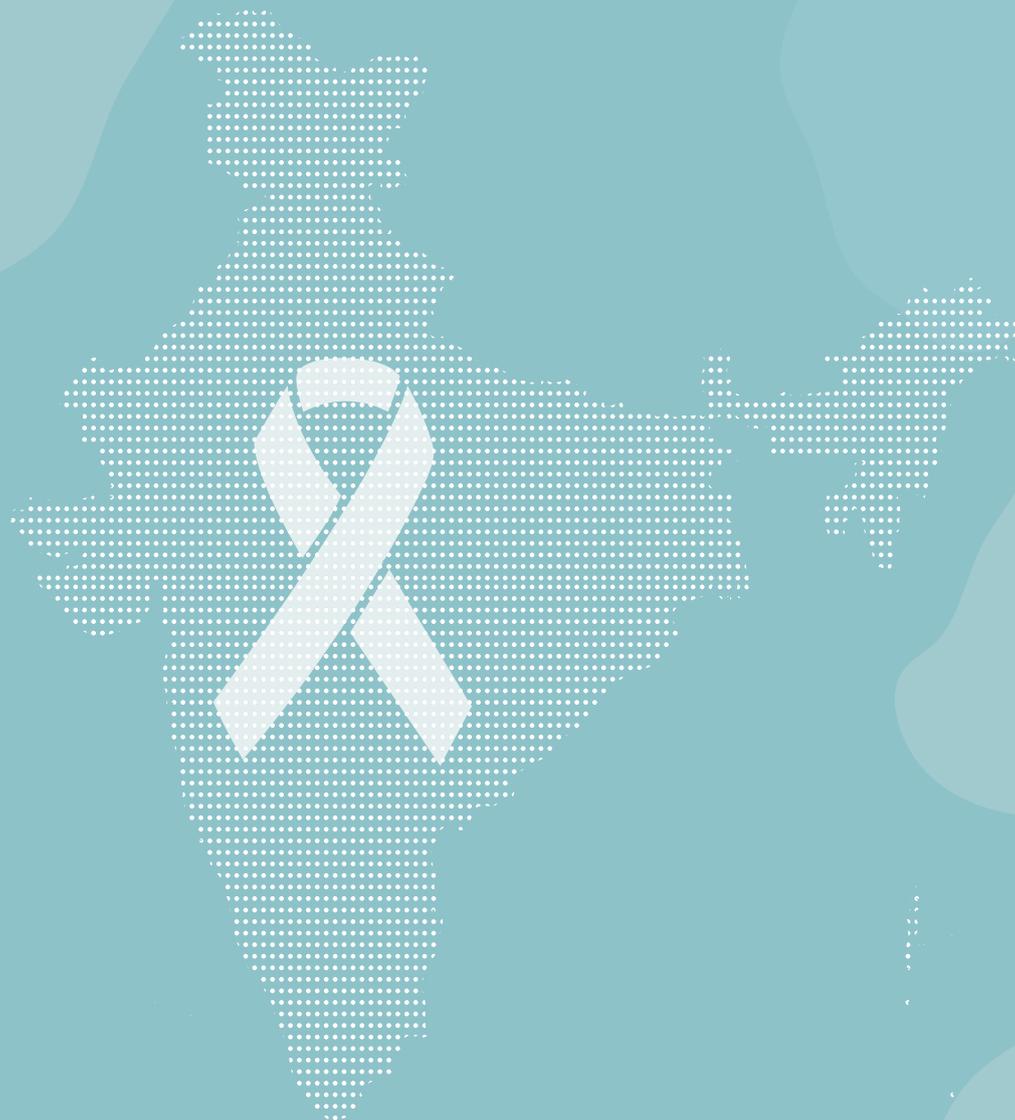




# INDIA HIV ESTIMATES 2019 REPORT



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# INDIA HIV ESTIMATES 2019 REPORT

NATIONAL AIDS CONTROL ORGANISATION | ICMR – NATIONAL INSTITUTE OF MEDICAL STATISTICS  
MINISTRY OF HEALTH & FAMILY WELFARE  
GOVERNMENT OF INDIA

GoI/NACO/Surveillance/HIV Estimates 2019/200720





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Dated the 21st July, 2020



## FOREWORD

Disease burden estimations are fundamental to public health policy formulation, resource allocation and implementation design. They further inform impacts of the public health interventions. In view of the importance of disease burden estimates, World Health Organization (WHO) has been publishing global burden disease estimates since 2000. For HIV, The Joint United Nations Programme on HIV/AIDS (UNAIDS) has established a robust system of periodic estimation which is adopted by most member countries.

HIV disease burden estimation is integral to Surveillance and Epidemiology under National AIDS Control Programme (NACP) since 1998. The first round used indigenous spread-sheet based method using findings from the first round of HIV sentinel surveillance. In 2006, HIV burden estimation under NACP took a methodological leap with availability of community-based HIV prevalence estimates from National Family Health Survey (NFHS) in select States and then also adopting WHO/UNAIDS recommended Workbook and Spectrum method. Since then, the process and tools have continued to evolve as the new evidences on assumptions emerge and models are subsequently improved by UNAIDS.

The HIV Estimates 2019 is the latest round providing updated estimates on the key indicators of prevalence, incidence, mortality, and elimination of mother to child transmission (EMTCT) need by States and UTs. The methods improve from previous round in terms of use of most recent fertility estimates, routine testing data of pregnant women and use of NFHS-IV to inform epidemiological curves and other assumptions. The results highlight that while the overall impact on the HIV/AIDS epidemic continue to be significant, there are pockets which require a very intensive and integrated actions by all Stakeholders to bend the epidemic curve. These estimates are further being disaggregated by districts and analyzed in-depth to provide both macro and micro level of evidences for policy making, local level planning and progress monitoring.

The HIV Estimates 2019 report has come out at an opportune moment. It provides evidence on how much progress has been made on at least three of the 2020 fast-track targets and thus provide a baseline for the programme as NACP designs its contour for the next five years. It also indicates locations which need a much more concerted effort. I am confident that all Stakeholders will use this report to further enhance evidence driven implementations towards achieving end of AIDS as a public health threat by 2030.

(Arti Ahuja)





सत्यमेव जयते

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## PREFACE

India is currently responding to the COVID-19 pandemic. The SARS-CoV-2 virus has impacted almost all aspects of life and the national HIV/AIDS programme is not an exception. High-risk groups and migrants have been impacted severely being one of the most disadvantaged and marginalized. Movements of people, drugs, testing kits and all other commodities were adversely impacted limiting the availability and access to the services. Also, globally, evidence has emerged that HIV-infected people are more at risk of COVID-19 death compared to HIV-negative patients. The challenges for the National AIDS Control Programme have multiplied with COVID-19 pandemic.

Given the current context, HIV Estimations 2019 report is a timely publication providing the latest evidence on the magnitude and directions of the HIV/AIDS epidemic. The report details the methodology, presents the findings on epidemiological indicators of prevalence-incidence-mortality-EMTCT need and finally discusses the implications for the National AIDS Control Programme. The report further provides evidence on progress towards 2020 fast-track targets. While progress on treatment aspect has been significant, there is still a lot to be done on the prevention of new HIV infections and the elimination of mother to child transmission of HIV. The continued diversity in the epidemic has been reflected systematically with higher prevalence and incidence in the north-eastern region but the high volume of overall size and new infections in the southern, western, central and eastern regions. Knowledge about this diversity will be vital to re-strategize the approaches under the national AIDS response.

HIV Estimations 2019 report concludes the 16<sup>th</sup> round of surveillance and estimation activities undertaken by NACP. The round directly engaged thousands of front-line workers, programme managers, epidemiologists, demographers, biostatisticians and microbiologists under the leadership of Dr. Shobini Rajan (Deputy Director General, Surveillance and Epidemiology, MoHFW, GoI). I congratulate all of them for successful implementation of another round of one of the world's largest and most diverse surveillance system. I am confident that the rich and timely evidence presented in this report will be used by all stakeholders to fast-track the national AIDS response.

  
(Alok Saxena)

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अपनी एचआईवी अवस्था जानें, निकटतम सरकारी अस्पताल में मुफ्त सलाह व जाँच पाएँ  
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## PREFACE

India has successfully generated HIV estimates under the 2019 estimations round for national and State/Union Territory for the following key parameters: adult HIV prevalence, number of people living with HIV, HIV incidence per 1,000 uninfected population, number of annual new HIV infections, AIDS-related mortality per 100,000 population, number of annual AIDS-related deaths, and finally the need for services to eliminate mother-to-child transmission of HIV in India.

These estimates are developed by the National Working Group on HIV Estimations (NWG) led by the Indian Council of Medical Research – National Institute of Medical Statistics (ICMR-NIMS) – which is the apex technical body for HIV estimations in the country – and the National AIDS Control Organisation (NACO). NWG members include specialists in Demography/Statistics/Epidemiology, Regional Institutes and Medical Colleges, and M&E officers/ epidemiologists from State AIDS Control Societies, independent national experts, and experts from UNAIDS India, WHO India and PEPFAR/CDC India. Technical advice has also been sought from specialists from the UNAIDS regional and headquarters and Avenir Health. The Technical Resource Group on HIV Surveillance and Estimations (TRG) is the oversight body, who have reviewed and validated the method and results of 2019 HIV estimates round.

2019 round of HIV estimates have been generated using the UNAIDS recommended Spectrum software revision 5.8. Latest demographic, epidemiological and programme data available in the country were updated, with curve-fitting using 'EPP Classic model' done with assumptions and parameters informed by available national data as much as possible. These 2019 estimates cannot be compared directly with estimates published previously as the current estimates are based on new assumptions. It is stemmed from evidence and enhancements made in the Spectrum modelling tool, and the updated latest demographic, surveillance and programme data, thus leading to a refined and improved quality.

As the Chairperson of the NWG on HIV estimates, I would like to congratulate all those who have been part of this modelling exercise and worked tirelessly to bring out this critical information for the National AIDS Control Programme in India. Special thanks to Dr. Damodar Sahu, PI & Focal person of Estimation, ICMR-NIMS and his team. I encourage all stakeholders to use this Technical Report on 2019 HIV Estimates as a guide for their decision making, planning and programmatic purposes.

(M. Vishnu Vardhana Rao)

Director, ICMR-NIMS

Chair National Working Group on HIV Estimations





## MESSAGE

I must commend the National AIDS Control Organisation (NACO) and the Indian Council of Medical Research-National Institute of Medical Statistics (ICMR-NIMS) for publishing HIV estimates periodically for the past 20+ years: The most recent being under this 2019 estimations round. HIV estimates are a critical source of information on the HIV epidemic and a sound basis to be used as markers to assess the burden of the epidemic and inform programme planning, prioritization, monitoring and impact assessment.

The development of HIV estimations in India is a noteworthy collaborative, pragmatic and scientific one. It engages national experts from ICMR Regional Institutes, Medical Colleges, and State AIDS Control Societies – who are members of the National Working Group on HIV Estimations (NWG) development under the leadership of ICMR-NIMS and NACO, and under oversight of the senior national and international experts body: the Technical Resource Group on HIV Surveillance and Estimations (TRG) which includes UNAIDS, WHO and PEPFAR/CDC.

UNAIDS is very pleased to have provided technical and financial support to this critical work. The 2019 HIV estimates have been generated using the latest version of Spectrum software recommended by UNAIDS for the modelling work; with the latest nationally available demographic, epidemiological and programmatic data inputted to inform State/UT models, end ensuring scientific methodological rigour.

The 2019 HIV estimates provide latest information on the level and trend of adult HIV prevalence, number of people living with HIV, annual new HIV infections, annual AIDS-related deaths, and need for elimination of mother-to-child transmission of HIV services at the national level and across 35 States/UTs. This evidence is made available in a very timely manner as India enters a critical year in its AIDS response. 2020–21 may very likely mark the final year of the National AIDS Control Programme's current phase IV. 2020 is also a critical year vis-à-vis national targets end-line year as mentioned in the National Strategic Plan 2017–24. This information will hence be very useful to inform stock-taking and HIV programme planning purposes towards the end of AIDS as a public health threat by 2030.

Finally, I would like to reiterate UNAIDS full and continued support to the HIV estimations work led by NACO and ICMR-NIMS and to the NWG and TRG. I remain convinced that with the evidence-based prioritization at local level, the community engagement, and the innovative implementation strategies, we will together advance India towards the end of AIDS.



Dr. Bilali Camara  
Medical Epidemiologist  
UNAIDS Country Director for India





डा. शोभिनी राजन

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Biennial HIV Estimations is a key component of spectrum of Surveillance and Epidemiology activities under the National AIDS Control Programme. Being implemented since 1998, HIV Estimations 2019 is the latest in the series updating the epidemiological evidences nationally and by States/UTs. India's topmost epidemiologist, demographers, bio-statisticians, community representatives with State and national programme managers have actively contributed in the successful completion of HIV Estimations 2019. We acknowledge the contributions made by all stakeholders engaged in the process.

The Technical Resource Group (TRG) for HIV Surveillance and Estimation, first under the chairpersonship of Shri Sanjeeva Kumar (former Special Secretary & DG, NACO, MoHFW, GoI) and now under the chairpersonship of Smt. Arti Ahuja (Additional Secretary & DG, NACO, MoHFW, GoI) and co-chairpersonship of Dr. Sanjay Mehendale (Former Addl. DG, ICMR) approved the process, methods and report for HIV Estimations 2019. Shri Alok Saxena (Joint Secretary, NACO) provided his guidance for timely completion of activities. Dr. D. C. S. Reddy, Prof. Arvind Pandey, Dr. Shashi Kant, Dr. Bilali Camara, Mx. Abhina Aher, Dr. John Stover, Mr Taoufik Bakkali, Dr. Melissa Nyendak, Dr. Laishram Ladu Singh, Dr. Rajesh Kumar, Dr. D. K. Shukla and Dr. Sanjay Dixit strengthened the exercise with their expertise and provided critical technical guidance at all stages as TRG members. Programmatic context for the exercise was provided by Dr. Sunil Gupta (Addl. DG, NACO), Dr. R. S. Gupta (Former DDG, NACO), Dr. Naresh Goel (DDG, NACO), Dr. Anoop Kumar Puri (DDG, NACO), Dr. Chinmoyee Das, Dr. Bhawani Singh Kushwaha, and Dr. Saiprasad Bhavsar (DD, NACO). We place on record our sincere thanks to NACO's leadership and senior experts for providing vision, insights and support towards HIV Estimations 2019.

National Working Group (NWG), constituted by NACO, was instrumental in planning, organization, and execution of HIV Estimations 2019. Excellent leadership to the working group was provided by Dr. M. Vishnu Vardhana Rao (Director, ICMR-NIMS, New Delhi).

Dr. Pradeep Kumar (NACO) and Dr. Damodar Sahu (ICMR-NIMS), together with Ms. Nalini Chandra (UNAIDS India) and Dr. Arvind Kumar (NACO), anchored the implementation of HIV Estimations 2019. Dr. Sheela Godbole (ICMR-NARI, Pune), Dr. A. Elangovan (ICMR-NIE, Chennai), Dr. M. K. Saha (ICMR-NICED, Kolkata), Dr. Sanjay Rai (AllMS, New Delhi), Dr. P. V. M. Lakshmi (PGIMER, Chandigarh) and Dr. T. Gambhir (RIMS, Imphal) enriched NWG with their insights into the epidemic for their respective regions. Dr. Srikala Acharya (Mumbai DACS), Dr. Pramod Devraj (Maharashtra SACS), Dr. Richard C. Lalramhluna (Mizoram SACS), Dr. Rajesh Gopal, Dr. Anup R. Amin (Gujarat SACS) and Dr. M. Janakiram (Tamil Nadu SACS) provided State perspective. Ms. Deepika Srivastava Joshi (CDC-DGHT India) and Dr. Rajatashuvra Adhikary (WHO India) provided international perspectives to the process. UNAIDS India supported the publication of HIV Estimations 2019 report. We acknowledge the contribution of each of them towards successful completion of HIV Estimations 2019.

Surveillance is information for action. HIV Estimations consolidates the most recent demographic, programmatic and surveillance evidences into key epidemiological parameters. We are confident that all stakeholders will use the latest evidences presented here to fine-tune their responses to further benefit the national AIDS response in the country.

*Shobini*  
(Shobini Rajan)



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# Abbreviations

AIIMS	All India Institute of Medical Sciences
AIM	AIDS Impact Module
ANC	Antenatal Care
CI	Confidence Interval
CLHIV	Children Living with HIV
CST	Care, Support and Treatment
DAPCU	District AIDS Prevention Control Unit
EPP	Estimation and Projection Package
FSW	Female Sex Worker
HSS	HIV Sentinel Surveillance
H/TG	Hijra/Transgender
IBBS	Integrated Biological and Behavioural Surveillance
ICMR	Indian Council of Medical Research
ICTC	Integrated Counselling and Testing Centre
IDU	Injecting Drug User
IIPS	International Institute for Population Sciences
MoHFW	Ministry of Health and Family Welfare
MSM	Men Having Sex with Men
NACO	National AIDS Control Organization

NACP	National AIDS Control Programme
NARI	National AIDS Research Institute
NFHS	National Family Health Survey
NICED	National Institute of Cholera and Enteric Diseases
NIE	National Institute of Epidemiology
NIMS	National Institute of Medical Statistics
NWG	National Working Group
PGIMER	Postgraduate Institute of Medical Education and Research
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
RIMS	Regional Institute of Medical Sciences
SDG	Sustainable Development Goal
TRG	Technical Resource Group
UNAIDS	Joint United Nations Programme on HIV/AIDS
UT	Union Territory
WHO	World Health Organization



# Executive Summary

National AIDS Control Organization (NACO), Ministry of Health and Family Welfare (MoHFW), Government of India undertakes model-based biennial HIV estimations in collaboration with the Indian Council of Medical Research (ICMR) – National Institute of Medical Statistics (NIMS). The objective of this biennial exercise is to provide an update on the current status of the HIV epidemic in the country/State/Union Territory (UT)/district on key epidemiological parameters of HIV prevalence, new infections and AIDS-related mortality. HIV estimations also provide the need for the elimination of mother-to-child transmission of HIV. HIV Estimations 2019 is the report on the latest round in the series of HIV Estimations process.

HIV estimation employs the Joint United Nations Programme on HIV/AIDS (UNAIDS)-supported Spectrum tool as an ongoing activity of the National AIDS Control Programme (NACP). Spectrum version 5.80 has been used for the 2019 round of HIV Estimations. This tool is developed under the technical guidance of the UNAIDS Reference Group on Estimates, Modelling, and Projections. The use of this tool has not only standardized the method but also facilitated comparison of the State/UT or national estimates with the UNAIDS-published global, regional and country estimates.

Like all previous rounds, the State/UT models in this round are improved over previous

rounds in terms of data inputs, approach to handling the survey data as well as assumptions of various epidemiological parameters. Improvements included updating fertility rates and age distribution of fertility and updating programmatic and epidemiological data, including use of State-specific HIV prevalence data (95% confidence interval [CI]) from the latest round of National Family Health Survey (NFHS)-IV to calibrate the epidemic curve. For the first time, the HIV Estimations 2019 exercise has also used data on routine HIV testing of pregnant women under NACP to inform the epidemiological curve. Further, the ratio of female to male incidence for 15–49 years was also updated using NFHS-IV data. In view of these improvements, results from HIV Estimations 2019 cannot be compared with any of the previous rounds of estimations and will be considered as replacements for all previous estimations concerning the level and trends of the HIV epidemic as well as programmatic needs.

In 2019 at the national level, there were an estimated 23.49 lakh (17.98 lakh – 30.98 lakh) people living with HIV (PLHIV), with an adult (15–49 years) HIV prevalence of 0.22% (0.17–0.29%). Children living with HIV (CLHIV) comprised 3.4% of the total PLHIV estimates. HIV-infected women (15+ years) constituted around 44% of the total estimated 15+ years PLHIV. There were 69.22 thousand (37.03 thousand – 121.50 thousand ) new HIV

infections in 2019 which has declined by 37% since 2010 and by 86% since reaching the peak in 1997. There were 58.96 thousand (33.61 thousand – 102.16 thousand) AIDS-related deaths in 2019, which has declined by 66% since 2010 and by 78% since attaining peak mortality in 2005. HIV incidence was estimated at 0.05 per 1,000 uninfected population in 2019. Around 20.52 thousand (14.98 thousand – 28.13 thousand) pregnant women were estimated to be in need of prevention of mother-to-child transmission (PMTCT).

Mizoram was estimated to have the highest adult HIV prevalence (2.32% [1.85–2.84%]), followed by Nagaland (1.45% [1.15–1.78%]) and Manipur (1.18% [0.97–1.46%]). Other States/UTs with an estimated adult HIV prevalence that was higher than the national average included Andhra Pradesh (0.69% [0.54–0.89%]), Meghalaya (0.54% [0.46–0.63%]), Telangana (0.49% [0.35–0.66%]), Karnataka (0.47% [0.37–0.59%]), Delhi (0.41% [0.33–0.50%]), Maharashtra (0.36% [0.25–0.53%]), Puducherry (0.35% [0.20–0.58%]), Goa (0.27% [0.19–0.46%]), Punjab (0.27% [0.22–0.35%]), Dadra and Nagar Haveli (0.23% [0.14–0.37%]), and Tamil Nadu (0.23% [0.16–0.29%]).

Maharashtra had the highest estimated number of PLHIV (3.96 lakh), followed by Andhra Pradesh (3.14 lakh), Karnataka (2.69 lakh), Uttar Pradesh (1.61 lakh), Telangana (1.58 lakh), Tamil Nadu (1.55 lakh), Bihar (1.34 lakh) and Gujarat (1.04 lakh). Together, these eight States constituted 72% of the total PLHIV estimates in the country. West Bengal, Delhi, Punjab, Rajasthan, Madhya Pradesh, Odisha and Haryana contributed another 18% of the total PLHIV size.

HIV incidence per 1,000 uninfected population in 2019 was estimated to be the highest in Mizoram (1.18 per 1,000 uninfected population), followed by Nagaland (0.73) and Manipur (0.34). Other States estimated to have HIV incidence per 1,000 uninfected population above the national average of 0.05 were Meghalaya (0.23), Delhi (0.15), Tripura (0.11), Chhattisgarh (0.10), Haryana (0.09), Punjab (0.08), Telangana (0.08), Bihar (0.07) and Maharashtra (0.07). The incidence rate among high-risk groups (HRGs) was higher than the total incidence estimates.

