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New HIV infections data among key populations: proportions in 2010 and 2022

UNAIDS Explainer

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Key messages

Background

On 1 January 2024, the *Journal of Acquired Immune Deficiency Syndromes* (JAIDS) (*1*) published an article describing the findings from UNAIDS and co-authors on new HIV infections among key populations[1] and their sexual partners in 2010 and 2022, by world region. For the first time, UNAIDS and partners have used expanded data sources and refined, dynamic HIV transmission models to make estimates of new HIV infections with time trends within each country and key population. This article, prepared by UNAIDS and partners, highlights the new methods used to gain a better understanding of new HIV infections among key populations. The article focuses primarily on the new methods and necessary improvements for future estimates. This document places the findings in the wider context of the AIDS epidemic and response for their advocacy and programmatic use. For additional information, data and nuances it is suggested to refer to the full article.

Key messages

- More than half (55%) of all new HIV infections in 2022 occurred among people from key populations and their sexual partners. This represents an increase from 2010 when the estimated proportion was 44%.
- New HIV infections declined by 35% between 2010 and 2022 in the 15–49-year-old population globally, but only by 11% among key populations. Discrimination, stigma and criminalization are preventing access to and/or availability of services for key populations, contributing to unequal rates of progress in the HIV response for these same key populations.
- Annual numbers of new HIV infections among gay men and other men who have sex with men increased by 11%, and among transgender women by 3%, from 2010 to 2022. Discrimination and stigma prevent these people from seeking the health care and HIV services they need.
- In the previous analyses, UNAIDS estimated the distribution of new HIV infections for a single point in time. As agreed in the Global AIDS Strategy 2021–2026: End Inequalities, End AIDS, UNAIDS and partners wanted to determine whether the declines in new infections were occurring across populations, including among key populations. In 2023, for the first time, UNAIDS and partners used expanded data sources and refined, dynamic models that capture estimates of the time trends within each country and key population.
- The global HIV response must work to increase the access of key populations to high quality testing, prevention and treatment services. Barriers to access must be reduced and services must expand to reduce unmet needs. The disproportionate burden of new infections borne by key populations and their sex partners points to unequal access to life-extending services and treatment.

[1] Key populations were defined as per the Global AIDS Strategy 2021-2026 to include gay men and other men who have sex with men, sex workers, transgender people and people who inject drugs.

Stark inequalities continue to exist in the risk of acquiring HIV

In 2022, the relative risk of acquiring HIV was 14 times higher for people who inject drugs, 23 times higher for gay men and other men who have sex with men, 9 times higher for sex workers and 20 times higher for transgender women than in the wider population globally. Key populations remain at much higher risk than the wider population of acquiring HIV today, which is unacceptable 40 years into the HIV pandemic.

In sub-Saharan Africa, annual new adult HIV infections declined by 600 000 between 2010 and 2022 (from 1.1 million to 510 000). In the same region, sex workers and their clients appear to have benefited equally when compared with the overall adult population in terms of falling numbers of new infections. New infections among sex workers and among clients of sex workers dropped by 50% and 67%, respectively, according to the modelled estimates. For gay men and other men who has sex with men and people who inject drugs there was no such progress. The relative risk for sex workers in the region remains high as they are still 11 times more likely to acquire HIV than the wider population.

In sub-Saharan Africa, new HIV infections among key populations represented 25% of the total new infections in 2022.

In the rest of the world, key populations represented 80% of all new infections in 2022.

Outside of sub-Saharan Africa, new HIV infections among adults 15–49 years old saw no change between 2010 and 2022. The annual number of new infections remained steady at 580 000. Up to 80% of the new infections occurred among key populations and their sexual partners, compared with 72% in 2010. The distribution of those new infections appears to have changed, with a larger proportion occurring among gay men and other men who have sex with men.

