measure of the knowledge of status may be underestimated if not all people diagnosed are reported to the surveillance system in a timely manner; the measure also may be overestimated if people are reported to the system or included on a register more than once and these duplicates are not detected. Similarly, if people die or emigrate but are not removed from the system, the number of people living with HIV who are reported to know their HIV status also will be overstated.

For 28 countries in eastern and southern Africa and western and central Africa, estimates of the numbers of people living with HIV who knew their status were derived using a new UNAIDS-supported mathematical model called the First 90 model. This model uses population-based survey and HIV testing service program data—together with country-specific HIV epidemic parameters from the standard UNAIDS Spectrum model—to produce outputs of knowledge of HIV status for adults, by sex. More details on the modelling approach are available in a forthcoming article (currently in press) *(2)*.

Knowledge of HIV status from the First 90 model for eastern and southern Africa and western and central Africa has a number of strengths compared with UNAIDS' previously recommended approach to estimating knowledge of status relying on population survey data and programme treatment coverage data. Most importantly, the new model differentiates in the population survey data those who are aware of their HIV status and those who likely seroconverted after their last HIV-negative test based on national incidence trends. This approach constrains the upper bound of the proportion of people living with HIV ever tested in the survey who likely knew their HIV status at the time of the survey, thus producing a more accurate estimate of the first 90. Results of the proportion of people who know their HIV status from the model are also available by sex, assuming male-to-female testing ratios have remained relatively constant over time. Estimates of knowledge of status by sex for adults are also available since 2010.

An important model limitation, similar to the previously recommended approach, is that caution should be used in interpreting results when the last population-based survey was conducted more than five years ago or if there are concerns about the accuracy of self-reported testing history in the survey. Model results also are only for those aged 15 years and older. UNAIDS continues to recommend that countries conservatively estimate knowledge of status among children as the proportion of children living with HIV on treatment (unless other information from case surveillance data are available). Additional strengths and limitations of the model are described in the forthcoming article referenced earlier in this section.

People accessing antiretroviral therapy

Global and regional measures of antiretroviral therapy numbers are abstracted from country-reported programme data through the UNAIDS-supported Spectrum software, the Global AIDS Monitoring reporting tool, and the Dublin Declaration reporting process. In 2018, 143 countries had publicly available estimates of the number of people on treatment, representing 85% of all people on treatment. For the small number of countries where reported numbers of people on treatment are not available in selected years—primarily in western and central Europe and North America, and inin China, India and the Russian Federation—estimates of the number of people on treatment are developed either in consultation with the public health agency responsible for monitoring the national treatment programme or based on published sources.

In partnership with UNICEF, WHO, the Government of the United States, the Global Fund and other partners that support treatment service delivery in countries, UNAIDS annually reviews and validates treatment numbers reported by countries through Global AIDS Monitoring and Spectrum. UNAIDS staff also provide technical assistance and training to country public health and clinical officers to ensure the quality of the treatment data reported. Nevertheless, this measure may overestimate the number of people on treatment if people who transfer from one facility to another are reported by both facilities. Similarly, coverage may be overestimated if people who have died, disengaged from care or emigrated are not identified and removed from treatment registries. Treatment numbers also may be underestimated if not all clinics report the numbers on treatment completely or in a timely manner.

In 2016, UNAIDS completed a triangulation of data to verify the UNAIDS global estimate of people accessing antiretroviral therapy at the end of 2015. Since early 2017, UNAIDS and other international partners have supported more than 15 countries, primarily in sub-Saharan Africa, to verify that the number of people reported to be currently on treatment is accurate. For more details about how confident UNAIDS is in reported treatment numbers, please see *How many people living with HIV access treatment?*[4]

People who have achieved viral suppression

Progress towards the viral suppression target among people on treatment and as a proportion of all people living with HIV was derived from data reported in Spectrum and through the online Global AIDS Monitoring reporting tool and the Dublin Declaration reporting process. For the purposes of reporting, the threshold for suppression is a viral load of less than 1000 copies per ml, although some countries may set lower thresholds or require persons to achieve an undetectable viral load. This guidance also specifies only a person's last test result from the reporting year be submitted, so the reported number suppressed among those tested should represent people and not tests performed.