Maharashtra was estimated to have the highest number of new HIV infections in 2019 (8.54 thousand), followed by Bihar (8.04 thousand), Uttar Pradesh (6.72 thousand), West Bengal (3.97 thousand), Gujarat (3.37 thousand) and Delhi (2.99 thousand). Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Telangana, Rajasthan, Tamil Nadu, Haryana, Punjab and Odisha were the other States with the estimated annual new HIV infections each ranging between 2,000 and 3,000 in 2019. Together, these 15 States accounted for 83% of the total new HIV infections in the country.

Nationally, the annual new HIV infections has decreased by 37% since 2010. The decline in annual new HIV infections has been noted in all States/UTs except for Tripura, Arunachal Pradesh, Chhattisgarh and Chandigarh. The highest decline has been noted in Karnataka (75%), followed by Himachal Pradesh (74%) and Andhra Pradesh (65%). Annual new HIV infections are estimated to have increased in Tripura, Arunachal Pradesh and Chhattisgarh; while they have stabilized in Mizoram and West Bengal.

AIDS mortality was estimated at 4.43 per 100,000 population in 2019 at the national level, which peaked at around 25 during 2004/05 and then continued to decline. State/UT-wise, AIDS mortality per 100,000 population was estimated to be the highest in Manipur (36.86), followed by Mizoram (28.34), Nagaland (26.20), Andhra Pradesh (21.76), Puducherry (15.33), Meghalaya (11.08) and Telangana (10.79). In addition, Karnataka (9.72), Goa (9.68), Maharashtra (7.81), Haryana (6.83), Chandigarh (5.74), Chhattisgarh (5.25) and Delhi (5.21) were the other States/UTs where AIDS mortality was estimated to be at 5 per 100,000 population or higher.

Nationally, there were an estimated 20.52 thousand (14.98 thousand – 28.13 thousand) pregnant women who would require antiretroviral treatment (ART) to prevent mother-to-child transmission of HIV. States

accounting for the highest need were Maharashtra (14.7% of the total PMTCT needs), Bihar (12.3%) and Uttar Pradesh (10.8%), Karnataka (6.8%), Andhra Pradesh (6.8%), Telangana (5%), Gujarat (4.8%), Rajasthan (4.2%), Tamil Nadu (4.1%) and West Bengal (3.3%).

The HIV Estimations 2019 report reiterates that while the country is on track in achieving the reduction in AIDS-related deaths at the national level and also in majority of the States/UTs, fast-tracking the progress to achieve targets for reduction in new HIV infections remains a priority. Further, district-level disaggregation of these estimates will provide a more granular understanding of the epidemic in these States/UTs and may further augment the process of prioritization at the sub-national level and also strengthen the AIDS response at the local level.



# 01 Background



HIV epidemic monitoring has been a vital component of strategic information activities under the NACP since its inception. This is done through a robust institutional arrangement inclusive of Technical Resource Group (TRG) on HIV Surveillance and Estimation, national and regional institutes, State AIDS Control Societies, and a network of laboratories for testing and re-testing of blood specimen (see Figure 1). Under this institutional arrangement, ICMR-NIMS is the nodal institute for HIV Estimations.

Model-based HIV estimation is undertaken biennially under the NACP as one of the fundamental epidemic monitoring activities. The objective of this biennial exercise is to provide an update on the current status of the HIV epidemic in the country/State/UT/district on key epidemiological parameters such as HIV prevalence, new infections and AIDS-related mortality. Estimations on the need for measures to eliminate mother-to-child transmission of HIV are also provided.

Modelled HIV estimations are critically needed in a country like India as it is not possible to enumerate PLHIV by performing a census-based testing of each individual for HIV regularly. Similarly, it is not possible

to count the number of AIDS-related deaths because it will require investigations into the cause of all reported deaths. Model-based estimates with uncertainty bounds provide scientifically appropriate and programmatically acceptable information on levels and trends of the HIV epidemic, which can inform decisions related to resource allocation and planning, and an insight on the impact of the AIDS response. The first HIV estimation exercise in India was conducted in 1998, while the latest round was completed in 2017.

HIV Estimation 2019 under the NACP was done using the UNAIDS-supported Spectrum tool version 5.80. This tool is developed under the technical guidance of the UNAIDS Reference Group on Estimates, Modelling and Projections<sup>1</sup>. Its use has not only standardized the method but also made possible the comparison of the State/UT or national estimates with the UNAIDS-published global, regional and country estimates.

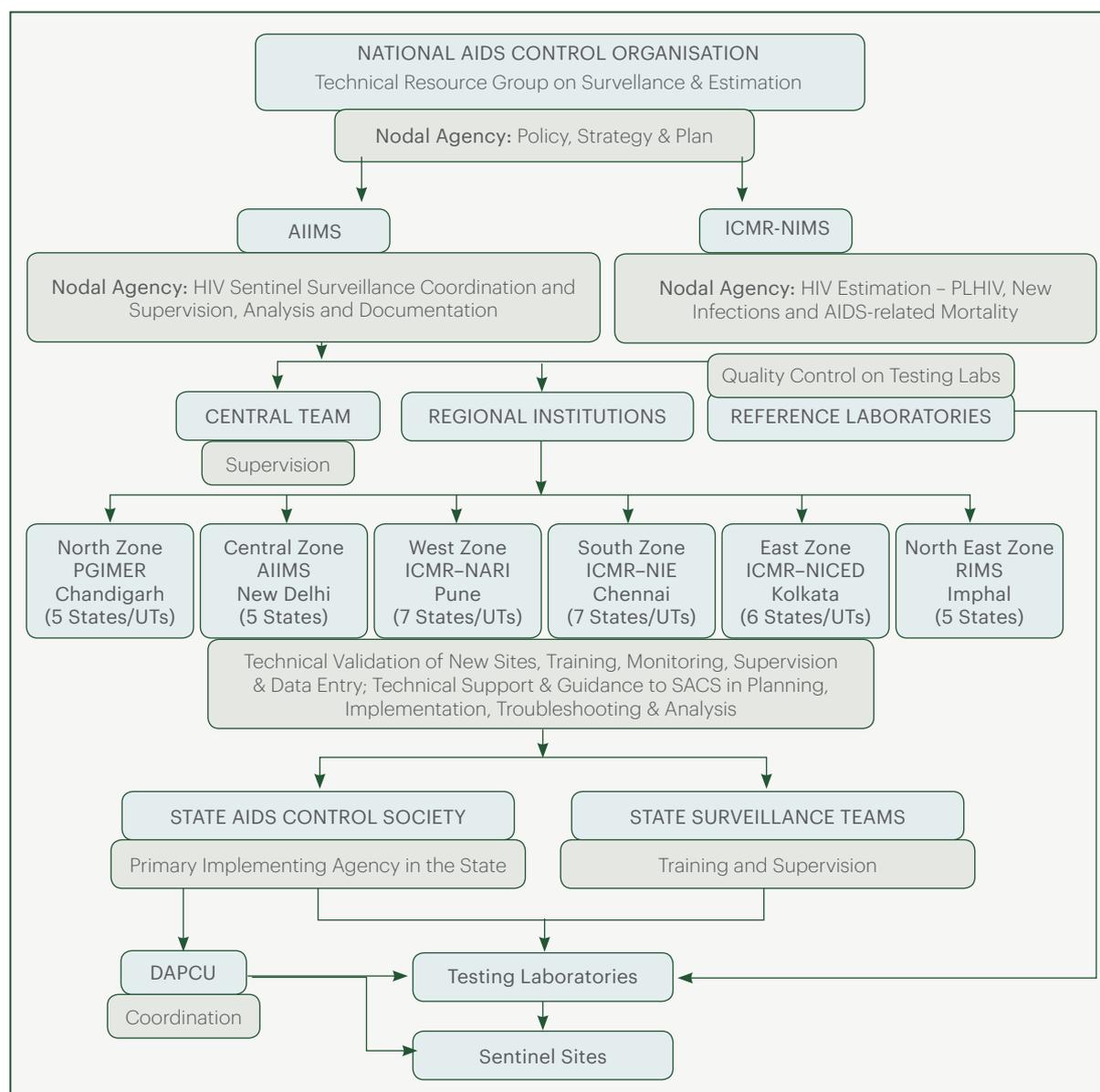
It is important to note that results from HIV Estimations 2019 cannot be compared with the previous rounds. As a part of the process, State/UT-wise models are prepared for every

<sup>1</sup> <http://www.epidem.org/>

round of estimations using the latest version of the Spectrum tool. The State/UT models may differ from one round to the next for two reasons. First, improvements are incorporated into the UNAIDS-supported Spectrum model itself based on the latest available evidence and understanding of the epidemic as well as of the impact of the programmatic interventions. Second, new demographics, surveillance, survey and programme data are incorporated into each of the State/UT models. Such improvements

can change the trends of HIV prevalence and incidence over time. Because of these augmentations to the model and addition of new data to create the estimates for each round, the results from previous rounds of estimates cannot be compared to the results of the current round, and only findings from the current round of estimates shall be used for all references. This is as per the UNAIDS recommendations regarding the comparison of the latest estimates with previously published estimates<sup>2</sup>.

Figure 1: Institutional Framework for HIV Surveillance and Estimation under NACP



<sup>2</sup> Joint United Nations Programme on HIV/AIDS (UNAIDS). Methods for deriving UNAIDS estimates. Geneva: UNAIDS; 2016

# 02 Process



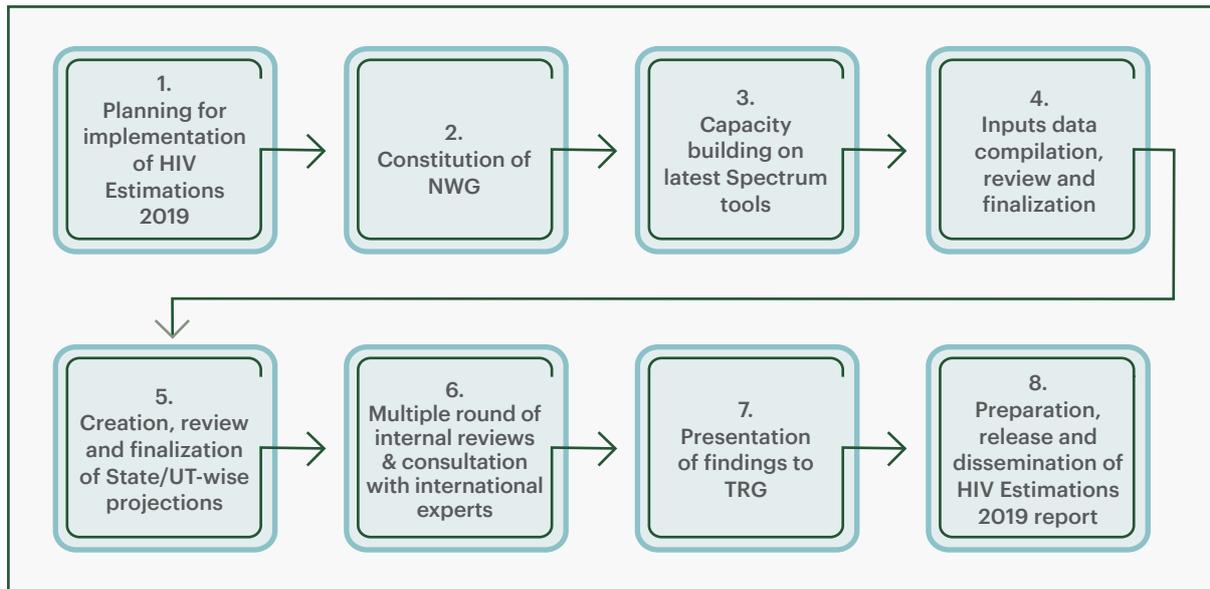
The process of HIV Estimations 2019 was initiated vide NACO's office order no. T-11020/08/2019-NACO (Surveillance) dated 21.08.2019. It identified the National Working Group (NWG) and defined the conceptual framework and activity timeline matrix with the objective of providing the latest epidemiological estimates at the national, State and district levels (see Figure 2). It was decided that the district-level estimations will be done after publications of State/UT-results for HIV Estimations 2019.

The NWG for HIV Estimation 2019 is chaired by the Director, ICMR-NIMS, New Delhi and co-chaired by the Assistant Director General – Strategic Information, NACO. It has members with expertise in demography, epidemiology, statistics, etc. coming from national and regional institutes for HIV Surveillance and Estimation, UNAIDS, World Health Organization (WHO), Center for Disease Control, independent technical experts and from NACO. An expert from the International Institute for Population

Sciences (IIPS), the nodal organization for implementing the NFHS, is also represented in the NWG. The composition and terms of reference (ToR) of the NWG are placed at annexure 1.

As a part of the process, NACO organized a four-day capacity building-cum-expert consultation workshop on HIV Estimations 2019 for national, regional, and State/UT stakeholders on 27–30 August 2019 with support from UNAIDS. Jointly, ICMR-NIMS and NACO convened three meetings of NWG during which the data inputs, adopted approaches and model results were reviewed and validated. After the recommendations from the NWG, the methods and results for HIV Estimations 2019 were presented to the TRG on HIV Surveillance and Estimations for their review and recommendations. In continuation, this technical report presents the method and results from HIV Estimations 2019.

Figure 2: Process of HIV Estimations 2019



# 03

# Method and Data Inputs



## 3.1 Overview

HIV Estimations 2019 used the UNAIDS-supported Spectrum version 5.8, which was the latest version available during the implementation period. The final State/UT model from HIV Estimations 2017 was used as the starting point to develop the State/UT models for HIV Estimations 2019.

Spectrum is a suite of models available as analytical tools for policymakers for informed decision-making. Two of its modules, namely the DemProj module and the AIDS Impact Module (AIM), are used for HIV Estimations.<sup>3</sup>

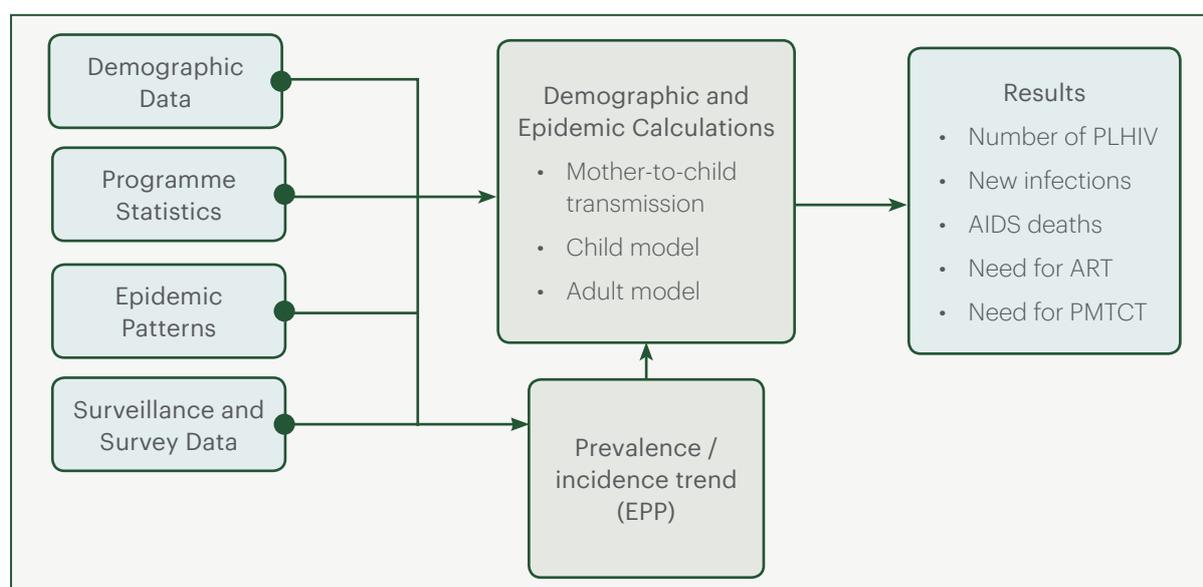
DemProj projects the demographics by age and sex for the given locality using inputs on birth rates (fertility), death rates (mortality), and migration. Demographics inputs include population size, level, and trends of fertility and mortality, sex ratio at birth and net migration. Demographics data are entered by age and sex to inform the projections. The population projection is set from 1981 to 2026. The first case of AIDS was detected

in India in 1986 and accordingly, 1981 has been chosen as the base year under the assumption that the epidemic must have started earlier. State-specific age and sex population projections have been made and subsequently used as input in the model after cross-matching them with Census results for 1991, 2001, and 2011 to ensure consistency.

AIM accounts for the programme statistics, population sub-groups among 15–49 years with their size, HIV prevalence and sex-age pattern of HIV incidence. It factors in all the epidemiological programme-related inputs such as setting up of the CD4-based eligibility for treatment, coverage of PMTCT and ART programme. Then the size and HIV prevalence among various population groups including antenatal clinic attendees and population groups at high risk of HIV infection, such as female sex workers (FSW), men having sex with men (MSM), hijra/transgender (H/TG) people and injecting drug users (IDUs) are inputted in the module. The next step in AIM is curve fitting. HIV estimations in India has done the fitting of

<sup>3</sup> Stover J, Brown T, Marston M. Updates to the Spectrum/Estimation and Projection Package (EPP) model to estimate HIV trends for adults and children. *Sex Transm Infect.* 2012 Dec 1;88(Suppl 2): i11-6

Figure 3: HIV Estimations Conceptual Framework



the epidemic in the past using ‘Estimation and Projection Package (EPP)-Classic’ model, which has also been used during HIV Estimations 2019. After generating the epidemic curves, the sex-age pattern for incidence is inputted and results are then produced in the AIM. Plausible values of range for each output indicator are then generated through uncertainty analysis tool of AIM by defining the standard deviation for the given indicator. Figure 3 depicts the conceptual framework for HIV estimations using the Spectrum tool.

## 3.2 Spectrum Version 5.8

The Spectrum tool continues to improve under the technical guidance of the UNAIDS Reference Group on Estimates, Modelling and Projections. The latest updates to the Spectrum/AIM model have been described elsewhere.<sup>4,5</sup> The update has been made

for the assumptions regarding mother-to-child transmission rates based on the additional evidence available for peripartum and postpartum transmission; however, differences between 5.63 version and 5.80 version were in the decimal-point range (Table 1).

## 3.3 Key Methodological/ Data Updates in the State/Union Territory Model

### A. Demographics:

- a. Total fertility rate and age distribution of fertility were updated using the latest evidence from the Sample Registration Survey and National Family Health Surveys.

<sup>4</sup> Stover J, Glaubius R, Mofenson L, Dugdale CM, Davies MA, Patten G, Yiannoutsos C. Updates to the Spectrum/AIM model for estimating key HIV indicators at national and subnational levels.

<sup>5</sup> Case KK, Johnson LF, Mahy M, Marsh K, Supervie V, Eaton JW. Summarizing the results and methods of the 2019 Joint United Nations Programme on HIV/AIDS HIV estimates.

**Table 1:** Peripartum and Breastfeeding Transmission Rates by Antiretroviral Regimen

Regimen	Spectrum v5.8			Spectrum v5.63		
	Perinatal	Breastfeeding (per month)		Perinatal	Breastfeeding (per month)	
		< 350	≥ 350		< 350	≥ 350
<b>No prophylaxis</b>						
Existing infections						
CD4 < 200	37	0.89		37	0.81	
CD4 200-350	27	0.81		27	0.81	
CD4 > 350	15		0.51	15		0.51
Incident infections	18.1	26.9	26.9	18.2	26.9	26.9
<b>Regimen options</b>						
Single dose nevirapine	7.5	0.99	0.4	8.9	0.78	0.51
WHO 2006 dual ARV regimen	2.2	0.18	0.18	4.1	0.78	0.51
Option A	4.1		0.2	4.1		0.2
Option B	1.9		0.13	1.9		0.13
ART						
Started before pregnancy	0.26	0.023		0.21	0.013	
Started during pregnancy > 4 weeks	1.4	0.11		1.9	0.13	
Started during pregnancy < 4 weeks	8.2	0.2		7.6	0.2	

**B. Programme Statistics:**

- The programme data on PMTCT and ART (adult and paediatric) coverage was updated for the years 2017, 2018, and 2019.
- To project the coverage for the period 2020–2026, the most recent trend in coverage scale-up (the last 1–2 years), as observed in the programme, was used.
- For Chandigarh and Delhi, data on PLHIV on ART was disaggregated by State of residence and then adjusted accordingly.
- The size of adult and child PLHIV on ART was reconciled using

data on the date of birth of PLHIV on ART using Integrated Management System data.

**C. Epidemic Configuration:**

- In select States with no HRG population in the epidemic configuration in 2017 round of estimation because of limited trend prevalence data points, HRG sub-population was added in the epidemic configuration. A ratio of antenatal care (ANC) prevalence point vis-à-vis HRG prevalence in the corresponding year for the State was created using local evidence. The ratio

was applied to the time series of ANC surveillance data to generate the HRG prevalence time series data points.

#### **D. Surveillance Data:**

- a. Surveillance data points from the 2019 round of ANC HIV Sentinel Surveillance (HSS) were used to update the general population data points.
- b. For HRG, the last improvements for the year 2017 were used in the absence of any new surveillance data for the group
- c. Routine-testing data from stand-alone integrated counselling and testing centre (ICTC) of pregnant women was inputted for the period 2010–2018 as additional data points to inform general population curves.
- d. For States with two rounds of National Family Health Survey on HIV prevalence (Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu, Telangana, Uttar Pradesh, Manipur and Nagaland [for Nagaland, findings from a special study from 2006 was also referred as per previous estimations rounds]), the NFHS data points were inputted for the general population.

#### **E. Epidemic Curves Fitting and Calibration:**

- a. For HRG population, epidemic curve fitting was done using HRG HSS data.
- b. For general population, ANC surveillance data and routine stand-alone ICTC data were used to inform the curve fitting for all States.
- c. In States with two HIV prevalence data points from the community-based survey, the same was used in curve fitting.
- d. HIV prevalence for HRG population was calibrated using HIV prevalence from Integrated Biological and Behavioural Surveillance (IBBS).
- e. HIV prevalence for the general population was calibrated using HIV prevalence (95% CI) from NFHS-IV.

#### **F. Sex Ratio:**

- a. The ratio of female to male incidences for 15–49 years age group was updated using NFHS-IV data.