More work is needed for HIV prevention and addressing stigma, criminalization and discrimination

Forty years of experience in the response to HIV demonstrated that people are more likely to use prevention methods if the context for seeking health is safe and not hostile, and when community-led networks are funded to provide tailored services to their peers. Comprehensive HIV prevention programmes for all key populations are the bedrock of progress in the AIDS response.

While the published article does not reflect on the implications of these new data for programmes, it is critical to highlight that countries where the rights of key populations are upheld, protected and fulfilled obtain better results in terms of prevention of new HIV infections.

Gay men and other men who have sex with men who live in countries that criminalize same sex relations in sub-Saharan Africa are more than twice as likely to be living with HIV as those living in countries without such criminal penalties. Those living in countries with severe criminalization are almost five times as likely to be living with HIV as those in countries without such criminal penalties (*2*).

In ten countries in sub-Saharan Africa, the odds of living with HIV were seven times higher for a sex worker in a country that criminalizes sex work compared with a country that partially decriminalized sex work (*3*).

A dynamic transmission model of decriminalization combined with enhanced harm reduction and antiretroviral therapy coverage for eastern Europe and central Asia suggests that it was cost-saving and reduced HIV transmission. Program costs were reduced 17–26% and numbers of new infections among people who inject drugs fell between 60 and 80%, varying by country (*4*).

New methods for better analysis

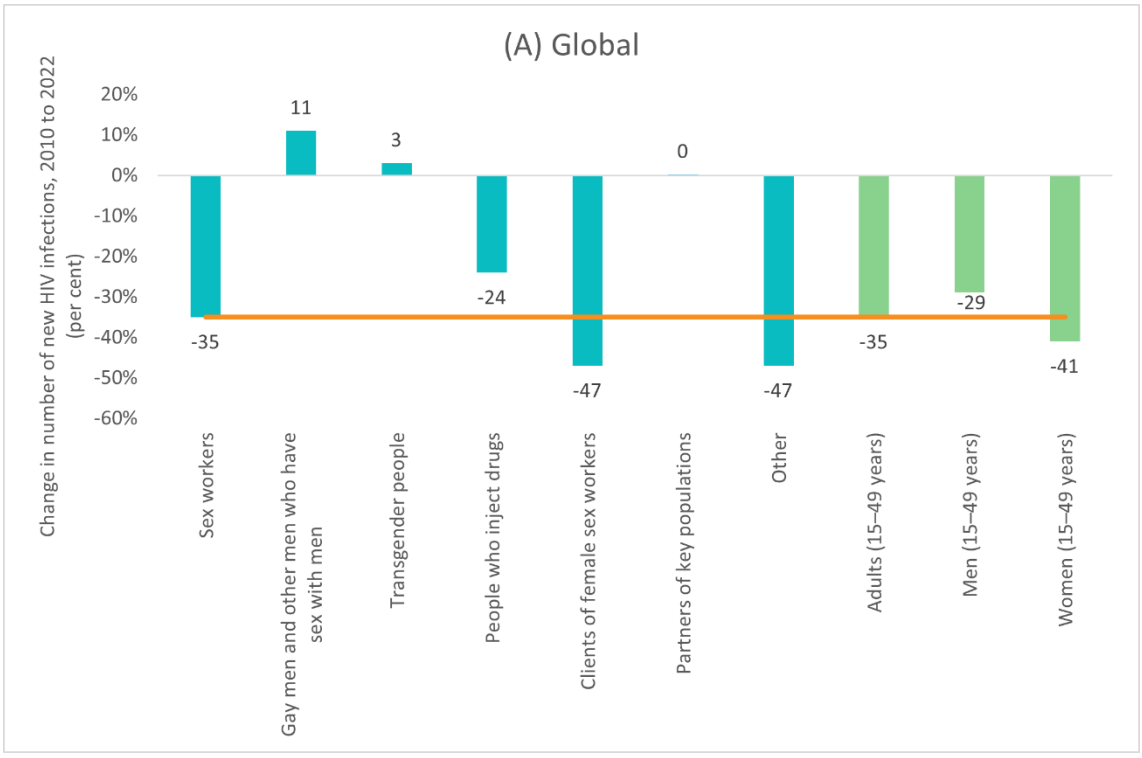
UNAIDS strives to publish data with the latest analytical tools available. The analysis in this article represents our best understanding of trends among key populations given the data currently available to UNAIDS and the partners involved in this paper.