UNAIDS2019 Global AIDS Monitoring guidelines were revised from those of 2018 to clarify that countries should report viral load suppression outcomes, regardless of testing coverage. However, viral load testing results will only be published in countries where access to testing is for all or nearly all (>90%) people on treatment or nationally representative (typically 50–90% testing coverage). Table 1 shows the increase in the number of countries able to report on viral load suppression compared to previous years. In 2015, only 26 countries had reliable estimates; in 2018, there were 76 countries with reported data.

For countries with nationally representative but not universally accessible access to treatment, the estimate of viral suppression among those tested (i.e., the third 90) was multiplied by the number of people on treatment to obtain overall viral suppression levels in the country. Countries where testing coverage was 90% or higher reported only the number suppressed among all people on treatment.

A number of challenges exist in using country-reported data to monitor the viral load suppression target. First, routine viral load testing may not be offered at all treatment facilities, and those facilities that do offer it may not be representative of the care available at facilities without viral load testing. By assuming that the percentage of people suppressed among those accessing viral load testing is representative of all people on treatment countries that do not have complete access to testing, the measure may be overestimated or underestimated (depending on the characteristics of the reporting clinics).

4 The document is available at http://www.unaids.org/en/resources/documents/2016/how-many-people-living-with-HIV-access-treatment.

TABLE 1 Data availability for constructing UNAIDS measures of progress against the 90–90–90 treatment targets

		Asia and the Pacific	Caribbean	Eastern Europe and central Asia	Eastern and southern Africa	Latin America	Middle East and North Africa	Western and central Africa	Western and central Europe and North America	Global
Number of countries		38	16	16	21	17	20	25	40	193
Number of countries in UNAIDS global estimates		28	10	16	20	17	19	24	36	170
Number of countries with publicly available data on estimates of people living with HIV	2015	20	9	12	20	16	15	24	23	139
	2016	20	9	12	20	16	15	24	24	140
	2017	20	9	12	20	16	15	24	23	139
	2018	20	9	12	20	16	15	24	21	137
Number of countries with publicly available data on knowledge of HIV status	2015	8	6	7	20	6	6	18	9	80
	2016	9	6	8	20	8	6	18	18	93
	2017	12	7	9	20	8	6	18	18	98
	2018	15	6	12	20	9	9	18	13	102
Number of countries with publicly available data on treatment	2015	20	9	13	20	16	15	24	21	138
	2016	20	9	13	20	16	15	24	23	140
	2017	21	9	13	20	16	15	24	24	142
	2018	22	9	14	20	16	17	24	21	143
Number of countries with publicly available data on people with suppressed viral load	2015	5	0	5	3	4	4	1	4	26
	2016	5	2	5	8	7	4	1	13	45
	2017	7	4	8	7	8	6	3	12	55
	2018	9	7	11	13	11	9	6	10	76

Source: UNAIDS special analysis, 2019.

Another challenge in measuring the accuracy of viral load suppression estimates is that UNAIDS guidance requests routine (i.e., annual) viral load testing results only for people who are on treatment and eligible for testing. If people newly initiated on treatment achieve viral suppression but have not yet been offered viral load testing, they will be incorrectly counted as not suppressed, and the resulting viral suppression estimate will be understated. UNAIDS also requests countries to only report results from routine viral load testing: if countries report test results primarily performed because of suspected treatment failure, the number of people virally suppressed in these countries will be underestimated. UNAIDS validates country submissions for quality, but it is not always possible to identify cases where both routine and other types of testing are occurring. Finally, UNAIDS guidance recommends reporting viral load test results only for people on antiretroviral therapy; persons who are not on treatment and naturally suppress the virus will not be included in this measure.

METHODS FOR CONSTRUCTION THE 90–90–90 TREATMENT TARGET AT THE REGIONAL AND GLOBAL LEVELS

All programme data submitted to UNAIDS were validated by UNAIDS and its partners prior to publication. Country-submitted data that did not meet the required validation checks for quality either at the indicator level or across the treatment cascade were not included in the composite regional or global measures.