# 04 Results



The results from HIV Estimations 2019 on level and trends of prevalence, incidence, AIDS-related deaths, and PMTCT needs have been provided in this report. It is important to reiterate that these results, generated using the most updated Spectrum tool and having the most recent data inputs, replace the results from previous rounds of estimates. For all comparisons, the time trend data, as provided through HIV Estimations 2019, shall only be used until the data from the next round of estimation is made available. This is in accordance with the recommendations of the UNAIDS, Geneva, stating that results from previous years cannot be compared with the results from this year.<sup>6</sup>

The report provides the national as well as State/UT-wise estimates. For a visual comparison, trends on epidemiological estimates have been presented for six specific regions depicting each State/UT in the region. The grouping has been kept

the same as that used in the National Family Health Survey for consistency.<sup>7</sup> These groups are:

- (i) **North:** Chandigarh (CH), Delhi (DL), Haryana (HR), Himachal Pradesh (HP), Jammu & Kashmir (JK),<sup>8</sup> Punjab (PJ), Rajasthan (RJ) and Uttarakhand (UK)
- (ii) **Central:** Chhattisgarh (CG), Madhya Pradesh (MP) and Uttar Pradesh (UP)
- (iii) **East:** Bihar (BH), Jharkhand (JH), Odisha (OD), West Bengal (WB)
- (iv) **Northeast:** Arunachal Pradesh (AR), Assam (AS), Manipur (MN), Meghalaya (MG), Mizoram (MZ), Nagaland (NG), Sikkim (SK) and Tripura (TR)
- (v) **West:** Dadra & Nagar Haveli (DNH), Daman & Diu (DD), Goa (GO), Gujarat (GJ), Maharashtra (MH)

<sup>6</sup> UNAIDS HIV data and estimates. UNAIDS Geneva. Available at [https://www.unaids.org/en/dataanalysis/knowyourresponse/HIVdata\\_estimates](https://www.unaids.org/en/dataanalysis/knowyourresponse/HIVdata_estimates) and accessed on 26.02.2020

<sup>7</sup> <http://rchiips.org/NFHS/NFHS-4Reports/India.pdf>

<sup>8</sup> Refer to former State of Jammu & Kashmir including Ladakh before its reorganization under Jammu and Kashmir Reorganization Act, 2019

- (vi) **South:** Andaman & Nicobar Islands (AN), Andhra Pradesh (AP), Karnataka (KA), Kerala (KE), Puducherry (PO), Tamil Nadu (TN) and Telangana (TL)

## 4.1 Overview

Nationally, there were an estimated 23.49 lakh (17.98 lakh – 30.98 lakh) PLHIV in 2019, with an adult (15–49 years) HIV prevalence of 0.22% (0.17–0.29%). This includes around 79 thousand CLHIV accounting for 3.4% of the total PLHIV estimates. There were 9.94 lakh women living with HIV (15+ years) constituting around 44% of the total estimated 15+ years PLHIV. There were 69.22 thousand (37.03 thousand – 121.50 thousand) new HIV infections in 2019, which has declined by 37% since 2010 and by 86% since attaining the peak in 1997. There were 58.96 thousand (33.61 thousand – 102.16 thousand) AIDS-related deaths in the year

2019, which has declined by 66% since 2010 and by 78% since attaining its peak in 2005. HIV incidence was estimated at 0.05 per 1,000 uninfected population in 2019. Around 20.52 thousand (14.98 thousand – 28.13 thousand) pregnant women were estimated to be in need of PMTCT (see Table 2).

## 4.2 Adult (15–49 years) HIV Prevalence

Overall, the estimated adult (15–49 years) HIV prevalence trend has been declining in India since the epidemic's peak in the year 2000 and has been stabilizing in recent years. The estimate for this indicator was 0.22% (0.17–0.29%) in 2019 (see Figure 4). In the same year, HIV prevalence among adult males (15–49 years) was estimated at 0.24% (0.18–0.32%) and among adult females at 0.20% (0.15–0.26%).

Figure 4: Trend of Adult HIV Prevalence in India, 1981–2019 (in %)

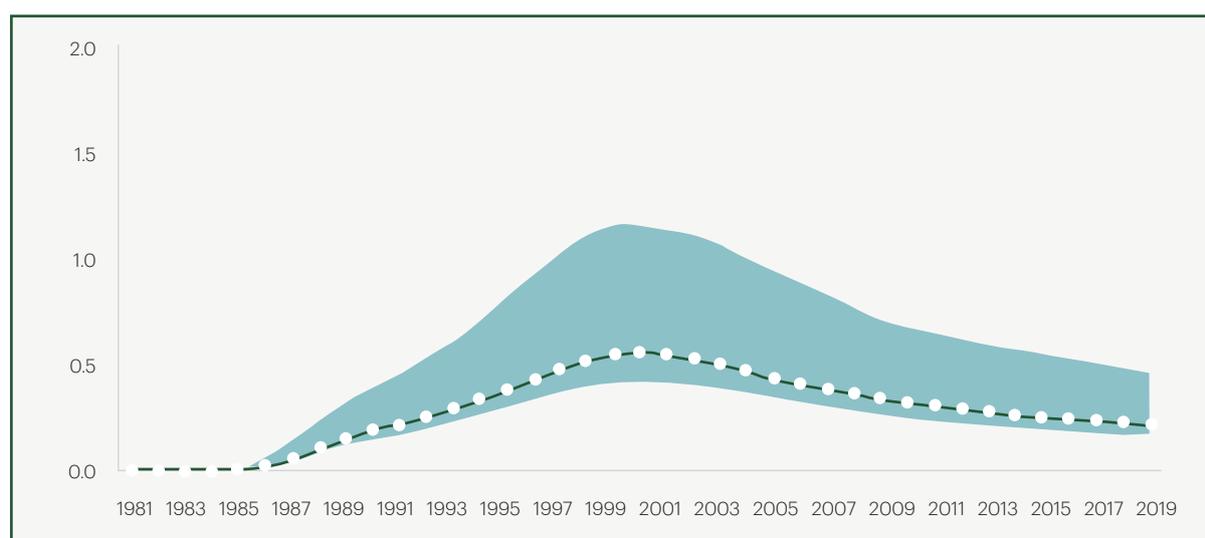


Table 2: Status of the HIV/AIDS Epidemic in 2019

<b>Adult (15–49 years) HIV prevalence (%)</b>	<b>Total</b>	<b>0.22 [0.17–0.29]</b>
	Male	0.24 [0.18–0.32]
	Female	0.20 [0.15–0.26]
<b>Number of people living with HIV (lakh*)</b>	<b>Total</b>	<b>23.49 [17.98–30.98]</b>
	Adults (15+ years)	22.70 [17.37–29.97]
	Female(15+ years)	9.94 [7.61–13.00]
	Children (<15 years)	0.79 [0.58–1.05]
<b>HIV incidence per 1,000 uninfected population</b>	<b>Total</b>	<b>0.05 [0.03–0.09]</b>
	Male	0.06 [0.03–0.10]
	Female	0.05 [0.02–0.08]
<b>New HIV infections (thousand)</b>	<b>Total</b>	<b>69.22 [37.03–121.50]</b>
	Adults (15+ years)	65.24 [34.45–115.51]
	Female (15+ years)	27.58 [14.45–49.53]
	Children (<15 years)	3.98 [2.49–6.11]
<b>Decline in new HIV infections since 2010 (%)</b>	<b>Total</b>	<b>37.4</b>
	Adults (15+ years)	33.9
	Female (15+ years)	32.3
	Children (<15 years)	66.1
<b>AIDS-related deaths (thousand)</b>	<b>Total</b>	<b>58.96 [33.61–102.16]</b>
	Adults (15+ years)	55.40 [31.55–96.58]
	Female (15+ years)	16.76 [8.46–31.73]
	Children (<15 years)	3.57 [1.94–5.74]
<b>Decline in AIDS-related deaths since 2010 (%)</b>	<b>Total</b>	<b>66.1</b>
	Adults (15+ years)	66.1
	Female (15+ years)	73.7
	Children (<15 years)	65.3
<b>PMTCT needs (thousand)</b>	<b>Total</b>	<b>20.52 [14.98–28.13]</b>

\* Lakh = 100,000

At the sub-national level, three States with the highest adult HIV prevalence were from the north-eastern part of the country, namely Mizoram (2.32% [1.85–2.84%]), Nagaland (1.45% [1.15–1.78%]), and Manipur (1.18% [0.97–1.46%]) (see Figure 5). Other States/UTs estimated to have adult HIV prevalence higher than the national average were Andhra Pradesh (0.69% [0.54–0.89%]), Meghalaya (0.54% [0.46–0.63%]), Telangana (0.49% [0.35–0.66%]), Karnataka (0.47% [0.37–0.59%]), Delhi (0.41% [0.33–0.50%]), Maharashtra (0.36% [0.25–0.53%]), Puducherry (0.35% [0.20–0.58%]), Goa (0.27% [0.19–0.46%]), Punjab (0.27% [0.22–0.35%]), Dadra and Nagar Haveli (0.23% [0.14–0.37%]), and Tamil Nadu (0.23% [0.16–0.29%]).

A decline in HIV prevalence, similar to the national trend, has been noted in the southern States of Andhra Pradesh, Karnataka, Tamil Nadu and Telangana, the western States of Maharashtra, Goa and Gujarat, the northern States of Punjab and Haryana, and the north-eastern State of Manipur (Figure 6). In the rest of the States/UTs, HIV prevalence appeared to range from

being stable to rising. Particularly, adult prevalence has been rising in Mizoram and was stable in Nagaland at a very high level. The rising HIV prevalence was noted in the rest of the north-eastern States.

### 4.3 Number of People Living with HIV

Nationally, there were an estimated 23.49 lakh (17.98 lakh – 30.98 lakh) PLHIV in 2019. Maharashtra was estimated to have the highest number of PLHIV (3.96 lakh), followed by Andhra Pradesh (3.14 lakh), Karnataka (2.69 lakh), Uttar Pradesh (1.61 lakh), Telangana (1.58 lakh), Tamil Nadu (1.55 lakh), Bihar (1.34 lakh) and Gujarat (1.04 lakh) (see Figure 7). Together, these eight States constituted 72% of the total PLHIV estimates in the country. The States of West Bengal, Delhi, Punjab, Rajasthan, Madhya Pradesh, Odisha and Haryana contributed another 18% of the total PLHIV size. Overall, 90% of PLHIV estimates were from these 15 States (see Figure 8).

Figure 5: Estimates of Adult HIV Prevalence by State/UT, 2019 (in %)



Figure 6: Trend of Adult HIV Prevalence in States/UTs, 1981–2019 (in %)

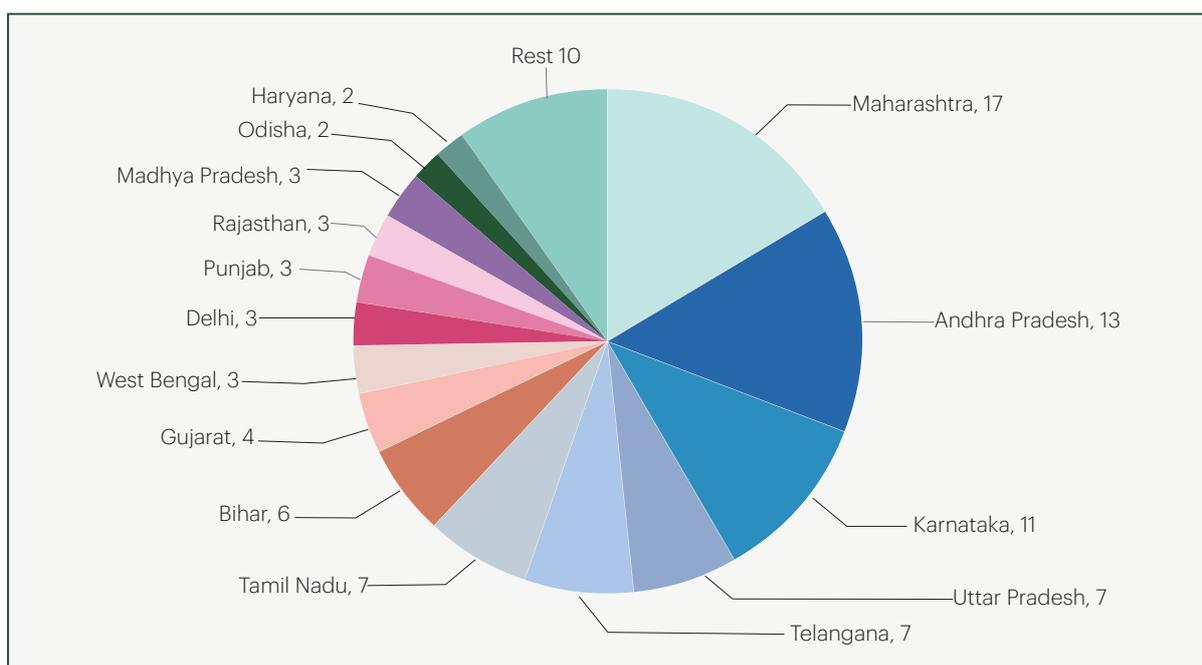


AN - Andaman and Nicobar Islands, AP - Andhra Pradesh, AR - Arunachal Pradesh, AS - Assam, BH - Bihar, CG - Chhattisgarh, CH - Chandigarh, DD - Daman and Diu, DL - Delhi, DNH - Dadra and Nagar Haveli, GJ - Gujarat, GO - Goa, HP - Himachal Pradesh, HR - Haryana, JH - Jharkhand, JK - Jammu and Kashmir, KA - Karnataka, KE - Kerala, MG - Meghalaya, MH - Maharashtra, MN - Manipur, MP - Madhya Pradesh, MZ - Mizoram, NG - Nagaland, OD - Odisha, PJ - Punjab, PO - Pondicherry, RJ - Rajasthan, SK - Sikkim, TL - Telangana, TN - Tamil Nadu, TR - Tripura, UK - Uttarakhand, UP - Uttar Pradesh, WB - West Bengal

Figure 7: Estimates of PLHIV by State/UT, 2019 (in lakh)



Figure 8: Distribution of PLHIV by State/UT, 2019 (in %)



## 4.4 HIV Incidence

Nationally, HIV incidence was estimated at 0.05 per 1,000 uninfected population in 2019. It has declined from 0.54 in 1995 to 0.05 in 2019 (see Figure 9). State/UT-wise, incidence per 1,000 uninfected population was estimated to be the highest in the three north-eastern States of Mizoram (1.18 per 1,000 uninfected population), Nagaland (0.73) and Manipur (0.34) in 2019 (see Figure 10). Other States

estimated to have HIV incidence per 1,000 uninfected population above the national average of 0.05 were Meghalaya (0.23), Delhi (0.15), Tripura (0.11), Chhattisgarh (0.10), Haryana (0.09), Punjab (0.08), Telangana (0.08), Bihar (0.07) and Maharashtra (0.07).

Similar to the national trend, HIV incidence has declined in most of the States/UTs during the period (Figure 11). HIV incidence has been estimated to be increasing in the State of Tripura.

Figure 9: Trend of HIV Incidence in India, 1990–2019 (per 1,000 uninfected population)

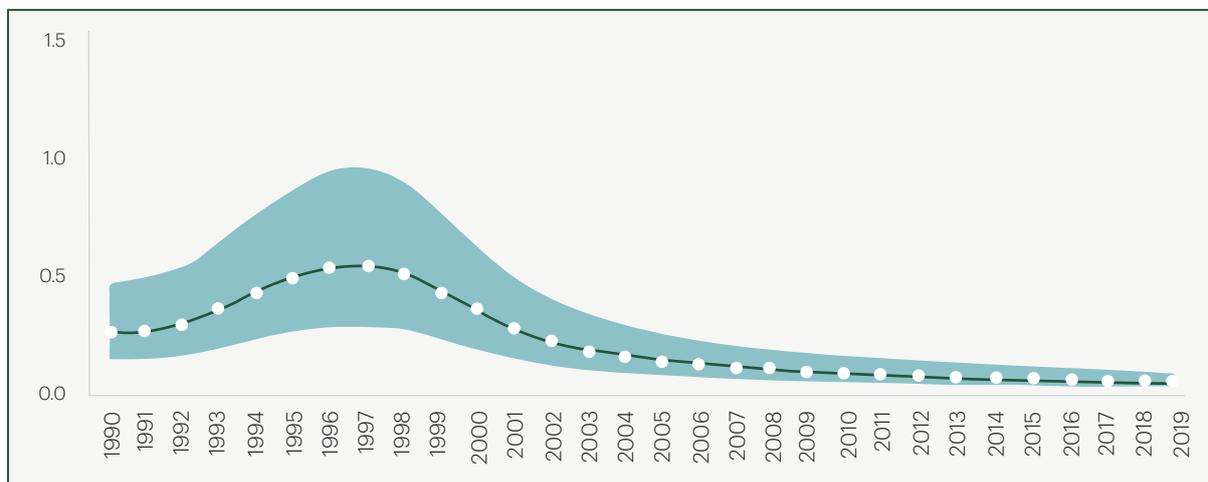
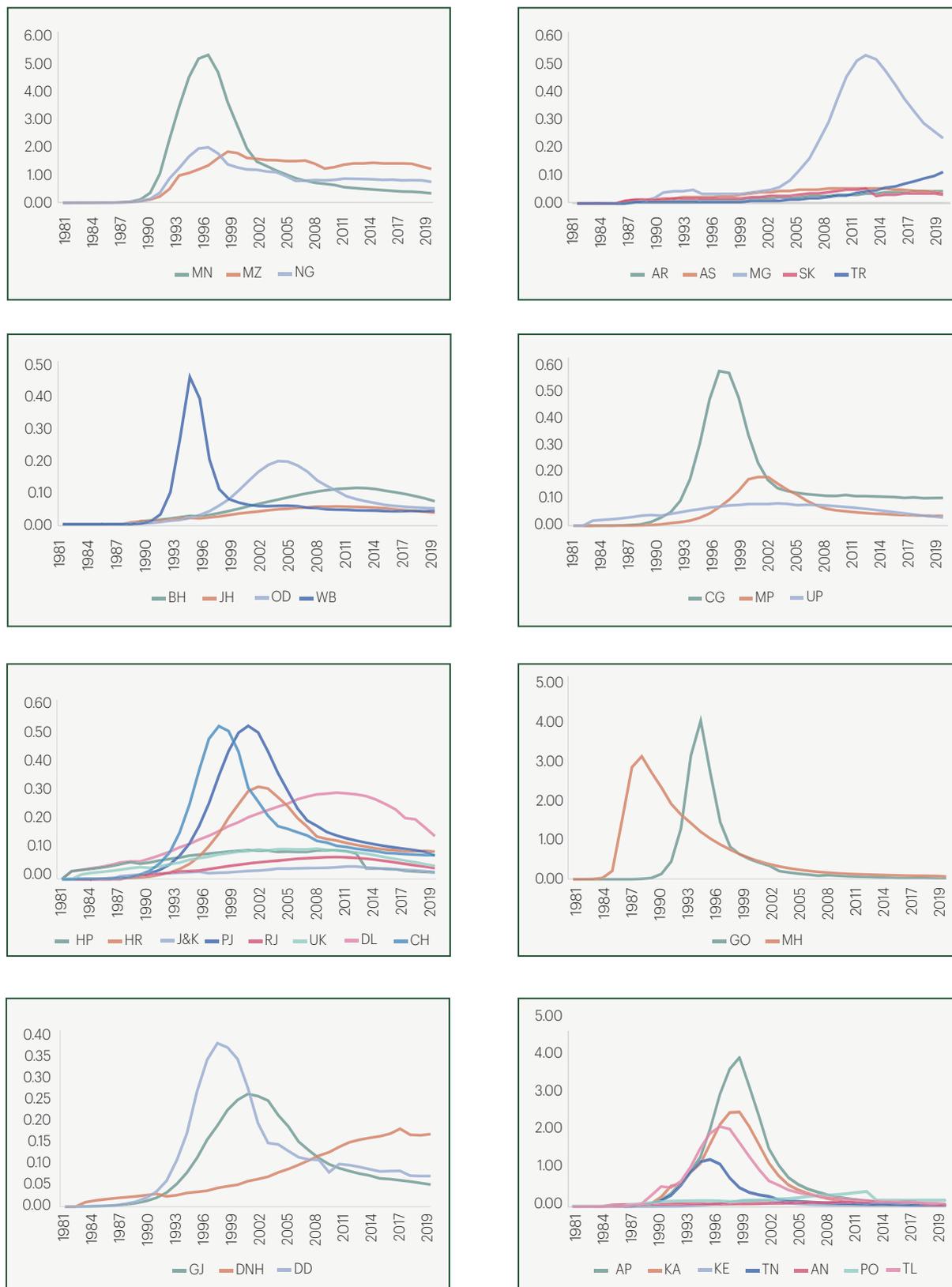


Figure 10: HIV Incidence by State/UT, 2019 (per 1,000 uninfected population)



Figure 11: Trend of HIV Incidence in States/UTs, 1981–2019 (per 1,000 uninfected population)



AN - Andaman and Nicobar Islands, AP - Andhra Pradesh, AR - Arunachal Pradesh, AS - Assam, BH - Bihar, CG - Chhattisgarh, CH - Chandigarh, DD - Daman and Diu, DL - Delhi, DNH - Dadra and Nagar Haveli, GJ - Gujarat, GO - Goa, HP - Himachal Pradesh, HR - Haryana, JH - Jharkhand, JK - Jammu and Kashmir, KA - Karnataka, KE - Kerala, MG - Meghalaya, MH - Maharashtra, MN - Manipur, MP - Madhya Pradesh, MZ - Mizoram, NG - Nagaland, OD - Odisha, PJ - Punjab, PO - Pondicherry, RJ - Rajasthan, SK - Sikkim, TL - Telangana, TN - Tamil Nadu, TR - Tripura, UK - Uttarakhand, UP - Uttar Pradesh, WB - West Bengal

The incidence rate among HRGs was higher than the total incidence estimates. In Tamil Nadu, HIV incidence among H/TG people was 0.18%, almost 18 times higher than the non-high risk population group. Among FSW, incidence (percentage) was as high as 2.12% in Meghalaya followed by 1.14% in Mizoram and Nagaland, 0.81% in Haryana, 0.67% in Maharashtra, 0.66% in Telangana and 0.63% in Karnataka. Among MSM, incidence (percentage) was estimated at 0.89% in Manipur, 0.88% in Bihar, 0.65% in Rajasthan, 0.55% in West Bengal and 0.51% in Himachal Pradesh. Among IDUs, incidence (percentage) was estimated at 16.4% in Uttar Pradesh, followed by 9.74% in Bihar, 3.71% in Maharashtra, 3.61% in Delhi, 3.51% in Haryana, 3.04% in Jharkhand, 2.40% in Madhya Pradesh, 2.80% in Mizoram, 1.69% in Odisha, 1.30% in Punjab, 0.92% in Tamil Nadu, 0.86% in Tripura and 1.64% in West Bengal.