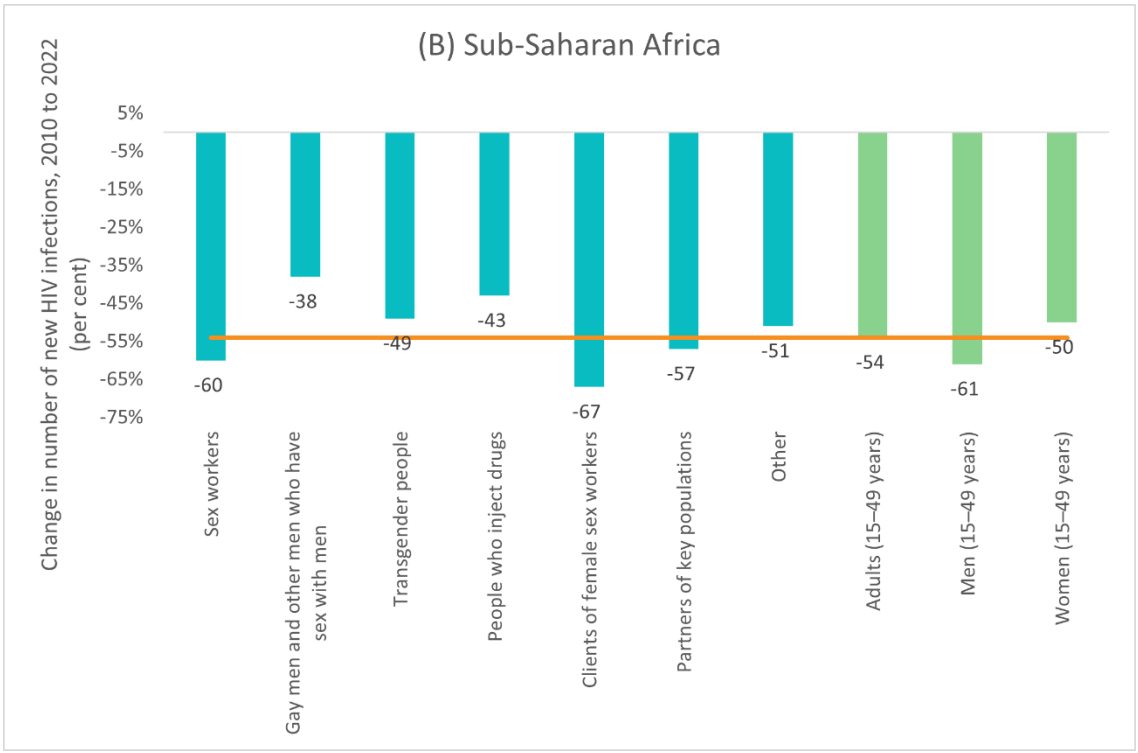
In the previous analyses, UNAIDS estimated the distribution of new infections for a single point in time. As agreed in the Global AIDS Strategy 2021–2026, UNAIDS wanted to determine whether the declines in new infections were occurring across populations, including among key populations. In 2023, for the first time, UNAIDS used a broader array of data sources and refined, dynamic HIV transmission models to make country estimates that capture the time trends within each country and key population as described in the article.