To estimate regional and global progress against the 90–90–90 targets, UNAIDS imputed missing country data for the first and third 90 targets using a Bayesian hierarchical model with uncertainty based on regional trends, sex differences and country-specific data for those countries reporting data for some but not all years. Additional details on the modelling approach are available in a forthcoming article *(4)*. The proportion of data on knowledge of status and viral load suppression that was imputed by region from 2015 to 2018 are shown in Table 18.2.

Due to large differences in the proportion of people virally suppressed in western and central Europe and the United States for the years in which data were available, sub-regional estimates for North America and western and central Europe were separately calculated and then combined to estimate the western and central Europe and North America regional results at large. Upper and lower ranges of uncertainty around the global and regional estimates of the HIV testing and treatment cascade are provided that reflect uncertainty in the number of people living with HIV and uncertainty (from missing country data) in the number of people who know their HIV status and the number of people who are virally suppressed. Based on reports from data quality reviews prior to 2017, uncertainty from possible overreporting or underreporting of treatment numbers of 0.88 and 1.04 for the lower and upper bounds, respectively, was added to the bounds of treatment coverage among people living with HIV and the second and third 90s. Upper and lower ranges of uncertainty for the 90s do not capture uncertainty in the reported or missing programme data on the numbers of people who know their HIV status or the number of people on treatment who are virally suppressed.

As in previous years, results of global and regional progress towards the 90–90–90 treatment target presented in this report supersede all previously published estimates. The new approach to modelling the global and regional estimates of the first and third 90s builds on the previous UNAIDS approach, which was to calculate missing -data for countries using the ratio of knowledge of status and treatment for the first 90 and the ratio of the number of people suppressed among those on treatment in the region for countries where data were available. One of the benefits of the new approach is that it can use reported data when they are available to estimate trends in and across the region. Also, it is now possible to measure progress separately among adults by sex.

As with the previous approach, one primary drawback to the model is that it is difficult to quantify the extent to which progress in countries that reported data to UNAIDS is similar to that of countries without data in the region. This is particularly true for viral load suppression estimates, where reported data in some regions—especially in 2015 and 2016—are limited. For example, no countries in the Caribbean in 2015 were able to meet the threshold coverage of 50% testing coverage for reporting estimates of viral load suppression. In Asia and the Pacific, national-level estimates of viral load suppression are not available in any year for India and prior to 2018 for China. As access to viral load testing improves over time, the accuracy of the estimates of the third 90 will improve. ■

TABLE 2 Proportion of imputed data used to estimate the regional and global measures of the percentage of people living with HIV who know their HIV status and the percentage of people living with HIV on treatment who are virally suppressed

	Estimates of people living with HIV where knowledge of status is imputed (%)				People living with HIV on treatment where viral suppression is imputed (%)			
	2015	2016	2017	2018	2015	2016	2017	2018
Asia and the Pacific	12	8	10	51	83	84	85	56
Caribbean	7	5	5	18	100	96	63	51
Eastern Europe and central Asia	65	69	68	5	77	76	75	4
Eastern and southern Africa	0	0	0	0	58	33	46	21
Latin America	24	21	20	22	33	29	28	28
Middle East and North Africa	21	25	19	28	63	63	46	37
Western and central Africa	2	2	0	2	99	99	98	47
Western and central Europe and North America	29	4	82	95	33	6	87	98
Global	8	6	10	15	62	46	60	35

Source: UNAIDS special analysis, 2019.

DATA ON KEY POPULATIONS

DISTRIBUTION OF NEW HIV INFECTIONS BY SUBPOPULATION

The distribution of new HIV infections among subpopulations globally and by region was estimated based on data for 177 countries using five data sources.