## 4.5 Annual New HIV Infections

Nationally, there were 69.22 thousand (37.03 thousand – 121.50 thousand) estimated new HIV infections in 2019. This translates into 190 new infections every day and eight new infections every hour.

State/UT-wise, Maharashtra was estimated to have the highest number of new HIV infections in 2019 (8.54 thousand), followed by Bihar (8.04 thousand), Uttar Pradesh (6.72 thousand), West Bengal (3.97 thousand), Gujarat (3.37 thousand) and Delhi (2.99 thousand). In addition, Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Telangana, Rajasthan, Tamil Nadu, Haryana, Punjab and Odisha were the other States with estimated annual new HIV infections ranging between 2,000 and 3,000 in 2019 (see Figure 13).

Figure 12: HIV Incidence among HRG in Select States (per 1,000 uninfected population)



Together, these 15 States accounted for 83% of the total new HIV infections in the country.

Nationally, annual new HIV infections have decreased by 37% since 2010. The decline in annual new HIV infections has been noted in

all States/UTs except for Tripura, Arunachal Pradesh, Chhattisgarh and Chandigarh (see Figure 14). Among States/UTs, the highest decline has been noted in Karnataka (75%), followed by Himachal Pradesh (74%) and Andhra Pradesh (65%).

Figure 13: Annual New HIV Infections by State/UT, 2019 (in thousand)



Figure 14: Percentage Change in Annual New HIV Infections by State/UT, 2010–2019



## 4.6 AIDS-related Mortality

Nationally, AIDS-related mortality was estimated at 4.43 per 100,000 population in 2019, which peaked at around 25 during 2004/05 and then continued to decline (see Figure 15). State/UT-wise, AIDS-related mortality per 100,000 population was estimated to be the highest in Manipur (36.86), followed by Mizoram (28.34), Nagaland (26.20), Andhra Pradesh (21.76), Puducherry (15.33), Meghalaya (11.08) and Telangana (10.79). The other States/UTs where AIDS-related mortality was estimated to be at 5 per 100,000 population or higher were Karnataka (9.72), Goa (9.68), Maharashtra (7.81), Haryana (6.83), Chandigarh (5.74), Chhattisgarh (5.25) and Delhi (5.21) (see Figures 16 and 17).

## 4.7 Annual AIDS-related Deaths

Nationally, 58.96 thousand (33.61 thousand – 102.16 thousand) AIDS-related deaths were estimated in the year 2019. State/

UT-wise, Andhra Pradesh was estimated to have the highest number of AIDS deaths in 2019 (11.43 thousand), followed by Maharashtra (9.69 thousand), Karnataka (6.39 thousand), Telangana (4.08 thousand), Uttar Pradesh (3.87 thousand) and Tamil Nadu (3.01 thousand). In addition, Bihar, Haryana, Madhya Pradesh, Odisha, Gujarat, Chhattisgarh, Punjab, West Bengal, Delhi and Manipur were the other States with an estimated AIDS deaths ranging between 1,000 and 2,400 in 2019 (see Figure 18).

State/UT-wise, annual AIDS-related deaths were estimated to have declined from 2010 to 2019 in nearly all States/UTs excluding Meghalaya, Arunachal Pradesh, Tripura, Jammu and Kashmir, Jharkhand and Assam (see Figure 19). In Sikkim and Bihar, the trend for this indicator was almost stable, while in Delhi the decline was marginal (5%). On the other hand, AIDS-related deaths have declined by 70–80% in Karnataka, Telangana, Tamil Nadu, Maharashtra, Himachal Pradesh, West Bengal and Andhra Pradesh. The other States where AIDS-related deaths have declined by more than 50% since 2010 were Punjab, Goa, Chhattisgarh, Kerala, Madhya Pradesh, Manipur, Gujarat and Mizoram.

Figure 15: Trend of AIDS Mortality in India, 1990–2019 (per 100,000 population)

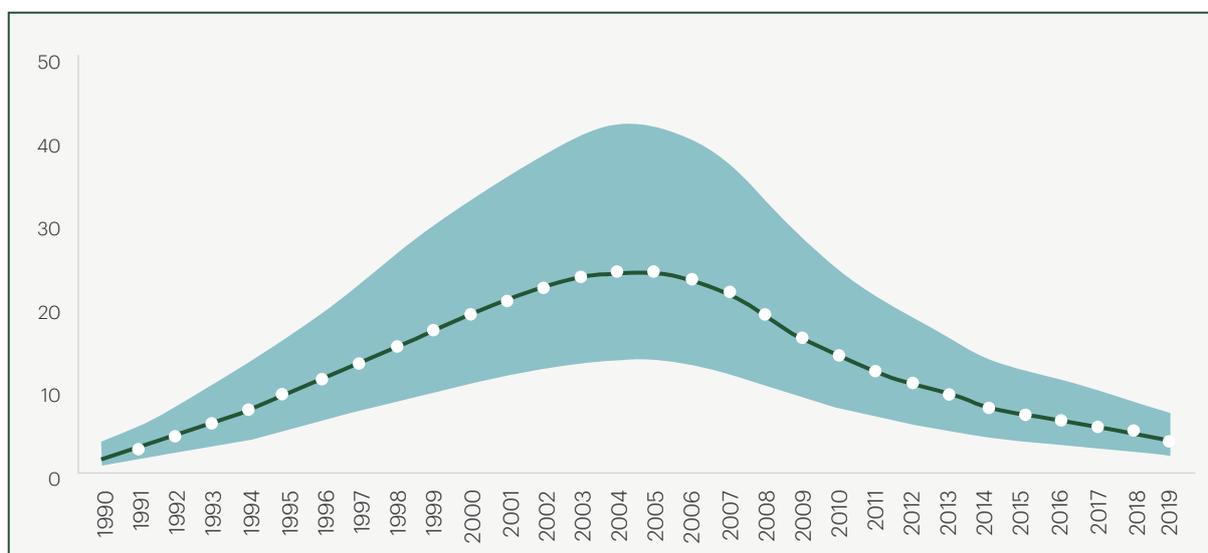


Figure 16: Trend of AIDS Mortality in India, 1990–2019 (per 100,000 population)



AN - Andaman and Nicobar Islands, AP - Andhra Pradesh, AR - Arunachal Pradesh, AS - Assam, BH - Bihar, CG - Chhattisgarh, CH - Chandigarh, DD - Daman and Diu, DL - Delhi, DNH - Dadra and Nagar Haveli, GJ - Gujarat, GO - Goa, HP - Himachal Pradesh, HR - Haryana, JH - Jharkhand, JK - Jammu and Kashmir, KA - Karnataka, KE - Kerala, MG - Meghalaya, MH - Maharashtra, MN - Manipur, MP - Madhya Pradesh, MZ - Mizoram, NG - Nagaland, OD - Odisha, PJ - Punjab, PO - Pondicherry, RJ - Rajasthan, SK - Sikkim, TL - Telangana, TN - Tamil Nadu, TR - Tripura, UK - Uttarakhand, UP - Uttar Pradesh, WB - West Bengal

Figure 17: AIDS Mortality by State/UT, 2019 (per 100,000 population)



Figure 18: AIDS Deaths by State/UT, 2019 (in thousand)



Figure 19: Percentage Change in Annual AIDS-related Deaths by State/UT, 2010–2019



## 4.8 Pregnant Women in Need of Prevention of Mother-to-Child Transmission Services

Nationally, there were an estimated 20.52 thousand (14.98 thousand – 28.13 thousand) pregnant women who would require ART to prevent mother-to-child transmission of HIV. States accounting for the highest need were Maharashtra (14.66% of the total PMTCT needs), Bihar (12.31%) and Uttar Pradesh

(10.78%), Karnataka (6.79%), Andhra Pradesh (6.76%), Telangana (5.02%), Gujarat (4.80%), Rajasthan (4.21%), Tamil Nadu (4.12%) and West Bengal (3.31%). States accounting for 2–3% of the total PMTCT needs each are Madhya Pradesh, Chhattisgarh, Delhi, Odisha, Punjab and Haryana. The States of Nagaland, Manipur, Jharkhand, Assam, Meghalaya and Mizoram account for 1–2% of the total PMTCT needs each while the remaining States/UTs have an estimated need of less than 1% each (see Figure 20).

Figure 20: Need for PMTCT of HIV by State/UT, 2019



# 05 Discussion



As a signatory to the United Nations declaration on Sustainable Development Goals (SDGs), India is committed to achieving the “End of AIDS” as a public health threat by 2030. Specific 2020 Fast-Track Targets, including 75% decline in new HIV infections from the 2010 baseline value, attainment of 90-90-90 treatment goals, elimination of mother-to-child transmission of HIV and elimination of HIV/AIDS-related stigma and discrimination, have been identified to anchor the global AIDS response towards attaining the “ENDGAME” by 2030. HIV Estimations 2019 provides critical epidemiological updates using the latest tool and data not only by informing the policymakers, programme managers and all other related stakeholders on the latest status of the epidemic but also as the present benchmark to inform the progress on 2020 Fast-Track Targets and 2030 “End of AIDS” goal.

HIV Estimations 2019 has reiterated that while India’s successful response to AIDS epidemic continues, there is no scope for complacency. While adult HIV prevalence has continued to decline nationally and

in many of the erstwhile high prevalence southern and western States, it has been rising in many States, probably reflecting the increasing survival of HIV-infected population due to successful care, support and treatment programme. Gradual increase in the number of PLHIV in various States/UTs in the coming years will have to be accounted for by the programme during the strategic planning of the activities such as HIV testing, ART treatment, etc.

In the erstwhile high prevalence and early epidemic States of Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu and Telangana, both the prevention and treatment programmes have been highly successful. As the annual new infections have declined more than annual deaths, the prevalence has declined in these States, which can be attributed to the significant impact of the national programme.

The results on new HIV infections suggest that while success on prevention aspects continue, the current achievement is still far from the target set. Nationally, new HIV infections have declined by 37% between

2010 and 2019 in comparison to the global average of 23% (between 2010 and 2019) but yet far from the envisaged target of 75%.

State/UT-wise, till 2019, Karnataka has already achieved the 2020 prevention targets, with Himachal Pradesh and Andhra Pradesh also nearing the targets. It is a concern that no other States/UTs have achieved a decline of 60% or more till 2019. Tripura, Arunachal Pradesh, Chhattisgarh, West Bengal, Mizoram and Nagaland face a major challenge of preventing new HIV infections, where it has continued to rise/remain stable between 2010 and 2019.

Care, support and treatment (CST) programme has been at the core of India's successful AIDS response. Although its implementation followed that of prevention activities by almost two decades and they were initiated as late as in 2004, rapid scale-up of CST programme under NACP has set up a global benchmark. Between 2010 and 2019 in India, the number of PLHIV on ART has increased almost fourfold while globally, the same has increased threefold (between 2010 and 2018). During the period between 2010 and 2019, AIDS-related deaths have declined nationally by almost 66% in comparison to the global average of 39% decline against the target to achieve 75% decline by 2020. In the erstwhile high prevalence States of Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and Telangana, the decline in AIDS-related deaths has ranged from 70% to 80% (between 2010 and 2019), which has been a major reason for the decline

seen at the national level. Meghalaya, Arunachal Pradesh, Tripura, Jammu and Kashmir, Jharkhand, Assam, Sikkim, Bihar and Delhi have exhibited a stable to rising trend in AIDS-related deaths. This is an area of concern and needs exploration and appropriate programmatic response.

The status of HIV/AIDS epidemic in the States of north-eastern India is indeed alarming. Except for Manipur, the HIV prevalence in these States has shown a stable to rising trend due to a relatively higher number of annual new HIV infections. Annual new HIV infections have, in fact, increased in Arunachal Pradesh and Tripura while being almost stable in Mizoram and Nagaland during 2010–2019. There is a clear need for community-driven integrated AIDS response in these States on an urgent basis to respond to the growing HIV problem in the region.

Under the NACP in India, HIV Estimations 2019 has established that the country is on track to achieve the reductions in AIDS-related deaths nationally as well as in many States/UTs. However, the initiatives for arresting the number of new HIV infections require more focused attention to achieve the SDG Target 3.3.1. Further insights on district-level estimates will provide a more granular understanding of the epidemic in the States/UTs of special concern because that data will be more meaningful in micro-planning, local-level prioritization and local programmatic response.



# Annexure 1: Composition of the National Working Group on HIV Estimations 2019

T-11020/08/2019 -NACO (Surveillance)  
Government of India  
Ministry of Health and Family Welfare  
National AIDS Control Organization

9<sup>th</sup> Floor, Chanderlok Building  
36, Janpath, New Delhi, 110001  
Dated 21/08/ 2019

## Office Order

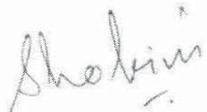
**Subject: Expansion of Terms of Reference of Working Group for District level PLHIV Estimation to undertake HIV Estimations 2019 under NACP**

\*\*\*

NACO has created a 'National Working Group' to undertake district level PLHIV estimation through its institutes for HIV Surveillance and Estimation vide office order T-11020/02/2015-NACO (Surveillance) dated 28<sup>th</sup> June 2018 (Enclosure 1).

The terms of reference of this national working group has been now expanded to undertake HIV Estimations 2019 (National, State and District). The technical considerations and workplan for HIV Estimations 2019 is at annexure 2. All other terms and conditions for the National Working Group remains the same.

This issue with the approval of Special Secretary & DG (NACO & RNTCP)

  
(Dr Shobini Rajan)  
Assistant Director General

**Enclosure:** As above

**To**  
All members of the Working Group

**Copy to:**

1. Sr PPS to Special Secretary & DG (NACO & RNTCP)
2. PS to Joint Secretary, NACO
3. Director (ICMR-NIMS, New Delhi)

T-11020/02/2015 -NACO (Surveillance)  
Government of India  
Ministry of Health and Family Welfare  
National AIDS Control Organisation

9<sup>th</sup> Floor, Chanderlok Building  
36, Janpath, New Delhi, 110001  
Dated 28<sup>th</sup> June 2018

Office Order

**Subject: Working Group for District level PLHIV Estimation under NACP**

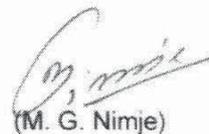
NACO is undertaking district level PLHIV estimation through its institutes for HIV Surveillance and Estimation. A concept note for the same is enclosed.

A working group has been constituted under the chairpersonship of Director (ICMR-NIMS) and Co-chairmanship of Addl. Director General (MES, NACO) for the implementation of the project. Members of the working group are as below:

- i. Dr DCS Reddy, Former HoD, Dept of Community Medicine, IMS, BHU, Varanasi, Uttar Pradesh
- ii. Dr Arvind Pandey, Former Director, NIMS-ICMR, New Delhi
- iii. Dr Shashi Kant, HoD, CCM, AIIMS, New Delhi
- iv. Dr Alok Deb, Epidemiologist and Scientist E, ICMR-NICED, Kolkata
- v. Focal Person, HIV Surveillance & Estimation, (NIMS, Delhi, NARI, Pune, AIIMS, New Delhi, NIE, Chennai, RIMS, Imphal)
- vi. Dr Nicole Seguy, WHO India
- vii. Dr Savina Ammassari, UNAIDS India
- viii. Ms Deepika Srivastava Joshi, CDC-DGHT India
- ix. Dr Yujwal Raj, Former NPO, NACO
- x. Dr S K Singh, Professor, IIPS
- xi. SACS Representatives (Maharashtra, Mumbai, Uttar Pradesh, Mizoram, Gujarat and Tamil Nadu, to be deputed by PD SACS)
- xii. Program Division Representatives (NC-ART, NC-ICTC, PO-Surveillance)

The working group will meet 5-7 times towards the implementation of the project and finally come out with most suitable methods/method-mix for district level estimation in India. The outcomes of the work will be reviewed and approved by Technical Resource Group (TRG) on HIV Surveillance and Estimation.

This issue with the approval of competent authority, NACO.



(M. G. Nimje)

Under Secretary to Govt of India

**Enclosure: As above**

**To**

All members of the Working Group

**Copy to:**

1. PS to Joint Secretary, NACO
2. Director (ICMR-NIMS, New Delhi)

Government of India  
Ministry of Health & Family Welfare  
National AIDS Control Organization

## Concept Note on HIV Estimations 2019

### Background

National AIDS Control organization (NACO), Ministry of Health and Family Welfare, Government of India periodically undertakes HIV estimation process to provide the updated information on the status of HIV epidemic in India. First HIV estimation in India was done in 1998 while last round was done in 2017. India HIV Estimates 2019, current round in the series, will provide current status of HIV epidemic in country, States and district on key parameters of HIV prevalence, new infections and AIDS related mortality.

### HIV Estimations Implementation Mechanism

A national working group (NWG), under the leadership of NACO and ICMR-NIMS, New Delhi and with involvements of members from developmental partners (UNAIDS, USAID, WHO and CDC) and other national and regional institutes for epidemic monitoring, undertakes this estimation work. The institutes include (i) All India Institute of Medical Sciences (AIIMS-Delhi), (ii) ICMR-National AIDS Research Institute (ICMR-NARI, Pune), (iii) ICMR-National Institute of Epidemiology (ICMR-NIE, Chennai), (iv) Post Graduate Institute of Medical Education and Research (PGIMER, Chandigarh), (v) ICMR-National Institute of Cholera and Enteric Diseases (ICMR-NICED, Kolkata) and (vi) Regional Institute of Medical Sciences (RIMS-Imphal). NWG, chaired by Director (ICMR-NIMS) and co-chaired by division head of Strategic Information division, NACO is responsible for doing the all the works related to HIV Estimations.

The results generated by NWG is critically reviewed and approved by Technical Resource Group (TRG) on "Surveillance and Estimation". Currently, Additional Secretary (NACO & RNTCP) is chair of the TRG. The members are the senior most national and international experts on HIV surveillance, epidemiology and estimations.

### HIV Estimations 2019

NACO has approved the workplan for HIV Estimations 2019. This round is unique in itself as it aims to provide the current status of HIV epidemic on key parameters of HIV prevalence, new infections and AIDS related mortality upto the district level. The tentative workplan for HIV Estimations 2019 is as below:

S No	Activity	Proposed Timelines
1	Updated input data in State-wise model and running the model; proposals for bridge population and HRG size estimates; localization of survival assumption	July-August 2019
2	Capacity Building cum consultation workshop of NWG, Experts, RI and State representatives with support from UNAIDS	27-30 <sup>th</sup> August 2019
3	Modifications of Input data in State-wise model and running the model	September'19
4	Second meeting of NWG	Last week of September'19
5	Modification in models and firming up the results	October'19
6	Third meeting of NWG for State and National Estimates	Mid of October'19

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7	Meeting of TRG on HIV Surveillance and Estimation	First week of November'19
8	Finalization of report and printing	Second and third week of November'19
10	Release of HIV Estimations 2019 Report with State and National Estimates	<sup>st</sup> 1 December 2019
11	Fourth meeting of NWG for HIV Estimations 2019 district estimates	Mid of January 2020
12	Second meeting of NWG for HIV Estimations 2019 district estimates	Last week of January 2020
13	Meeting of TRG on HIV Surveillance and Estimation for HIV Estimations 2019 district estimates	First Week of March 2020
14	Finalization of report and printing	Second and third week of March 2020
15	Release of HIV Estimations 2019 Report with District Estimates	Last week of March 2020

#### Expert Consultation-Cum-Capacity Building Workshop

The expert consultation-cum-capacity building workshop is one of the most fundamental meeting under series of meeting planned under HIV Estimations 2019. This is in line with past practices where officers from regional institutes, State AIDS Control Societies as well as members from national working group are trained on latest Spectrum model in the beginning of estimation round. The training is imparted by the best resource person in the world. This helps to widen the knowledge about this complex procedure and thus improves the ownership of the findings. In continuation of the tradition, day 1-3 will focus on capacity building of various stakeholders that will include updating them on the methodology as well as concepts behind it. The training design is mix of plenary, demonstrations and hands-on sessions.

Day 4 has been designed to take experts advice on select technical aspects of the HIV Estimations 2019. The objective of this expert consultation is to discuss the technical aspects further augmenting the technical rigour of HIV Estimations process under NACP. The key technical aspects under consideration for discussion are as below:

- HRG size estimates; mathematical estimates; IDU Size
- Bridge population segment in epidemic configuration
- Informing survival assumptions when on ART with India programme data
- Using pregnant women routine testing data on surveillance page
- CLHIV Size Estimates
- Wide uncertainty bound in HIV Estimations 2017

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National AIDS Control Organization

**Data Need**

The HIV Estimations 2019 will build upon the State models prepared for 2017 round. The demographic, programmatic and epidemiological data will be updated in the State model as a part of the process (Annexure 1-6). Programmatic data on PMTCT coverage, Adult ART coverage and child treatment will be updated in each States model for year 2017 and 2018. Epidemiological data, site-wise tested and positivity, from surveillance will be also updated from ANC HSS 2019 in State model.

The State model thus developed will be disaggregated into districts estimates using sub-epidemic model. The routine testing data from PMTCT programme from confirmatory centres will be used as additional data to inform the level and trend of HIV burden at district level.

**Funding Support**

The work will be completely supported within the already approved NACO's MoU with ICMR-NIMS for the period 2018-20. No additional fund will be required from NACO's to implement the project. Need based complementary funding to support the participation of out-side members will be explored through the partners funding if required.