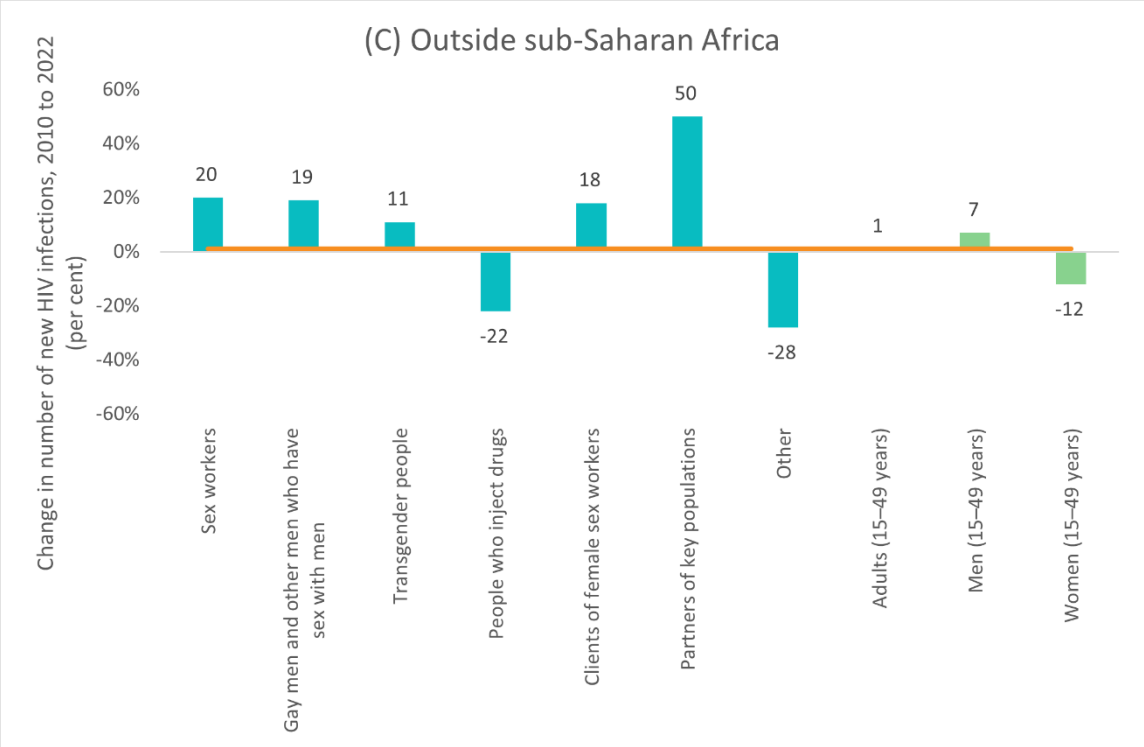
In this article, the authors describe this refined approach to quantify the unequal HIV burden experienced by key populations, with trends over time within each key population in each country. This refined and more systematized approach enhances the ability of UNAIDS, governments, civil society, and other stakeholders to track progress of the HIV response among key populations.

Relative change in annual new HIV infections

Figure 1. Proportional change in annual number of new adult HIV infections among selected populations between 2010 and 2022: (A) global; (B) sub-Saharan Africa; and (C) outside of sub-Saharan Africa.







Note: the horizontal orange lines indicate equality with the reduction in the overall 15–49-year-old population (same as the third bar from right). Negative percentages indicate a decrease in new infections in 2022 compared to 2010; positive percentages reflect a higher (increased) number.

Source: Korenromp E, Sabin K, Stover J, et al. New HIV Infections Among Key Populations and Their Partners in 2010 and 2022, by World Region: A Multisources Estimation. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2024;95(1S):e34–e45.

What does the new analysis tell us about the epidemic among key populations?

The context of the HIV epidemics and total adult infection trends differ notably between sub-Saharan Africa and elsewhere. In sub-Saharan Africa, overall, the number of adult infections among people 15–49 years old fell markedly between 2010 to 2022, from 1.1 million to 510000 (54% decline; Figure 1). However, the rest of the world has not seen declines in new HIV infections among adults between 2010 and 2022, which stood at 580 000 in both years (1% increase using unrounded numbers).