For countries that model their HIV epidemic based on data from subpopulations, including key populations, the numbers of new infections were extracted from Spectrum 2019 files. This source provided data for sex workers from 59 countries, for people who inject drugs from 37 countries, for gay men and other men who have sex with men from 61 countries, and for transgender people from 19 countries (all of which were located in Latin America, the Caribbean and Asia and the Pacific). Additionally, 22 countries (mostly from Asia and the Pacific) had data from clients of sex workers.

The second source was mode of transmission studies conducted in countries between 2006 and 2012. The proportions of new infections estimated for each subpopulation, calculated by modes of transmission analyses, were multiplied by the number of total new gender-specific adult infections (among those aged 15–49 years) to derive an estimated number of new infections by subpopulation. This source provided data for sex workers from 18 countries, for people who inject drugs from 25 countries, and for gay men and other men who have sex with men from 22 countries.

New HIV infections for European countries with neither of the aforementioned data sources were derived from the European Centre for Disease Prevention and Control (ECDC) and WHO Regional Office for Europe HIV/AIDS surveillance in Europe 2017–2018 data *(4)*. The proportions of new diagnoses for each region in Europe (western, central and eastern) were applied to UNAIDS estimates of new infections in each country for people who inject drugs, gay men and other men who have sex with men, and transgender people. Data for sex workers were not available from the ECDC report. New HIV infections in China, India, the Russian Federation and the United States were taken from the most recent available national reports of new diagnoses.

New HIV infections among countries without a direct data source were calculated from regional benchmarks. The benchmarks were set by the median proportion of new infections in the specific subpopulation in all available countries in the same region. The majority of these countries were located in sub-Saharan Africa. There were 112 countries that used benchmark values for the sex work estimate, 92 countries for the people who inject drugs estimate, 69 countries for the gay men and other men who have sex with men estimate, and 82 countries for the transgender people estimate.

The calculated proportions of infections for each key population include the sex partners of members of key populations. New infections among sex partners of key populations were estimated using the number of sex partners and transmission probabilities from the literature.

QUALITY OF POPULATION SIZE ESTIMATES

The regional sections of this report include tables on the estimated size of key populations. These data are based on values reported through Global AIDS Monitoring in 2018. A comprehensive review of the data was conducted during this reporting round and therefore estimates should not be compared with data presented in previous UNAIDS' reports. As a result of this process, the estimates reported can be categorized as follows:

- "National population size estimate" refers to estimates that are empirically derived using one of the following methods: multiplier, capture-recapture, mapping/enumeration, network scale up method (NSUM) or population-based survey, or respondent driven sampling–successive sampling (RDS-SS). Estimates had to be national or a combination of multiple sites with a clear approach to extrapolating to a national estimate.
- "Local population size estimate" refers to estimates that are empirically derived using one of the before mentioned methods but only for a subnational group of sites that are insufficient for national extrapolation.
- "Insufficient data" refers either to estimates derived from: expert opinions, Delphi, wisdom of crowds, programmatic results or registry, regional benchmarks or unknown methods or estimates derived prior to 2010. Estimates may or may not be national. ■

REFERENCES

1. Global AIDS monitoring 2019: indicators for monitoring the 2016 United Nations Political Declaration on HIV and AIDS. Geneva: UNAIDS; 2017 (https://www.unaids.org/sites/default/files/media_asset/global-aids-monitoring_en.pdf, accessed 7 July 2019).
2. Maheu-Giroux M, Marsh K, Doyle C, Godin A, Delauney CL, Johnson LF et al. National HIV testing and diagnosis coverage in sub-Saharan Africa: a new modeling tool for estimating the "first 90" from program and survey data. AIDS. 2019. [in press]
3. Johnston LG, Sabin ML, Prybylski D, Sabin K, McFarland W, Baral S et al. Policy and practice: the importance of assessing self-reported HIV status in bio-behavioural surveys. Bull World Health Organ. 2016;94:605-12.
4. HIV infection and AIDS. Annual epidemiological report for 2017. Stockholm: European Centre for Disease Prevention and Control (ECDC); 2019 ((https://ecdc.europa.eu/sites/portal/files/documents/AER_for_2017-hiv-infection-aids_1.pdf, accessed 7 July 2019).

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