**Outcome**

- Creation of a resource pool across stake-holders with in-depth understanding of the estimation model under NACP
- Augmented ownership of Estimations process
- Way forwards on further augmenting the technical rigour of HIV Estimations under NACP

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Annexure 1. PPTCT coverage (Number) (To be derived from PALS)

Name of State	2017-18			2018-19			2019-20		
	Triple ART started before current pregnancy	Triple ART started during current pregnancy > 4 weeks before delivery	Triple ART started during current pregnancy < 4 weeks before delivery	Triple ART started before current pregnancy	Triple ART started during current pregnancy > 4 weeks before delivery	Triple ART started during current pregnancy < 4 weeks before delivery	Triple ART started before current pregnancy	Triple ART started during current pregnancy > 4 weeks before delivery	Triple ART started during current pregnancy < 4 weeks before delivery
			Total			Total			Total

Annexure 2. Adult ART coverage (Number) (To be taken from CST-MPR)

Name of State	Gender	2017-18*	2018-19**	2019-20#
	Male			
	Female			
	H/TG			
	Total			

\* As on March 2018, \*\* As on March 2019, # As on July 2019

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National AIDS Control Organization

Annexure 3. Baseline Median CD4 count at detection (Number) (To be derived from CST-MLL/IMS to the extent possible)

Name of State	2010	2011	2012	2013	2014	2015	2016	2017	2018

Annexure 4. Median CD4 count at ART initiation (Number) (To be derived from CST-MLL/IMS to the extent possible)

Name of State	2010	2011	2012	2013	2014	2015	2016	2017	2018

Annexure 5. Child ART coverage (Number) (To be taken from CST-MPR)

Name of State	Gender	2017-18*	2018-19**	2019-20#
	Male			
	Female			
	H/TG			
	Total			

\* As on March 2018, \*\* As on March 2019, # As on July 2019

Annexure 6. HIV testing and positivity among pregnant women at Stand Alone ICTC (confirmatory centers) by reporting unit (To be taken from CMIS/SIMS)

State	District	Reporting Unit	2010-11		2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19	
			Test ed	Positi ve																

# Annexure 2: Composition of Technical Resource Group on HIV Surveillance and Estimation

**Chair:** Shri Sanjeeva Kumar, Former Special Secretary and Director General, NACO / Smt Arti Ahuja, Additional Secretary and Director General, NACO

**Co-chair:** Dr. Sanjay Mehendale, Additional Director General, ICMR

**Member Secretary:** Dr. Shobini Rajan, DDG (Surveillance & Epidemiology), NACO

## Members:

1. Shri Alok Saxena, Joint Secretary, NACO
2. Dr. Henk Bekedam, Country Representative, WHO India
3. Dr. Bilali Camara, Country Director, UNAIDS India
4. Dr. N. S. Dharmshaktu, Principal Advisor to Ministry on Public Health, MoHFW, GOI
5. Dr. Peter Ghys, Director, Strategic Information and Evaluation, UNAIDS, Geneva
6. Dr. D. C. S. Reddy, Former Head of Department, Department of Community Medicine, Banaras Hindu University, Lucknow and Ex-NPO, WHO India
7. Prof. Arvind Pandey, Advisor, National Institute of Medical Statistics, New Delhi
8. Dr. Rajesh Kumar, Head, School of Public Health, PGIMER, Chandigarh
9. Dr. Samiran Panda, Director, National AIDS Research Institute, Pune
10. Dr. Manoj Vasant Murhekar, Director, National Institute of Epidemiology, Chennai
11. Dr. Shanta Dutta, Director, National Institute of Cholera and Enteric Diseases, Kolkata
12. Dr. Shashi Kant, Professor and Head, Centre for Community Medicine, All India Institute for Medical Sciences, New Delhi
13. Dr. S. Baby Vasumathi, Director, Institute of Obstetrics & Gynaecology, Madras Medical College, Chennai
14. Dr. Sanjay Dixit, Department of Community Medicine, MGM Medical College, Indore

15. Dr. D. K. Shukla, Former I/C Director, ICMR-NIMS, New Delhi
16. Dr. Laxmisha Chandrashekar, Head of Department, Department of Dermatology and STD, JIPMER, Puducherry
17. Mr. Taoufik Bakkali, UNAIDS Regional Support Team for Asia and the Pacific, Bangkok
18. Dr. Laishram Ladu Singh, Officiating Director, International Institute for Population Sciences, Mumbai
19. Dr. Jagdish Chandra, Former Director, Kalawati Saran Children's Hospital, New Delhi
20. Dr. Timothy Holtz, Director, DGHT, CDC India
21. Dr. John Stover, Vice President, Avenir Health and member UNAIDS HIV Estimation Reference Group
22. Mr. Ashok R. Kavi, Chairman, The Humsafar Trust
23. Mx. Abhina Aher, Associate Director, India HIV/AIDS Alliance
24. Dr. Naresh Goel, Deputy Director General, NACO
25. Dr. R. S. Gupta, Former Deputy Director General, NACO
26. Dr. Anoop Kumar Puri, Deputy Director General, NACO

### **Overall Coordination**

1. Dr. Damodar Sahu, Scientist F & HIV Estimation Focal Person, ICMR-NIMS
2. Dr. Pradeep Kumar, Programme Officer, Surveillance, NACO

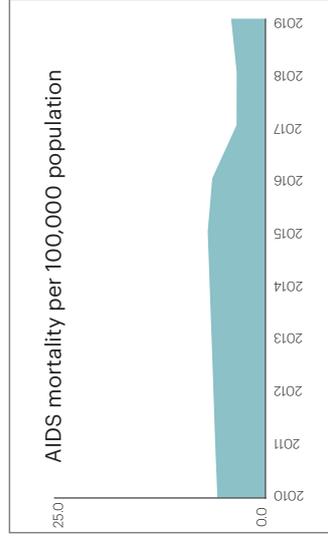
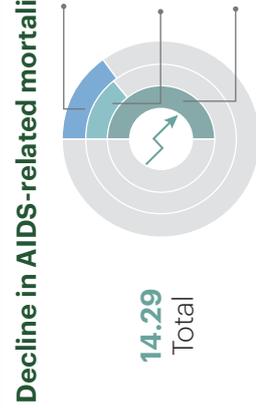
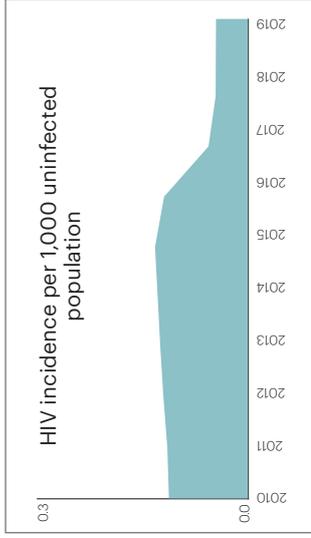
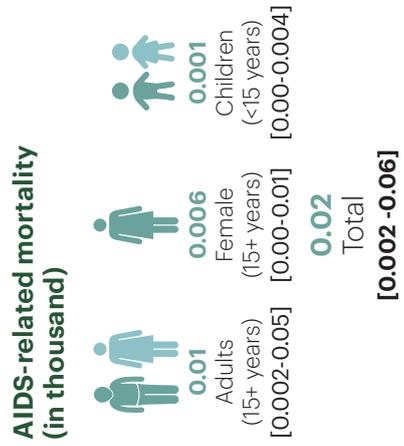
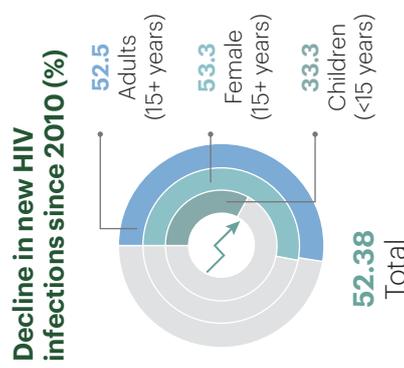
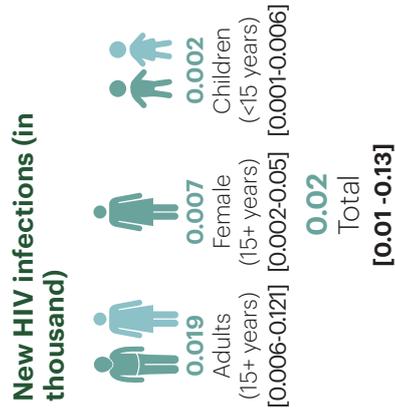
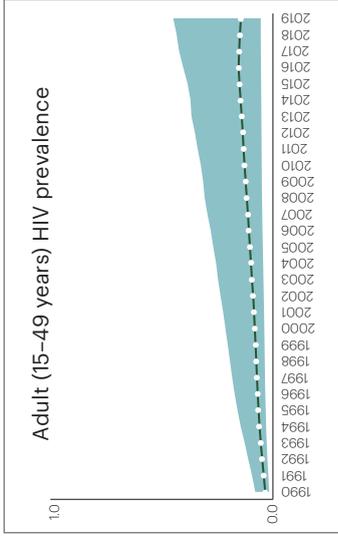
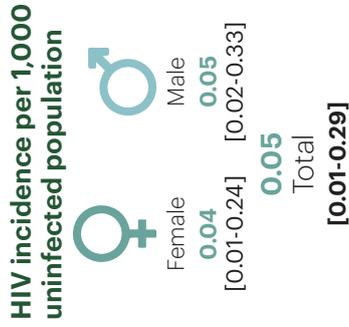
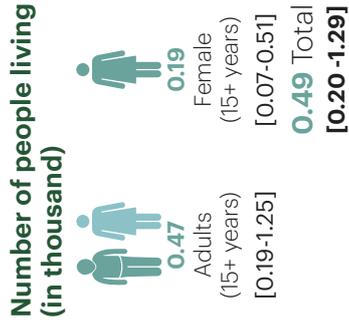
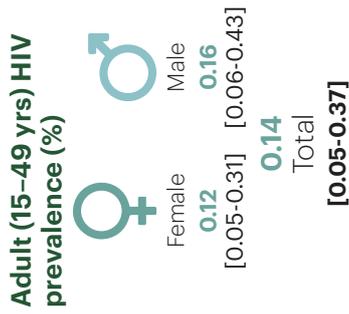
## Annexure 3: State and Union Territory-wise Summary of HIV Epidemic in 2019, India HIV Estimates 2019

No.	State/UT	Percentage of adult HIV prevalence (15-49 yrs), 2019			Total number of PLHIV, 2019 (in thousand)			HIV incidence per 1,000 uninfected population, 2019			Total number of annual new HIV infections, 2019 (in thousand)			% change in annual new HIV infections, 2010-2019			AIDS-related mortality per 100,000 population, 2019			Total number of annual AIDS-related deaths, 2019 (in thousand)			% change in annual AIDS-related deaths, 2010-2019			PMCT needs (in thousand)				
		Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound	Lower bound	Estimate	Upper bound		
1	Andaman & Nicobar	0.05	0.14	0.37	0.20	0.49	1.29	0.01	0.05	0.29	0.01	0.02	0.13	-52.38	0.50	4.05	12.41	0.00	0.02	0.06	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
2	Andhra Pradesh	0.54	0.69	0.89	24713	31373	40446	0.02	0.05	0.13	1.06	2.82	6.69	-64.87	12.32	2176	34.43	6.48	11.43	18.10	0.98	1.39	2.01	0.98	1.39	2.01	0.98	1.39	2.01	
3	Arunachal Pradesh	0.04	0.06	0.1	0.39	0.66	1.03	0.02	0.05	0.09	0.03	0.07	0.14	62.22	0.48	1.14	2.11	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
4	Assam	0.08	0.09	0.1	18.97	21.22	24.42	0.03	0.04	0.05	0.05	1.01	1.33	1.78	-22.75	1.23	1.67	2.18	0.42	0.57	0.75	0.28	0.33	0.40	0.28	0.33	0.40	0.28	0.33	0.40
5	Bihar	0.11	0.18	0.24	83.02	134.49	185.61	0.03	0.07	0.12	3.23	8.04	13.47	-26.91	0.70	2.04	3.82	0.79	2.33	4.35	1.60	2.53	3.54	1.60	2.53	3.54	1.60	2.53	3.54	
6	Chandigarh	0.12	0.19	0.26	1.52	2.36	3.19	0.03	0.08	0.14	0.04	0.12	0.20	6.31	2.77	5.74	8.88	0.04	0.09	0.13	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
7	Chhattisgarh	0.15	0.2	0.27	31.99	42.52	55.46	0.06	0.10	0.15	1.70	2.83	4.11	6.55	3.30	5.25	8.03	0.93	1.48	2.26	0.41	0.58	0.80	0.41	0.58	0.80	0.41	0.58	0.80	
8	Dadra & Nagar	0.14	0.23	0.37	0.47	0.75	1.19	0.06	0.17	0.32	0.03	0.07	0.14	72.09	0.91	1.89	4.49	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
9	Daman & Diu	0.12	0.17	0.23	0.34	0.47	0.67	0.03	0.07	0.13	0.01	0.02	0.04	4.55	1.06	1.67	3.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10	Delhi	0.33	0.41	0.5	55.64	67.94	83.49	0.10	0.15	0.22	1.95	2.99	4.55	-35.94	3.19	5.21	8.47	0.67	1.10	1.79	0.46	0.57	0.72	0.46	0.57	0.72	0.46	0.57	0.72	
11	Goa	0.19	0.27	0.46	3.20	4.53	7.53	0.01	0.03	0.14	0.01	0.06	0.24	-44.00	4.95	9.68	26.14	0.09	0.17	0.46	0.02	0.02	0.04	0.02	0.02	0.04	0.02	0.02	0.04	
12	Gujarat	0.17	0.2	0.22	93.27	103.51	119.49	0.04	0.05	0.07	2.62	3.37	4.52	-35.17	1.83	2.37	3.19	1.21	1.57	2.12	0.85	0.99	1.20	0.85	0.99	1.20	0.85	0.99	1.20	
13	Haryana	0.17	0.21	0.26	37.25	44.76	55.16	0.06	0.09	0.13	1.72	2.62	3.66	-12.35	5.24	6.83	8.97	1.49	1.95	2.56	0.33	0.42	0.54	0.33	0.42	0.54	0.33	0.42	0.54	
14	Himachal Pradesh	0.09	0.12	0.15	5.60	7.05	8.80	0.02	0.02	0.03	0.11	0.16	0.24	-73.75	0.62	0.96	1.77	0.05	0.07	0.13	0.04	0.05	0.07	0.04	0.05	0.07	0.04	0.05	0.07	
15	Jammu & Kashmir and Ladakh	0.03	0.06	0.11	3.16	6.04	10.47	0.01	0.02	0.07	0.10	0.32	0.92	-35.98	0.23	0.97	2.28	0.03	0.13	0.31	0.03	0.03	0.05	0.03	0.03	0.05	0.03	0.05	0.09	
16	Jharkhand	0.06	0.09	0.13	14.92	22.75	33.65	0.02	0.04	0.07	0.60	1.30	2.41	-24.81	0.37	1.17	2.49	0.13	0.43	0.91	0.23	0.35	0.53	0.23	0.35	0.53	0.23	0.35	0.53	
17	Karnataka	0.37	0.47	0.59	218.71	269.47	338.71	0.01	0.02	0.05	0.70	1.57	3.53	-75.15	5.88	9.72	16.28	3.86	6.39	10.69	1.00	1.39	2.00	1.00	1.39	2.00	1.00	1.39	2.00	
18	Kerala	0.07	0.08	0.11	20.18	24.21	31.83	0.01	0.02	0.05	0.50	0.80	1.59	-24.20	1.00	1.50	2.82	0.35	0.53	0.99	0.12	0.16	0.24	0.12	0.16	0.24	0.12	0.16	0.24	
19	Madhya Pradesh	0.08	0.1	0.14	46.34	59.30	80.10	0.02	0.04	0.06	1.60	2.89	4.77	-16.24	1.40	2.23	3.63	1.14	1.82	2.96	0.43	0.61	0.86	0.43	0.61	0.86	0.43	0.61	0.86	
20	Maharashtra	0.25	0.36	0.53	288.60	396.35	577.01	0.03	0.07	0.16	3.77	8.54	20.10	-38.38	3.96	7.81	16.96	4.91	9.69	21.05	2.27	3.01	4.12	2.27	3.01	4.12	2.27	3.01	4.12	
21	Manipur	0.97	1.18	1.46	23.55	28.56	35.19	0.17	0.34	0.59	0.48	0.96	1.69	-29.09	24.59	36.86	56.70	0.72	1.08	1.66	0.26	0.36	0.50	0.26	0.36	0.50	0.26	0.36	0.50	
22	Meghalaya	0.46	0.54	0.63	9.51	11.28	13.08	0.18	0.23	0.31	0.57	0.73	0.98	-48.67	8.17	11.08	13.89	0.26	0.36	0.45	0.23	0.28	0.34	0.23	0.28	0.34	0.23	0.28	0.34	
23	Mizoram	1.85	2.32	2.84	16.12	20.05	24.62	0.73	1.18	1.70	0.85	1.37	1.96	-0.51	17.49	28.34	43.93	0.21	0.34	0.52	0.21	0.27	0.33	0.21	0.27	0.33	0.21	0.27	0.33	
24	Nagaland	1.15	1.45	1.78	18.05	22.55	27.41	0.49	0.73	0.97	1.04	1.55	2.05	-6.47	15.34	26.20	38.70	0.33	0.57	0.84	0.31	0.40	0.50	0.31	0.40	0.50	0.31	0.40	0.50	
25	Odisha	0.12	0.14	0.17	42.81	49.15	59.22	0.04	0.05	0.07	1.62	2.17	2.97	-38.33	2.85	3.88	5.42	1.28	1.74	2.43	0.40	0.49	0.61	0.40	0.49	0.61	0.40	0.49	0.61	
26	Puducherry	0.2	0.35	0.58	2.83	4.77	7.84	0.06	0.16	0.38	0.10	0.26	0.61	-39.06	6.18	15.33	29.63	0.11	0.26	0.50	0.02	0.03	0.06	0.02	0.03	0.06	0.02	0.03	0.06	
27	Punjab	0.22	0.27	0.35	54.18	65.83	84.51	0.05	0.08	0.14	1.40	2.37	4.10	-36.60	3.25	4.75	7.79	0.97	1.42	2.33	0.36	0.46	0.63	0.36	0.46	0.63	0.36	0.46	0.63	
28	Rajasthan	0.08	0.11	0.14	47.59	62.98	76.40	0.02	0.04	0.05	1.58	2.77	3.98	-41.59	0.46	0.93	1.57	0.36	0.71	1.20	0.64	0.86	1.06	0.64	0.86	1.06	0.64	0.86	1.06	
29	Sikkim	0.03	0.07	0.15	0.19	0.35	0.76	0.01	0.03	0.12	0.01	0.02	0.08	-34.38	0.17	0.64	2.35	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	
30	Tamil Nadu	0.16	0.23	0.29	114.37	154.61	197.84	0.01	0.04	0.07	1.08	2.62	4.90	-44.38	2.22	4.01	7.09	1.67	3.01	5.33	0.56	0.85	1.20	0.56	0.85	1.20	0.56	0.85	1.20	
31	Telangana	0.35	0.49	0.66	114.95	157.51	213.21	0.03	0.08	0.16	1.06	2.82	5.95	-52.06	6.03	10.79	18.06	2.28	4.08	6.84	0.68	1.03	1.52	0.68	1.03	1.52	0.68	1.03	1.52	
32	Tripura	0.07	0.1	0.13	2.04	2.86	3.77	0.07	0.11	0.17	0.29	0.45	0.65	264.52	0.20	0.46	0.91	0.01	0.02	0.04	0.02	0.03	0.04	0.02	0.03	0.04	0.02	0.03	0.04	
33	Uttarakhand	0.07	0.13	0.17	8.49	10.96	14.19	0.03	0.04	0.07	0.31	0.49	0.77	-46.09	1.84	3.08	4.81	0.21	0.34	0.54	0.07	0.10	0.13	0.07	0.10	0.13	0.07	0.10	0.13	
34	Uttar Pradesh	0.07	0.1	0.13	120.78	160.60	213.63	0.02	0.03	0.05	3.93	6.72	10.60	-46.37	0.84	1.71	3.03	1.91	3.87	6.89	1.72	2.21	2.94	1.72	2.21	2.94	1.72	2.21	2.94	
35	West Bengal	0.07	0.09	0.13	52.65	74.20	103.61	0.02	0.04	0.07	1.94	3.97	6.98	-37.38	0.51	1.40	2.98	0.68	1.37	2.92	0.45	0.68	1.05	0.45	0.68	1.05	0.45	0.68	1.05	
	<b>INDIA</b>	<b>0.17</b>	<b>0.22</b>	<b>0.29</b>	<b>1,798.99</b>	<b>2,348.86</b>	<b>3,098.83</b>	<b>0.03</b>	<b>0.05</b>	<b>0.09</b>	<b>37.03</b>	<b>69.22</b>	<b>121.50</b>	<b>-37.38</b>	<b>2.51</b>	<b>4.43</b>	<b>7.59</b>	<b>33.61</b>	<b>58.96</b>	<b>102.16</b>	<b>14.98</b>	<b>20.52</b>	<b>28.13</b>	<b>14.98</b>	<b>20.52</b>	<b>28.13</b>	<b>14.98</b>	<b>20.52</b>	<b>28.13</b>	



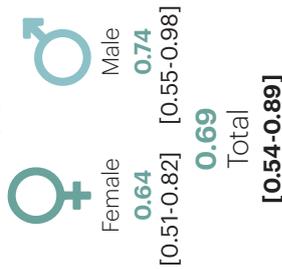


# Andaman and Nicobar Islands



# Andhra Pradesh

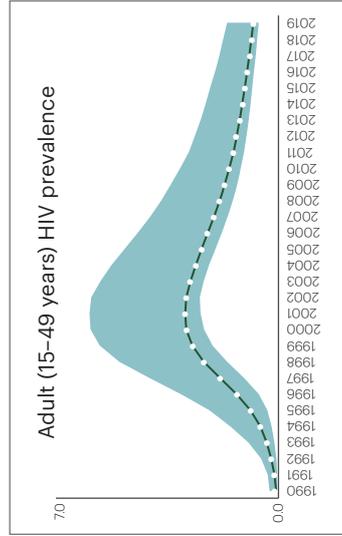
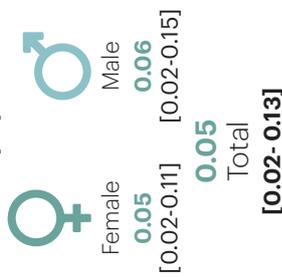
## Adult (15-49 yrs) HIV prevalence (%)



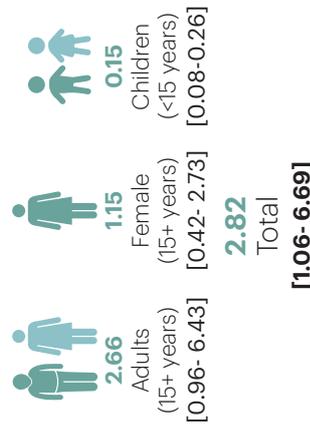
## Number of people living with HIV (in thousand)