This analysis suggests apparent progress in reducing new HIV infections among sex workers in sub-Saharan Africa, with new HIV infections declining between 2010 and 2022 slightly more than in the overall adult population of the region. The models assume sex workers in this region benefit from the high antiretroviral coverage in the wider population including among their sex partners. This also suggests more availability of prevention services for female sex workers compared to other key populations.

Globally, concerning results are emerging for gay men and other men who have sex with men and transgender women among whom new HIV infections are not decreasing. While data from the new methods indicate declines in new infections globally among people who inject drugs, some countries show increases in this population. New HIV infections among sex workers remain the same and show no progress outside sub-Saharan Africa and are increasing in some countries.

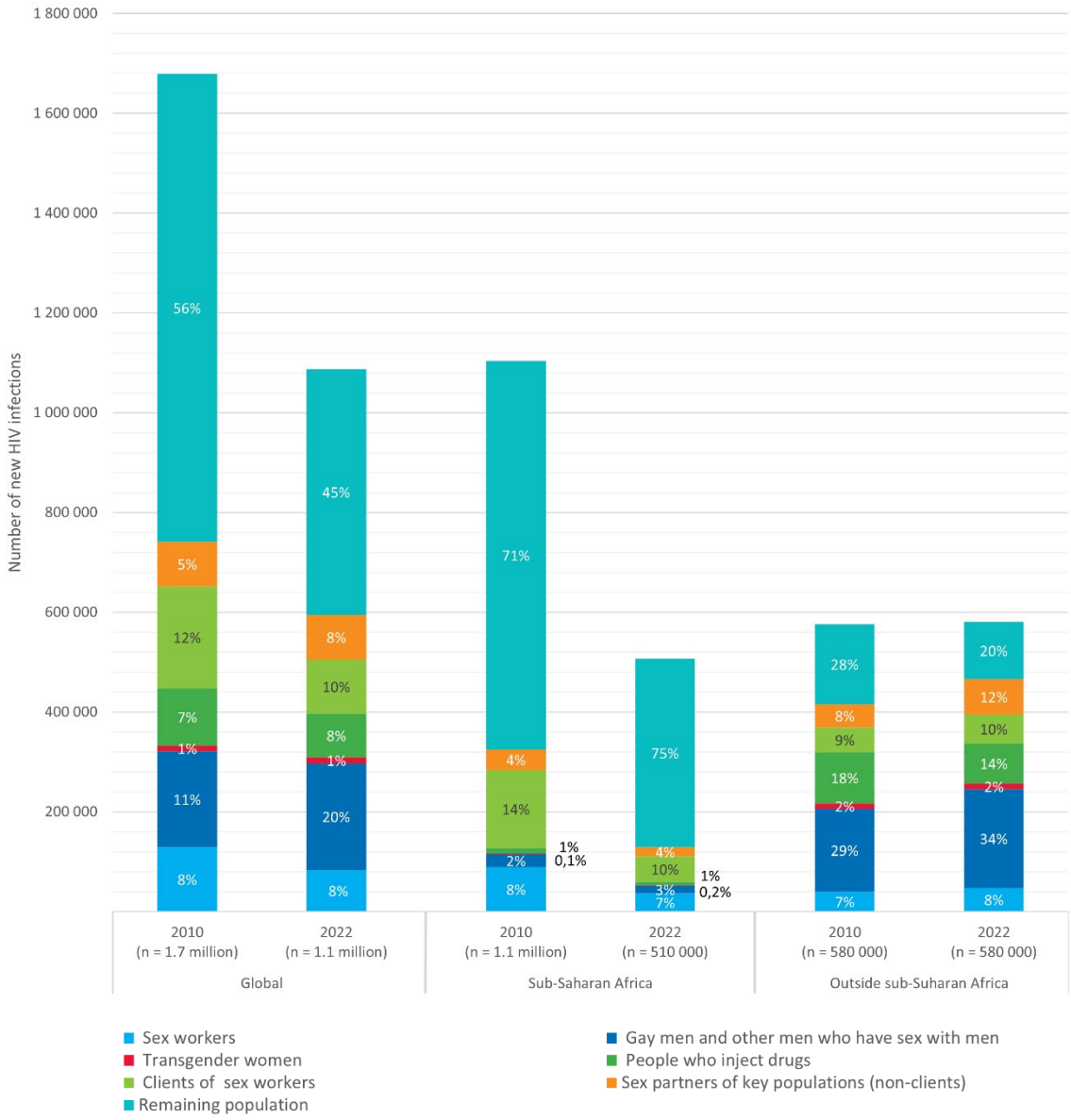
The analysis provides insight into progress in closing the gap between key populations and the general populations when it comes to the risk of acquiring HIV. Incidence rate ratios (relative risk) compare HIV incidence for each key population to the total adult population. An incidence rate ratio of 10 means 10 times higher risk, an incidence rate ratio of 1 means equal risk. The analysis suggests that sex workers and people who inject drugs experienced a decline in relative risk (12 to 9 and 21 to 14, respectively) between 2010 and 2022. Gay men and other men who have sex with men exhibited a small uptick (20 to 23) and risk for transgender women increased (11 to 20). Each of these relative risks are unacceptably high regardless of the changes over time.

Relative risk declines when a community has the resources and capacity to protect itself—when condoms are plentiful and the ability to negotiate their use is uncomplicated, when sterile injection equipment and opioid agonist maintenance therapy are readily available, when the population is not policed and criminalized, and when testing and treatment are provided without judgement or stigmatizing attitudes. The HIV response aims to reduce inequalities in risk, but also the overall risk for the wider population and key populations alike, which should decline over time when comprehensive HIV prevention services are universally available, unlike today. The question must be asked, “Why is the epidemic declining by 35% among the wider population but only by 11% among key populations? What are we doing, and what are we not doing, to equalize the impacts of falling HIV incidence among all subpopulations?”

Distribution of new HIV infections

More than half (55%) of all new HIV infections in 2022 occurred among people from key populations and their sexual partners. This represents an increase from 2010, when the estimated proportion was 44% (Figure 2).

Figure 2. Distribution of adult new HIV infections, global and by region, 2010 and 2022



Source: Korenromp E, Sabin K, Stover J, et al. New HIV Infections Among Key Populations and Their Partners in 2010 and 2022, by World Region: A Multisources Estimation. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2024;95(1S):e34–e45.

In sub-Saharan Africa, the total number of new infections fell by almost half, from 1.1 million to 510,000 during this time. The distribution of new infections in the region barely changed. In 2022 an estimated 25% of new HIV infections occurred among key populations, an increase from 21% in 2010. However, the limited data from key populations in the region render these estimates less robust than in other regions. The model will be adjusted as more data from key populations becomes available.

In regions outside of sub-Saharan Africa, by contrast, the results are mixed. Overall adult new HIV infections were similar in 2010 and 2022, about 580 000. The proportion of those new infections increased among gay men and other men who have sex with men while decreasing among the “remaining population”. The formulae for confidence intervals and the possibility of inferring if these changes are statistically significant are not yet available. There was variation by subregions. Among people who inject drugs, annual infections fell in at least four regions: Asia and the Pacific, Caribbean, eastern Europe and central Asia, western and central Europe and North America but rose in the Middle East and North Africa. For sex workers, three regions showed increasing numbers of new HIV infections (Middle East and North Africa, eastern Europe and central Asia, and western and central Europe and North America) and three showed a decrease (Asia and the Pacific, Caribbean, Latin America).
When looking at relative risk at a regional level, the risk and trends in the overall adult population must be considered. Key populations in some countries might face increased relative risk while overall new HIV infections may be declining.