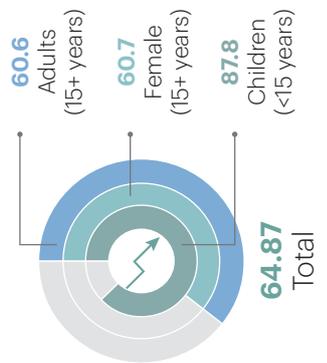
## HIV incidence per 1,000 uninfected population



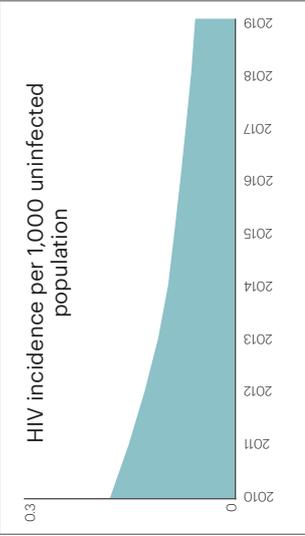
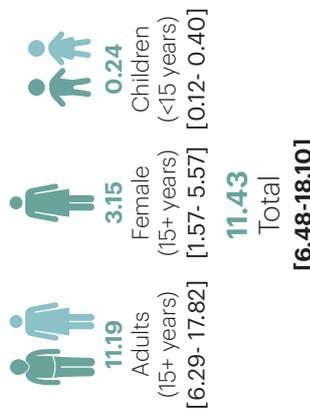
## New HIV infections (in thousand)



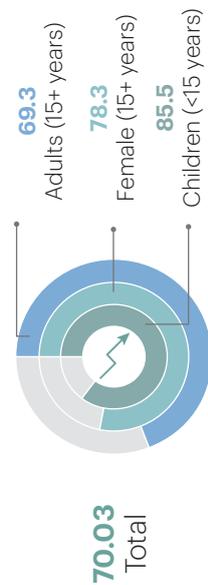
## Decline in new HIV infections since 2010 (%)



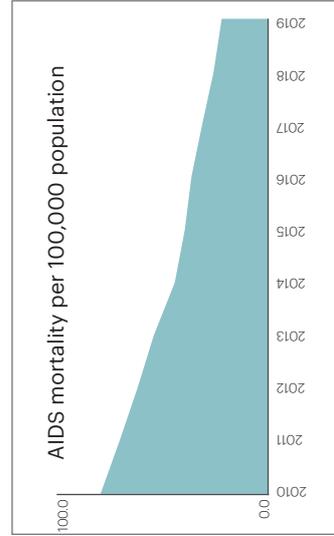
## AIDS-related mortality (in thousand)



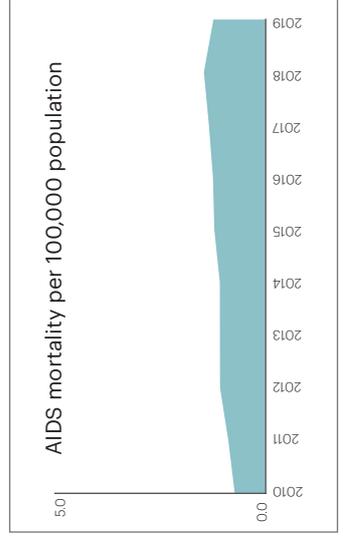
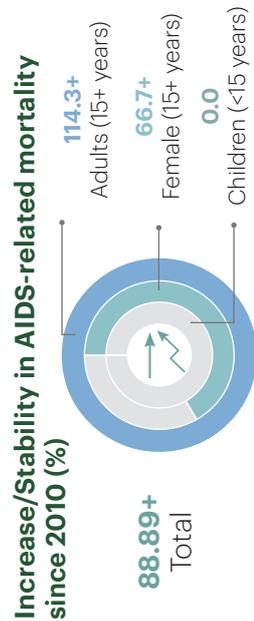
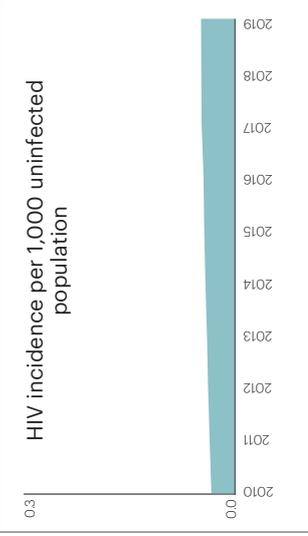
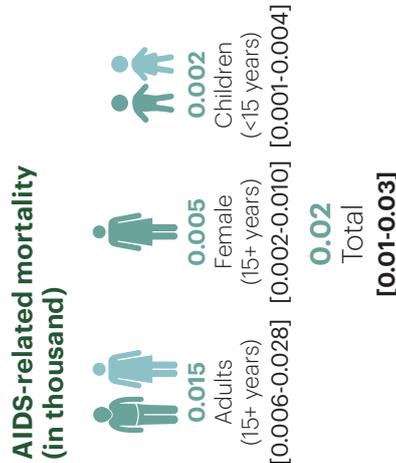
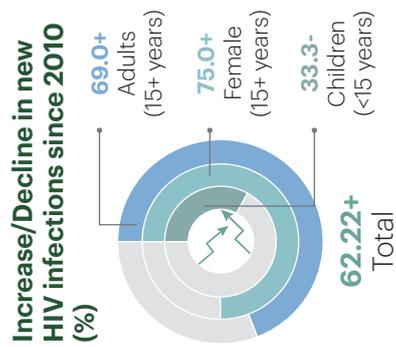
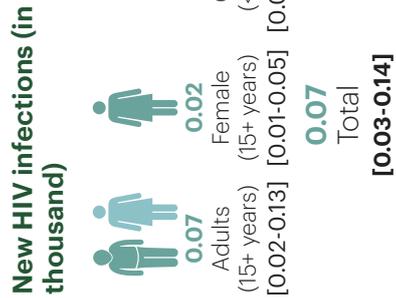
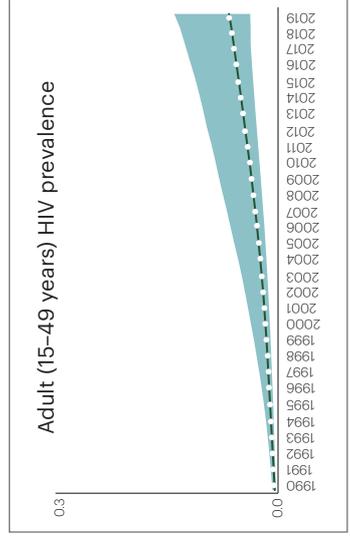
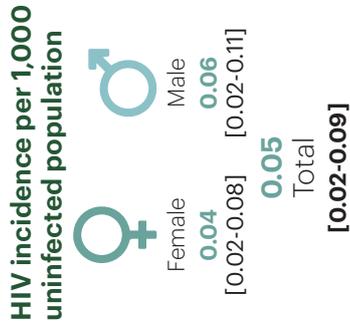
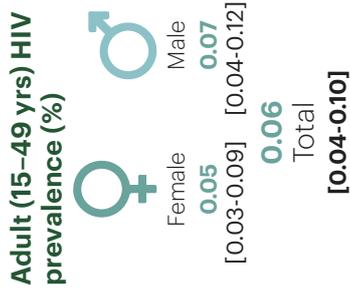
## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)

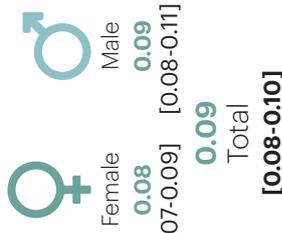


# Arunachal Pradesh

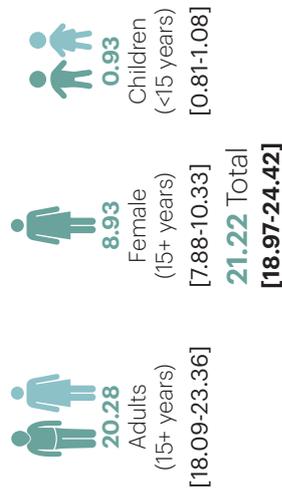


# Assam

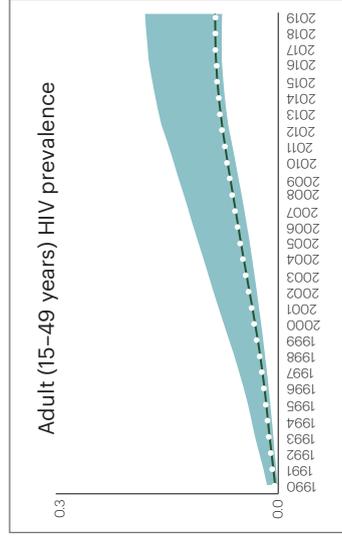
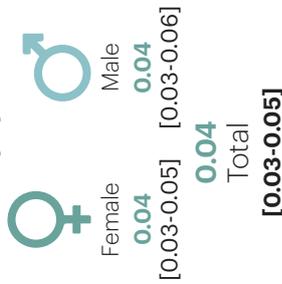
## Adult (15-49 yrs) HIV prevalence (%)



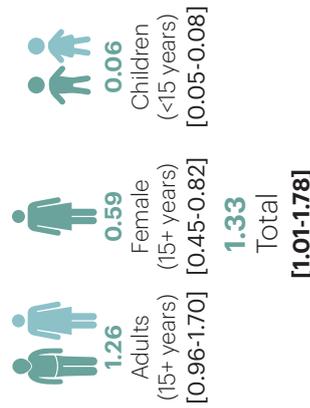
## Number of people living with HIV (in thousand)



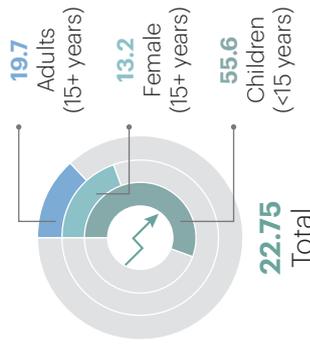
## HIV incidence per 1,000 uninfected population



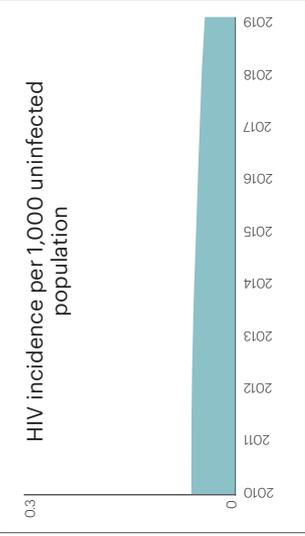
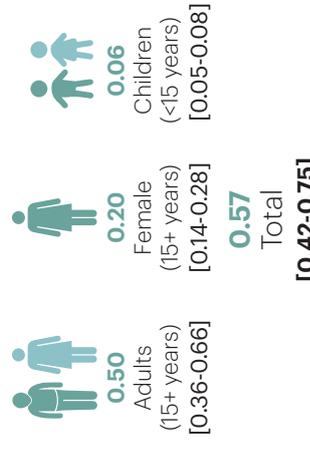
## New HIV infections (in thousand)



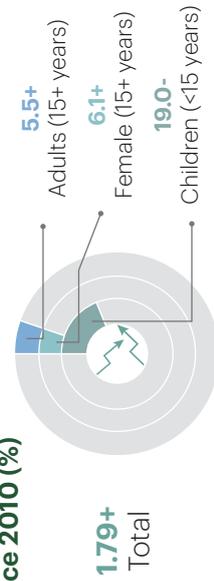
## Decline in new HIV infections since 2010 (%)



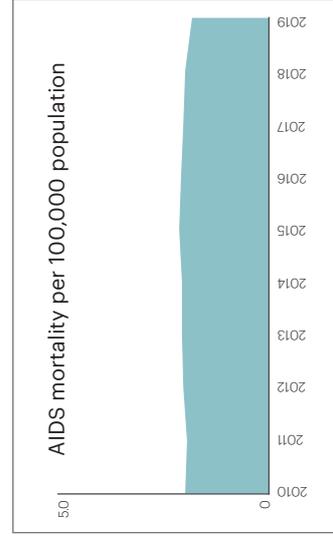
## AIDS-related mortality (in thousand)

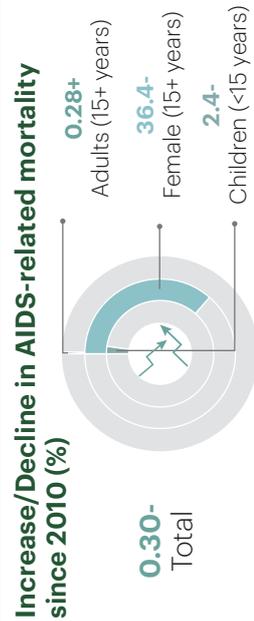
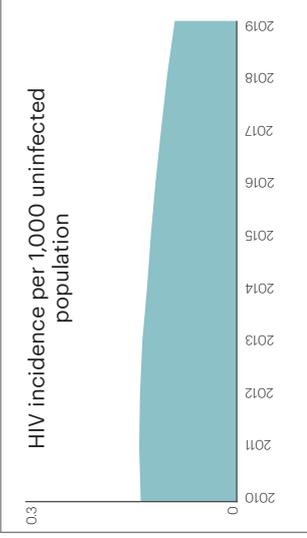
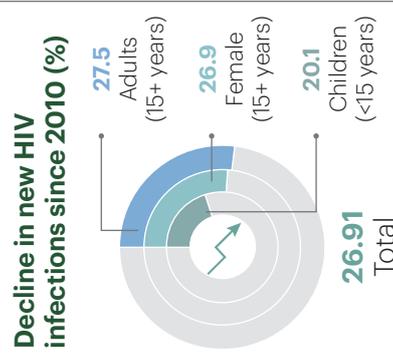
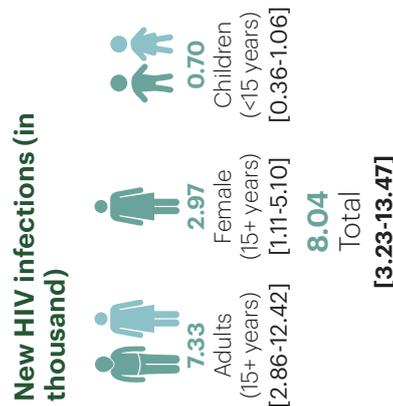
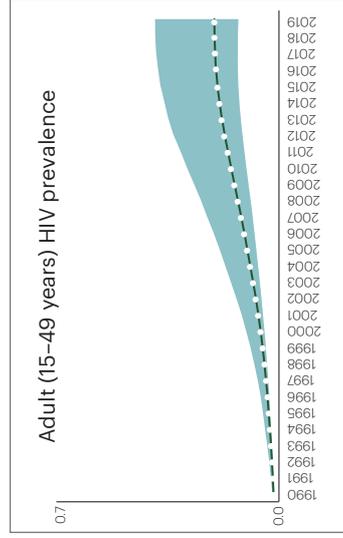
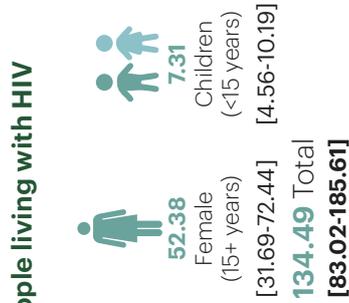
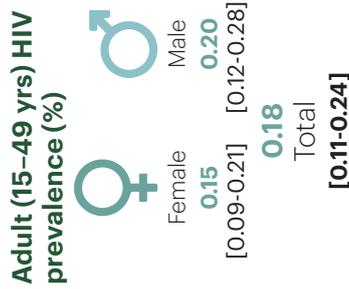


## Increase/Decline in AIDS-related mortality since 2010 (%)

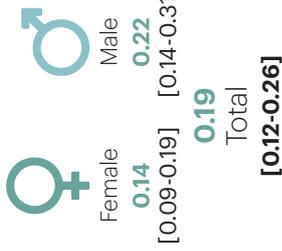


## Need for services to prevent mother-to-child transmission of HIV (in thousand)

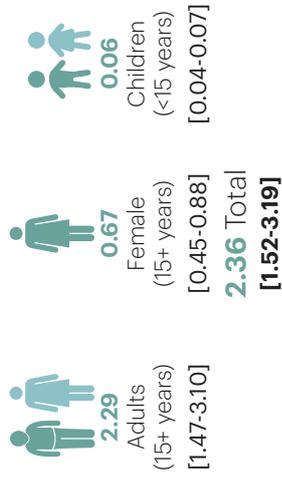




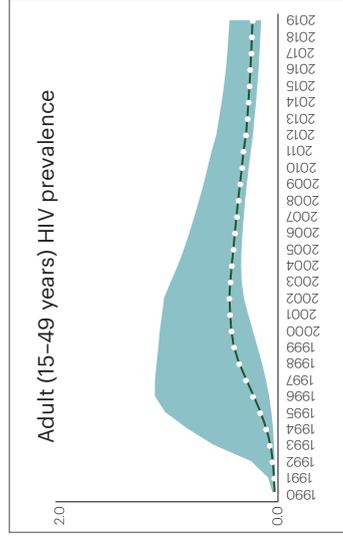
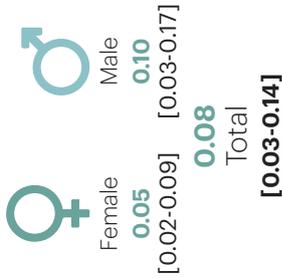
## Adult (15-49 yrs) HIV prevalence (%)



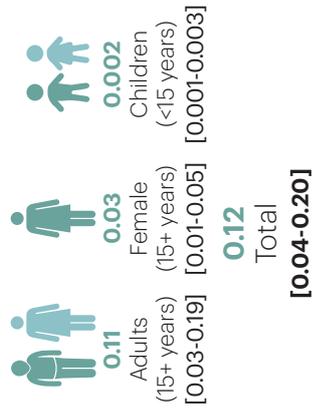
## Number of people living with HIV (in thousand)



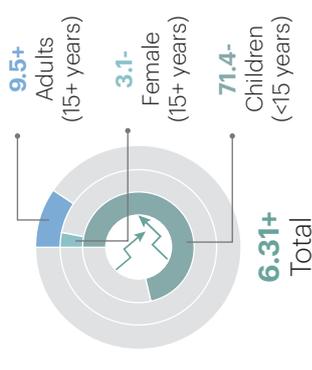
## HIV incidence per 1,000 uninfected population



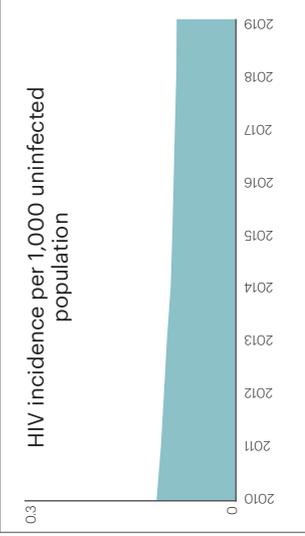
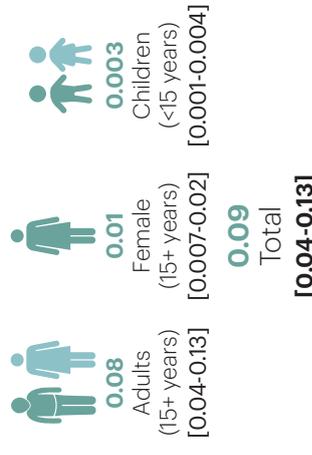
## New HIV infections (in thousand)



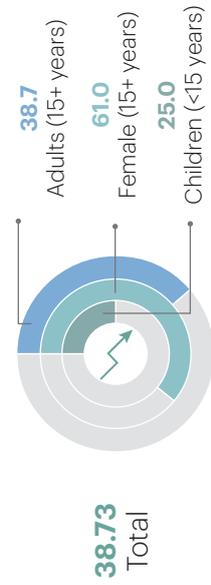
## Increase/Decline in new HIV infections since 2010 (%)



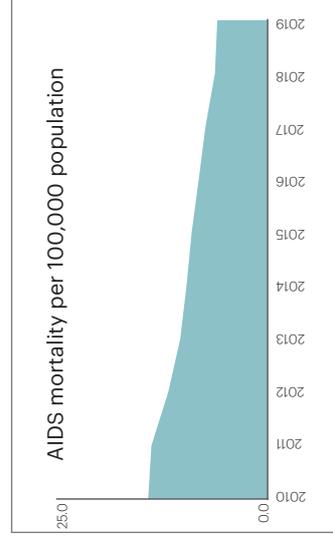
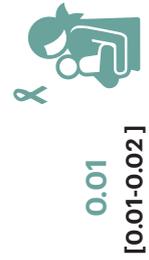
## AIDS-related mortality (in thousand)