What are the implications of this analysis?

The global HIV response must work to increase the access of key populations to high quality testing, prevention and treatment services. Barriers to access must be reduced and services must expand to reduce unmet needs. The disproportionate burden of new infections borne by key populations and their sex partners points to unequal access to life-extending services and treatment.

The analysis suggests that national responses should be aligning their prevention programmes to address the distribution of new infections among key populations. The HIV response must reinvigorate itself; governments and national programmes, especially in regions outside of sub-Saharan Africa, must commit to increasing and enhancing services where key populations are bearing a larger proportion of new infections in a stagnating epidemic.

Complacency in national responses, particularly as it relates to key populations, is a danger. Low coverage levels of effective prevention programmes have only steadied the number of new infections outside of sub-Saharan Africa and need to be further scaled up to achieve sustained declines in new HIV infections.

Successful programmes like *Sisters with a voice* (*5*) in Zimbabwe create a sub-Saharan African model that demonstrates how high-quality, community-led HIV programmes can have an impact on HIV among under-served populations such as sex workers. The success of some countries in scaling up HIV testing, treatment, prevention, and sustaining community-wide viral load suppression for key populations, all of which require an enabling environment, (e.g. free of stigma and police harassment), should be celebrated, even if much work remains to protect key populations from discrimination and to reach gay men and other men who have sex with men and people who inject drugs.

The sub-Saharan Africa region has benefited from focused international funding in recent years, including from the United States President’s Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria. However, the fact that sex workers in this region are still shouldering the burden of 7% of new HIV infections, and globally face a risk of acquiring HIV that is eight times higher than the rest of the

population, indicates that there are still significant barriers that sex workers face that increase the risk of acquiring HIV.

Laws that criminalize people from key populations and HIV non-disclosure, exposure or transmission drive people away from the support and services that can help them protect their health. Such laws, together with stigma and discrimination, combine to increase the risk of acquiring HIV.

Data collection led by key populations, their communities and the programmes serving them must expand to further elucidate where and how HIV incidence can be reduced.

What was done differently in these refined estimates?

In this new analysis, additional sources of new HIV infections data were included. The models used to make these estimates of new HIV infections were reviewed and ranked for statistical robustness (i.e., which were judged to have the greatest validity according to established criteria). The most complete models, with the most complete data, were ranked as the top quality available. Models with fewer data or fewer inputs contributing to the results were ranked second. Country sources with HIV case reporting data and no models that adjust for under-reporting and late diagnosis were ranked last. The top-ranked models preferably are known as “dynamic transmission models”. These models attempt to mimic transmission within and between different populations, reflecting how HIV occurs through in communities. The next best model relies on trends in HIV prevalence over time for each key population. HIV prevalence is mathematically related to HIV incidence. These models use that relationship to estimate incidence and new infections. The current results reflect the best available methods using the best data available to UNAIDS as of 2023.

New HIV infections among clients of sex workers were estimated separately from other non-key population sex partners. New infections among both groups track the trends among their key population sex partners in each country. Previously, the estimates were for all sex partners and were calculated only at regional level.

The estimates of the proportion of new HIV infections that are among key populations are lower than previous estimates from UNAIDS (published between 2016 and 2021) that suggested up to 70% of new adult HIV infections globally occurred among key populations. The previous estimates are not comparable to these current estimates because of the differing methods. The previous estimates were not comparable over time and no statements on trends could be made. The current estimates present the authors’ first estimations for two time points and suggest that key populations continue to endure a stable or increasing share of all adult infections between 2010 and 2022.

The main differences were:

- The synthesis of available (including more recent) key population data integrated into more up-to-date, country level transmission models or statistical models as a second choice. This allowed for consistency in estimates for each of the key populations at the

two time points and ensured the models did not surpass 100%of overall adult infections in any country in either year. The updated analysis also considered the 2010 to 2022 trend in overall adult infections according to each country's latest official, UNAIDS- reviewed national estimates.

- Analysis for high income countries without an epidemic model used case reporting data by mode of transmission, also ensuring consistency with the envelope of overall adult infection estimates in those countries.
- Refined assumptions about the risk of incidence among partners of key populations, consistent with each country's overall transmission pattern and overall adult infections.
- Refined extrapolation from this larger number of higher quality country models to countries with no epidemic model.

In the future, this analysis will be updated with additional country data. Country review and feedback will be requested and will potentially lead to additional refinements and changes in numbers for some countries and even regions.

What are the limitations in this analysis?

All models are limited by the data available on key populations, and their quality, national representativeness and comparability in a time trend analysis. Data are particularly limited for population size estimates, notably for gay men and other men who have sex with men and transgender people who may be hidden, under-counted and programmatically under-served due to stigma and discrimination. For clients of sex workers, not only group size but also prevalence data are scarce. There is fluidity across population groups: a person can adopt a particular behaviour, (e.g. selling sex) one year and stop it the next. This is difficult to track, yet it influences how many new HIV infections occur among key populations but then become long term infections (prevalent) among the general population.

The multiple methods and sources used prevented a formal calculation of statistical significance of 2010 to 2022 trends or differences among regions.

Antiretroviral therapy among key populations was assumed to be similar to people of the same gender in the country, with discounts based on available treatment data (*6*). For example, people who inject drugs were assumed to have 85% of the treatment coverage of adults in the same country. If this overestimates coverage among people who inject drugs, HIV transmission among them may have been greater.

Some countries lacked a robust estimation model describing all key populations. Patterns from neighbouring countries provided a proxy estimate in this case. For those countries that only reported new HIV case diagnoses by mode of transmission, the number was taken as a proxy of new infections; this approach may underestimate the importance of key populations if there is under-reporting of relevant behaviours at diagnosis or under-testing by one of the populations. For the remainder of countries, and key populations not included in a country model or case reporting, HIV infections among key populations were extrapolated from patterns across countries with a robust model within the region. UNAIDS and collaborators continue to collect and scrutinize data, and update and refine epidemic models to corroborate or refine the results. See the journal article and supplementary documentation for a full description of the methods and their respective limitations.

References

1. Korenromp E, Sabin K, Stover J, et al. New HIV Infections Among Key Populations and Their Partners in 2010 and 2022, by World Region: A Multisources Estimation. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2024;95(1S):e34–e45.

2. Lyons C. Utilizing individual level data to assess the relationship between prevalent HIV infection and punitive same sex policies and legal barriers across 10 countries in sub-Saharan Africa. Abstract OAF0403. Presented at the 23rd International AIDS Conference, 6–10 July 2020 [virtual] (https://www.abstract-archive.org/Abstract/Share/82510, accessed 3 July 2023).

3. Lyons CE, Schwartz SR, Murray SM, et al. The role of sex work laws and stigmas in increasing HIV risks among sex workers. Nat Commun. 2020;11(1):773.

4. Ward Z, Stone J, Bishop C, et al. Costs and impact on HIV transmission of a switch from a criminalisation to a public health approach to injecting drug use in eastern Europe and central Asia: a modelling analysis. Lancet HIV. 2022;9(1):e42-e53.

5. Cowan F, Davey C, Fearon E, et al. The HIV Care Cascade Among Female Sex Workers in Zimbabwe: Results of a Population-Based Survey from the Sisters Antiretroviral Therapy Programme for Prevention of HIV, an Integrated Response (SAPPH-IRe) Trial. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2017:74(4):375–382.

6. Stevens O, Sabin K, Arias Garcia S, et al. Key population size, HIV prevalence, and ART coverage in sub-Saharan Africa: systematic collation and synthesis of survey data. medRxiv. 2022.

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