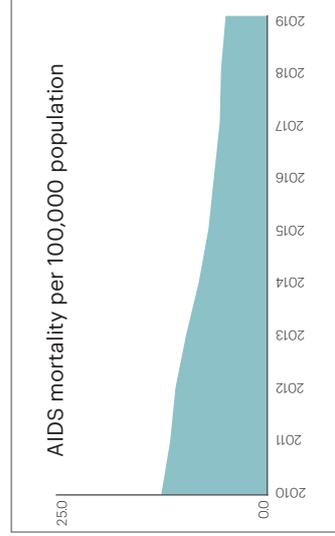
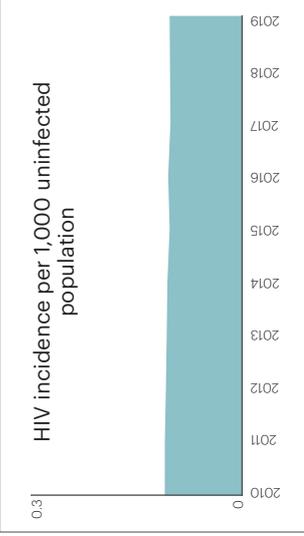
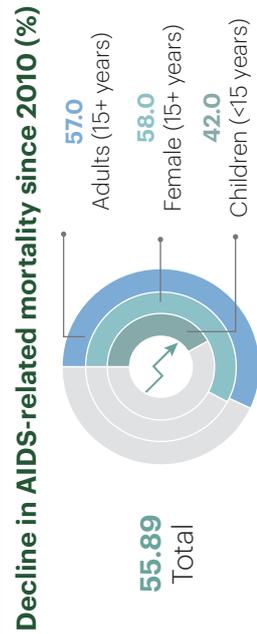
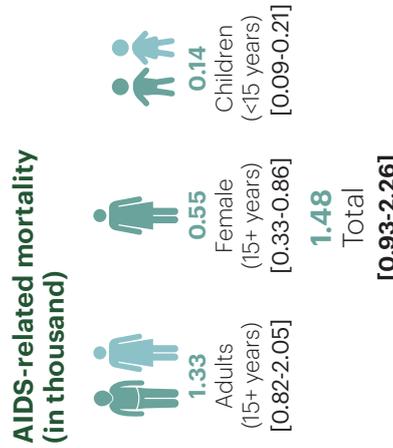
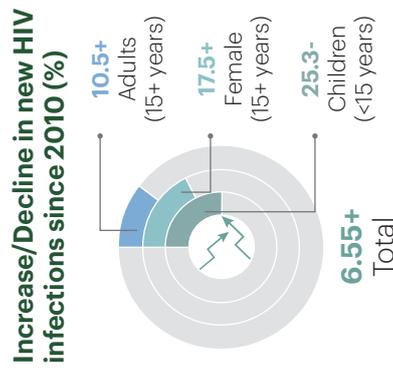
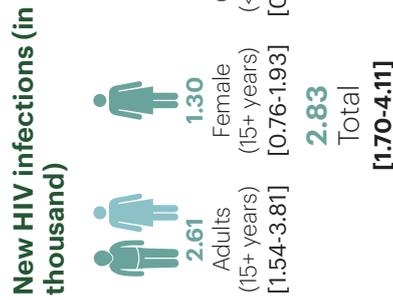
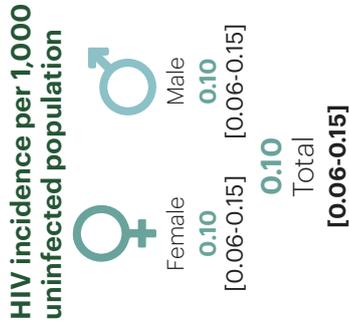
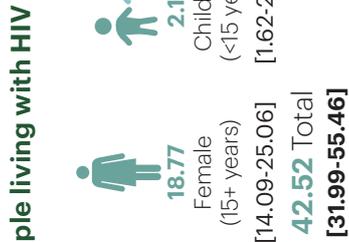
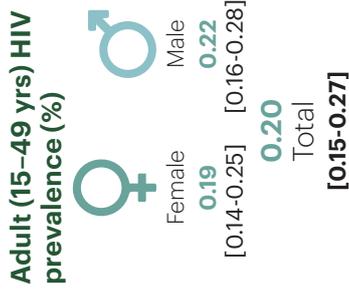


## Decline in AIDS-related mortality since 2010 (%)



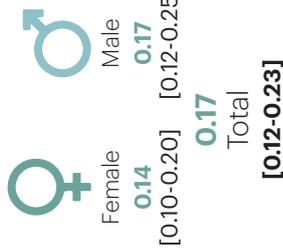
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



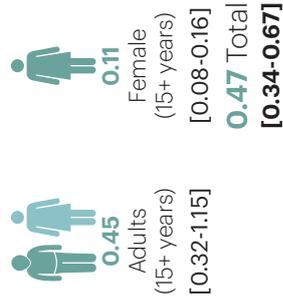


# Daman and Diu

## Adult (15-49 yrs) HIV prevalence (%)



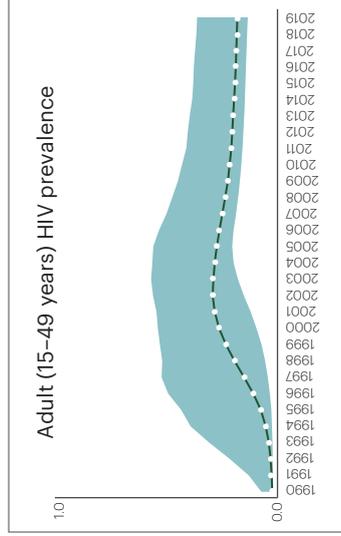
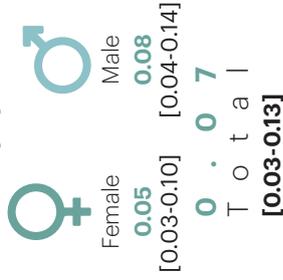
## Number of people living with HIV (in thousand)



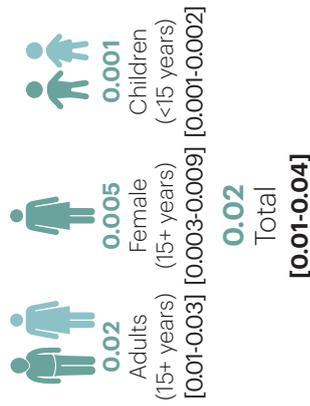
## Number of people living with HIV



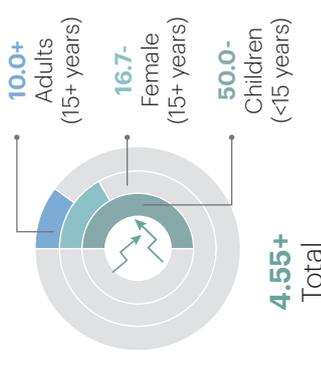
## HIV incidence per 1,000 uninfected population



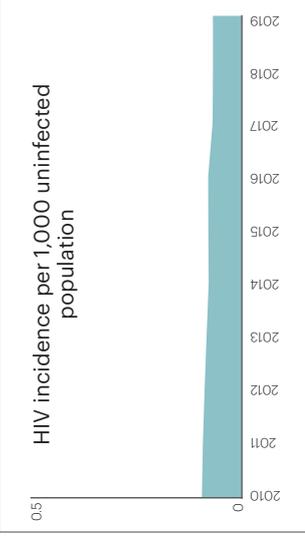
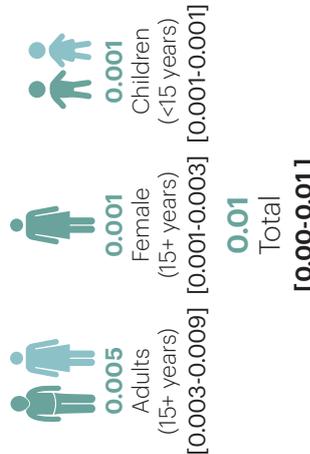
## New HIV infections (in thousand)



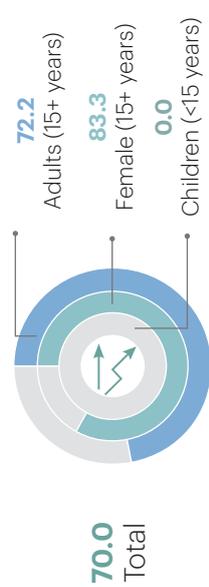
## Increase/Decline in new HIV infections since 2010 (%)



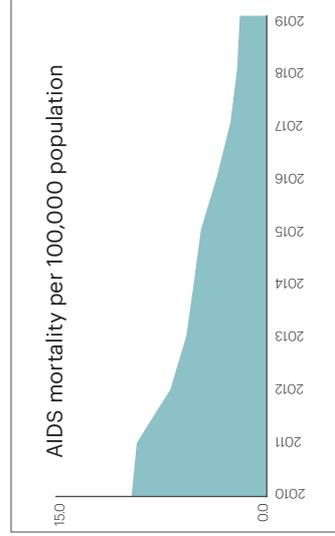
## AIDS-related mortality (in thousand)



## Decline in AIDS-related mortality since 2010 (%)

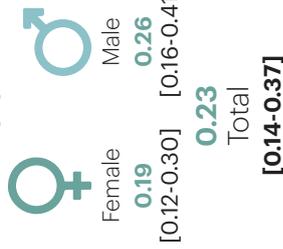


## Need for services to prevent mother-to-child transmission of HIV (in thousand)

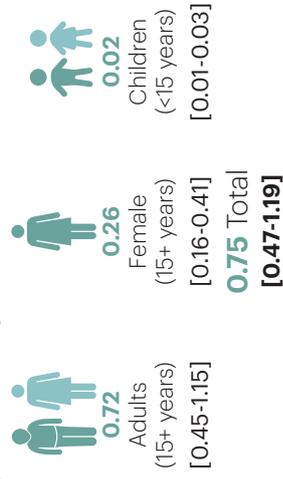


# Dadra and Nagar Haveli

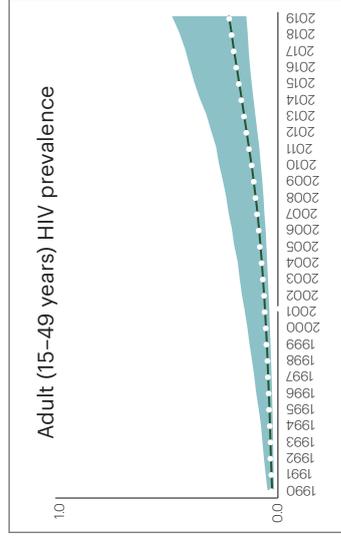
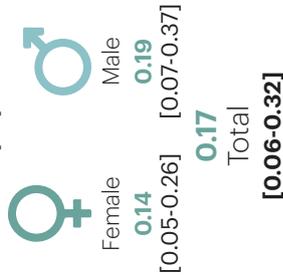
## Adult (15-49 yrs) HIV prevalence (%)



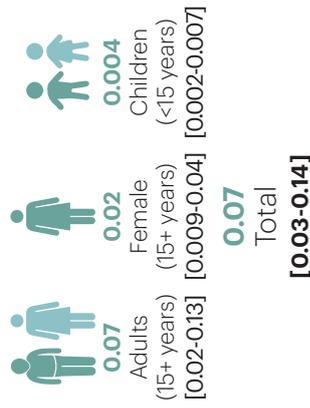
## Number of people living with HIV (in thousand)



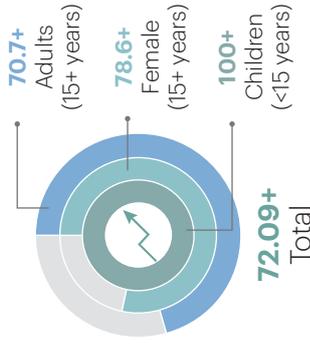
## HIV incidence per 1,000 uninfected population



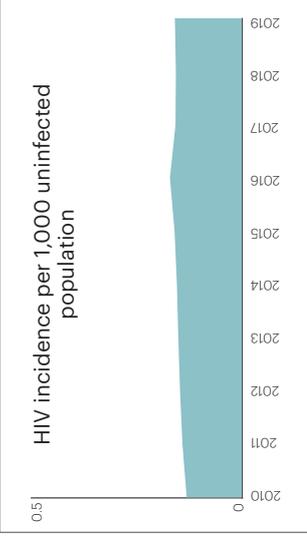
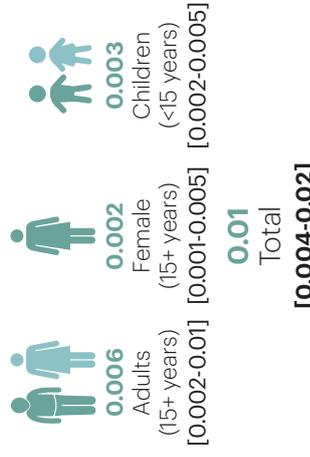
## New HIV infections (in thousand)



## Increase in new HIV infections since 2010 (%)



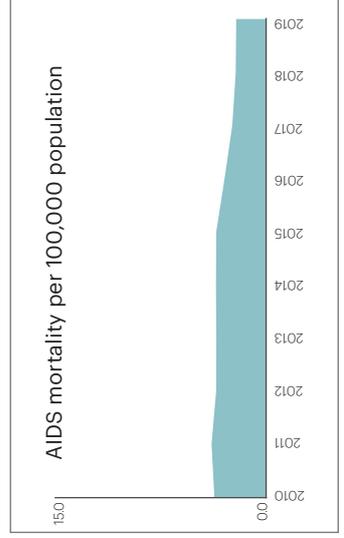
## AIDS-related mortality (in thousand)



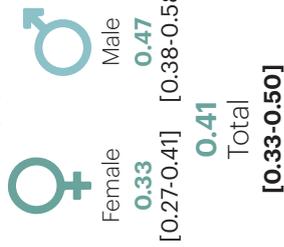
## Increase/Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)



## Adult (15–49 yrs) HIV prevalence (%)



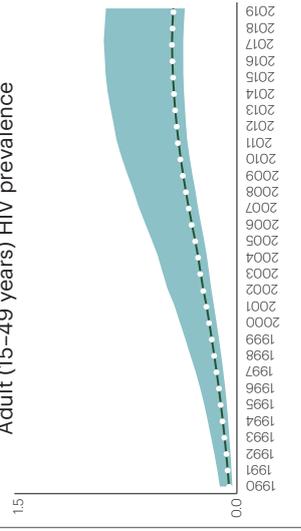
## Number of people living with HIV (in thousand)



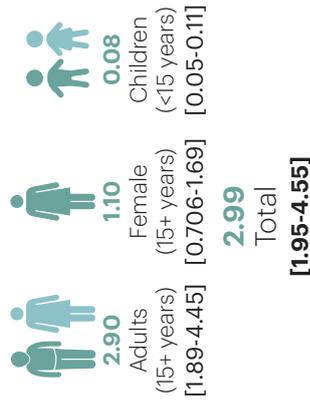
## HIV incidence per 1,000 uninfected population



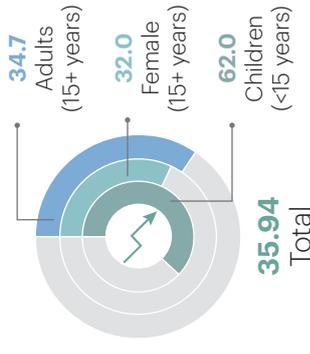
## Adult (15–49 years) HIV prevalence



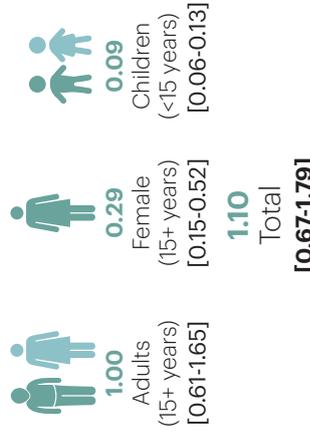
## New HIV infections (in thousand)



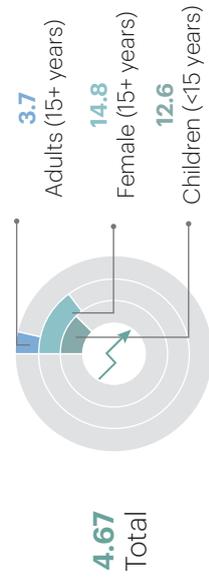
## Decline in new HIV infections since 2010 (%)



## AIDS-related mortality (in thousand)



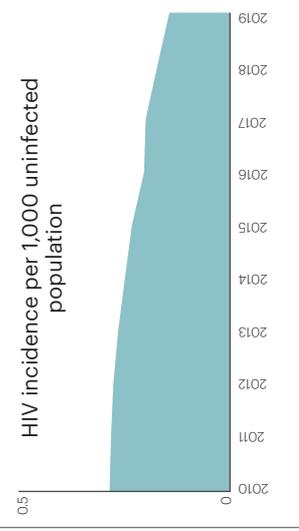
## Decline in AIDS-related mortality since 2010 (%)



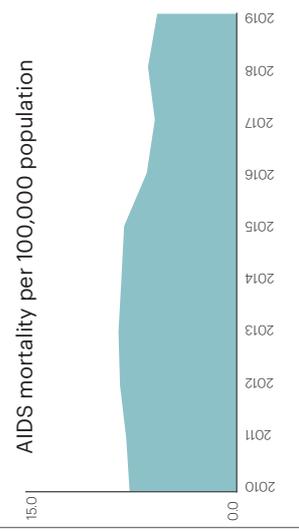
## Need for services to prevent mother-to-child transmission of HIV (in thousand)

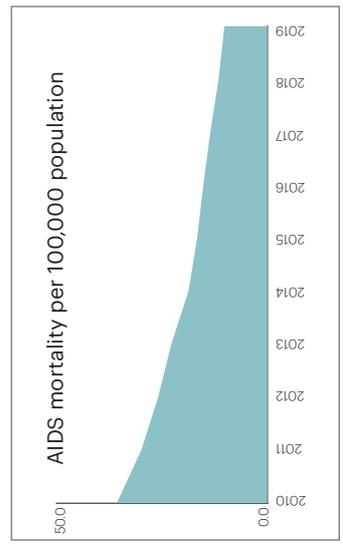
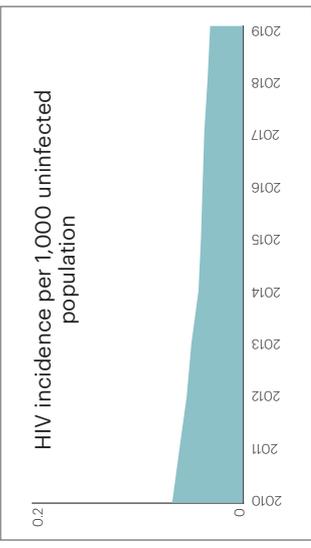
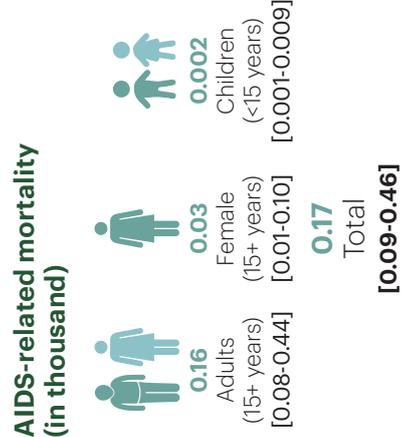
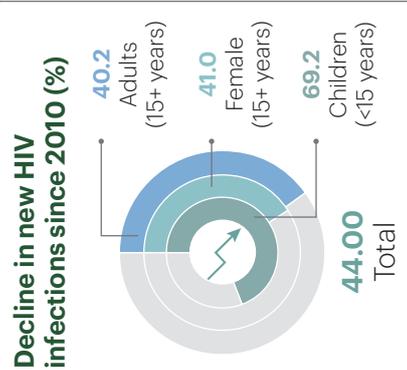
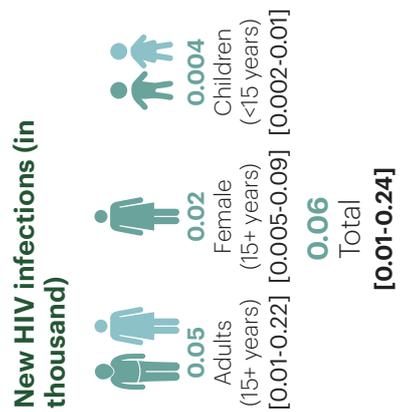


## HIV incidence per 1,000 uninfected population



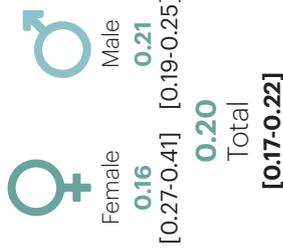
## AIDS mortality per 100,000 population



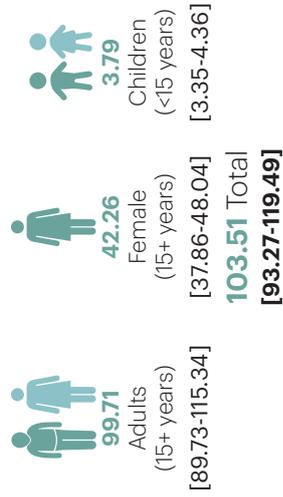


# Gujarat

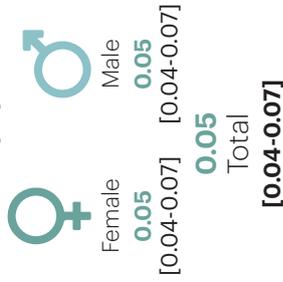
## Adult (15-49 yrs) HIV prevalence (%)



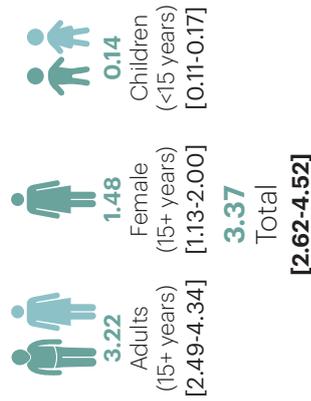
## Number of people living with HIV (in thousand)



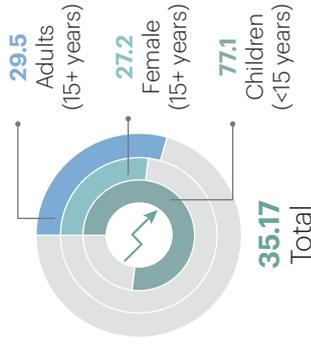
## HIV incidence per 1,000 uninfected population



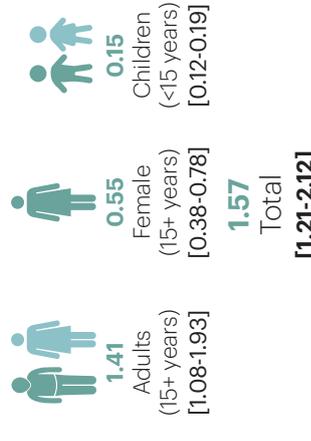
## New HIV infections (in thousand)



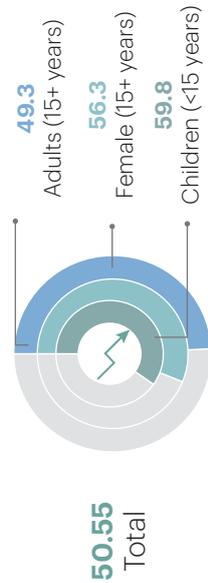
## Decline in new HIV infections since 2010 (%)



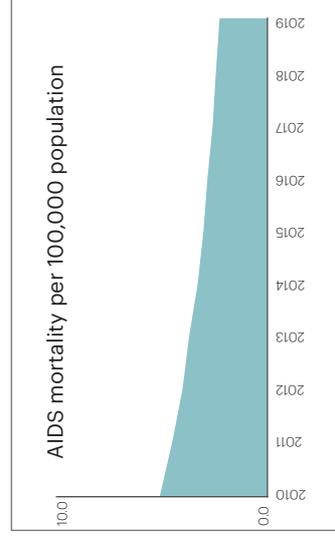
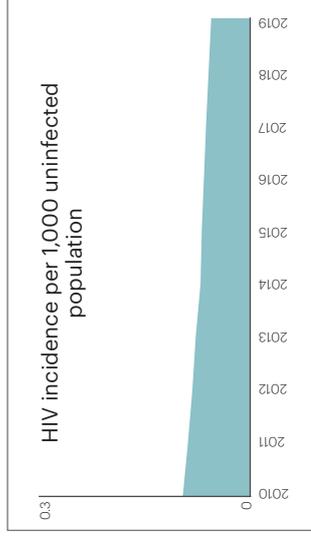
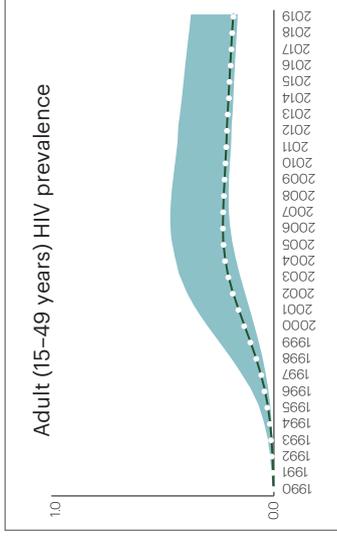
## AIDS-related mortality (in thousand)



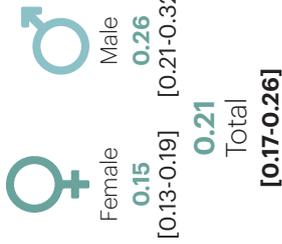
## Decline in AIDS-related mortality since 2010 (%)



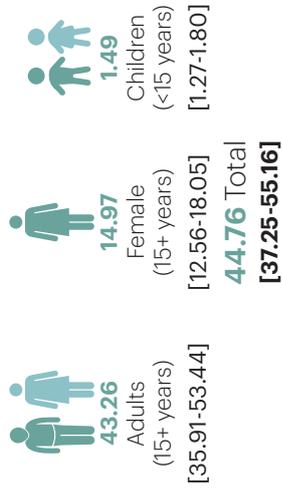
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



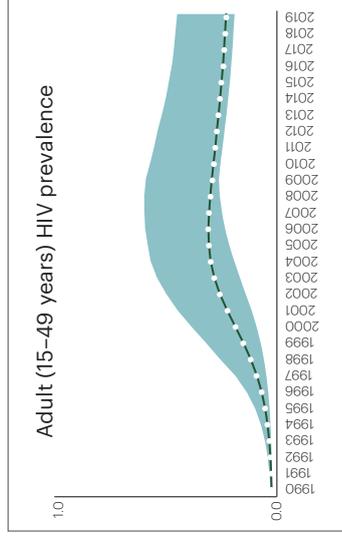
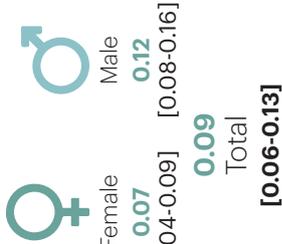
## Adult (15-49 yrs) HIV prevalence (%)



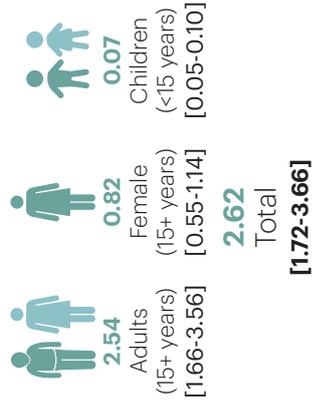
## Number of people living with HIV (in thousand)



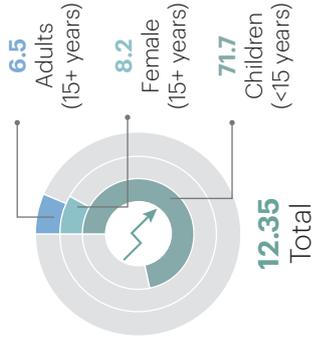
## HIV incidence per 1,000 uninfected population



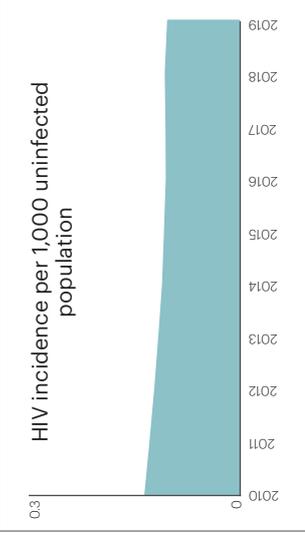
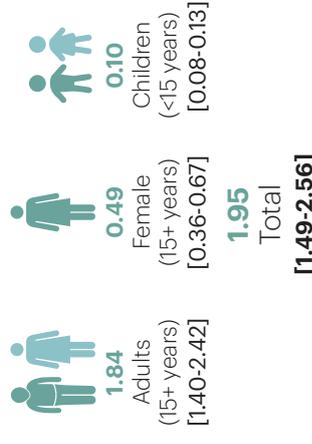
## New HIV infections (in thousand)



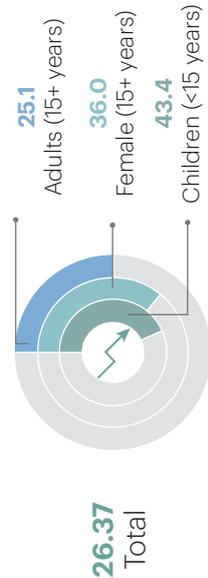
## Decline in new HIV infections since 2010 (%)



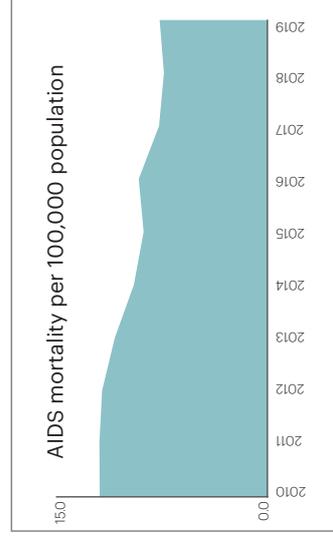
## AIDS-related mortality (in thousand)



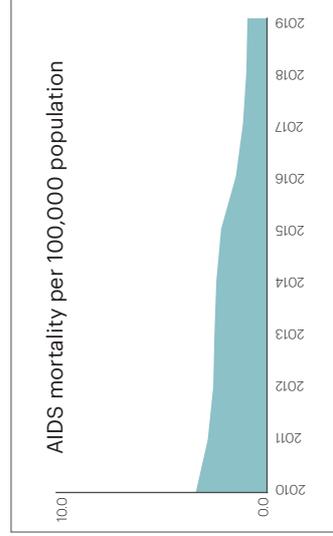
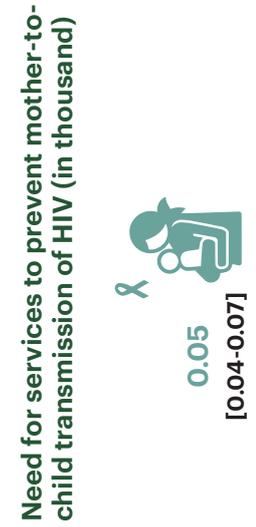
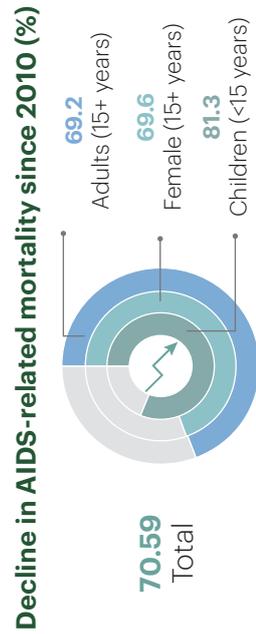
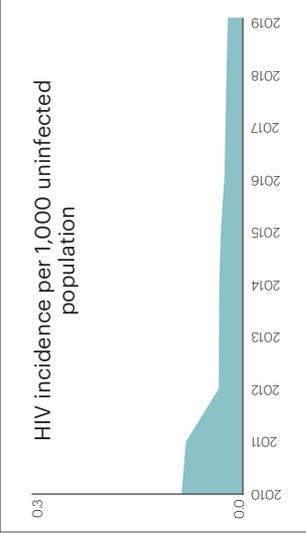
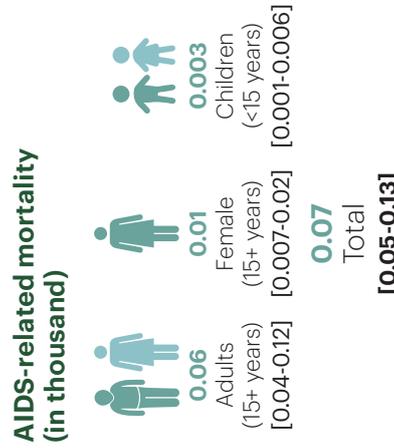
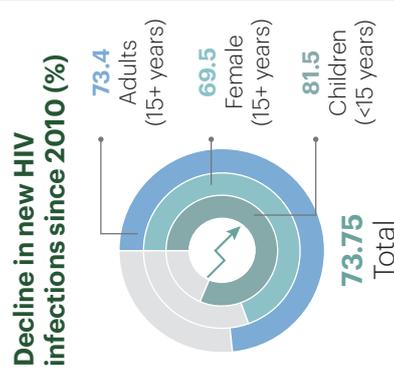
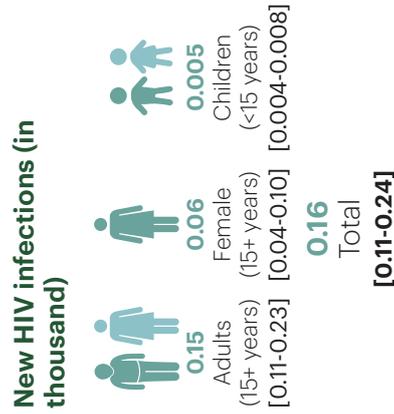
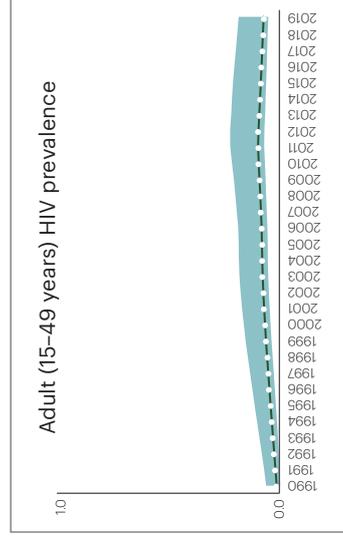
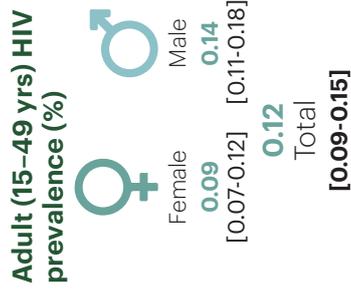
## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)

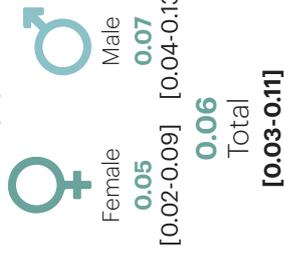


# Himachal Pradesh

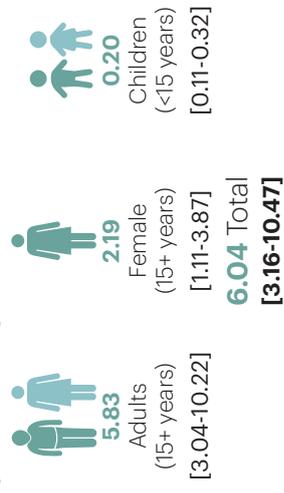


# Jammu and Kashmir and Ladakh

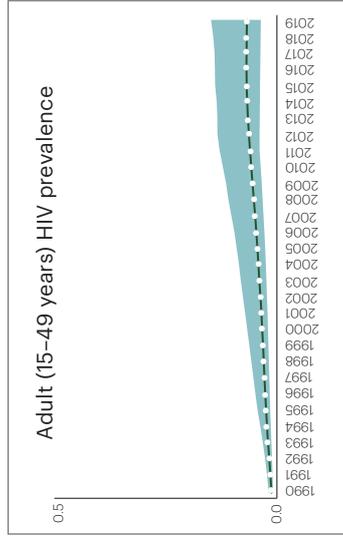
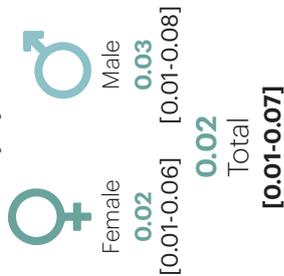
## Adult (15-49 yrs) HIV prevalence (%)



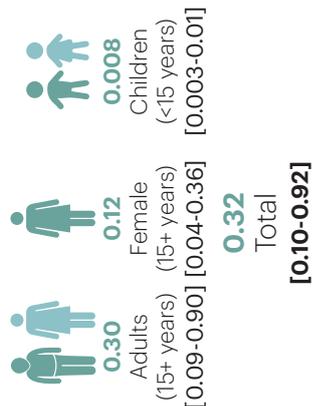
## Number of people living with HIV (in thousand)



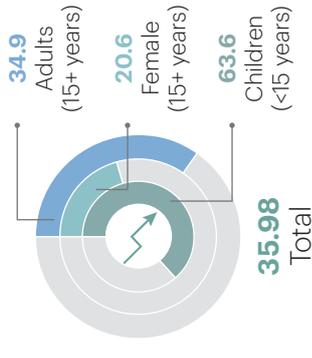
## HIV incidence per 1,000 uninfected population



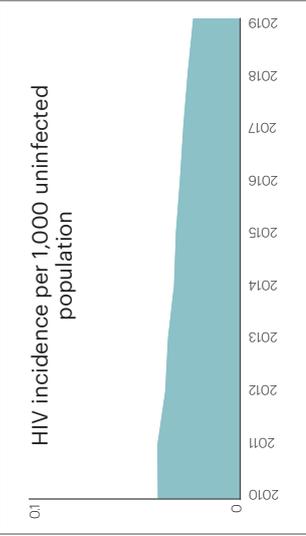
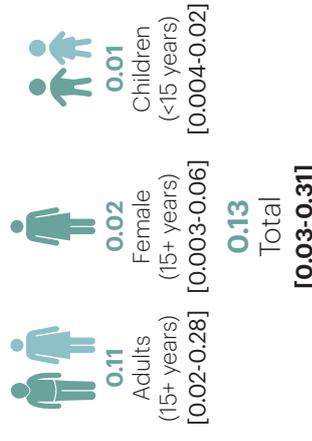
## New HIV infections (in thousand)



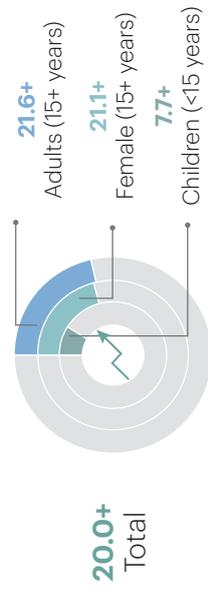
## Decline in new HIV infections since 2010 (%)



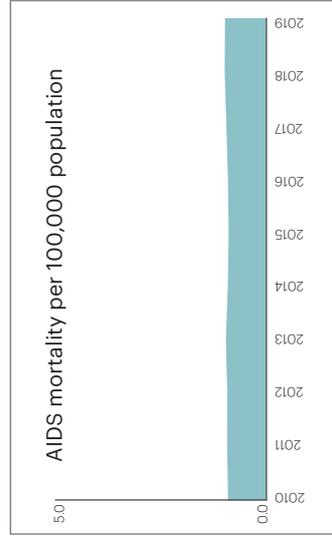
## AIDS-related mortality (in thousand)



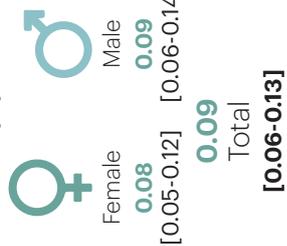
## Increase in AIDS-related mortality since 2010 (%)



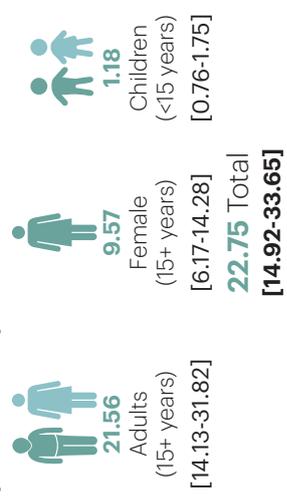
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



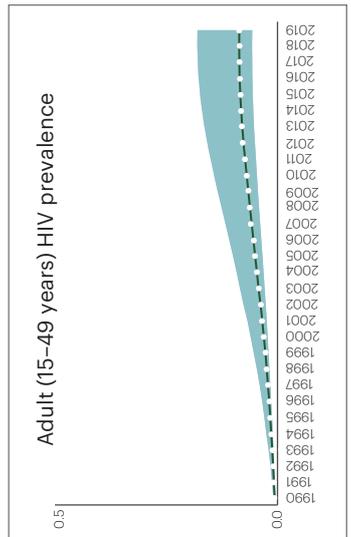
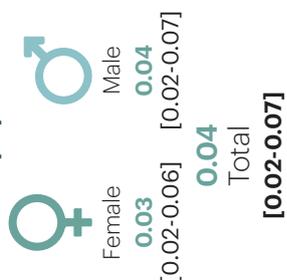
## Adult (15-49 yrs) HIV prevalence (%)



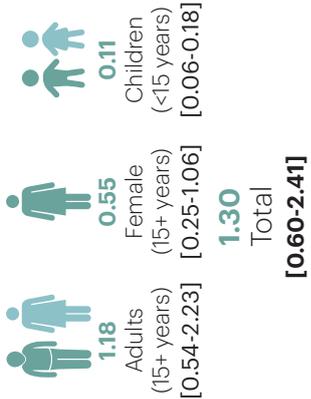
## Number of people living with HIV (in thousand)



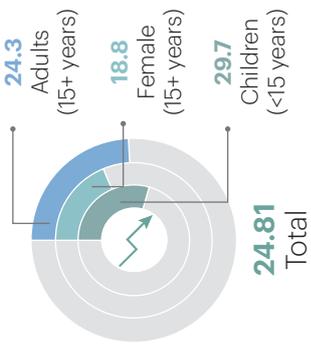
## HIV incidence per 1,000 uninfected population



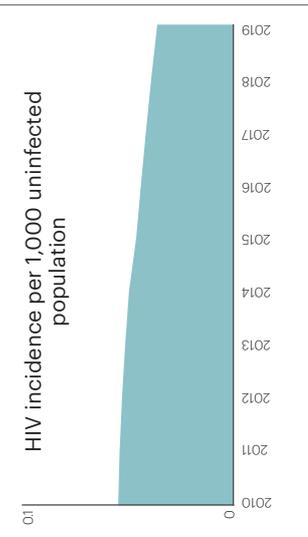
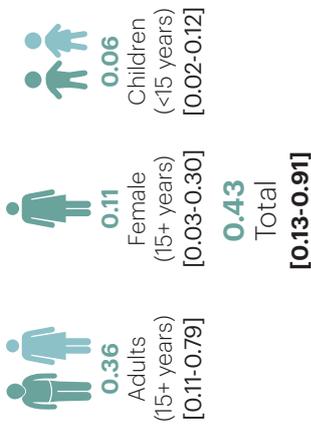
## New HIV infections (in thousand)



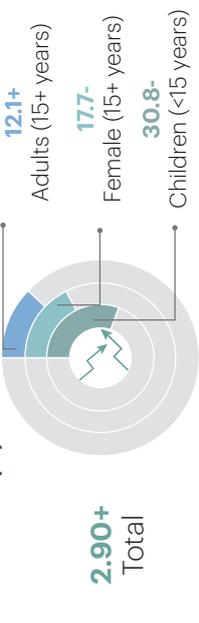
## Decline in new HIV infections since 2010 (%)



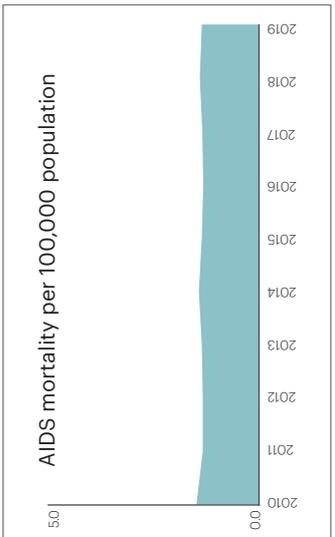
## AIDS-related mortality (in thousand)



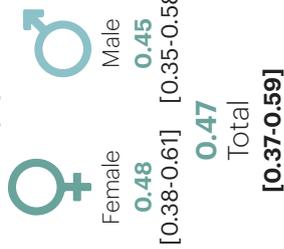
## Increase/Decline in AIDS-related mortality since 2010 (%)



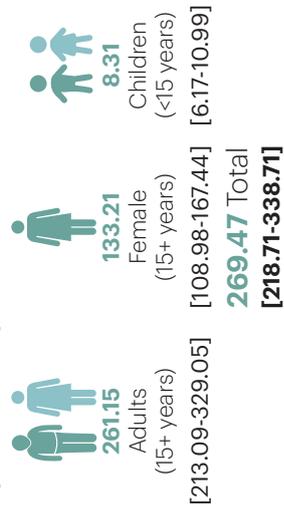
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



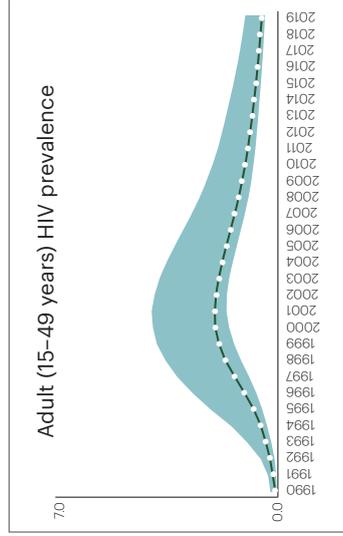
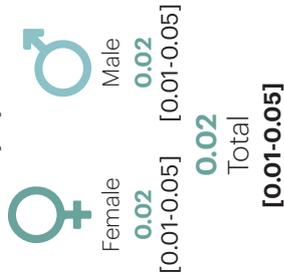
### Adult (15-49 yrs) HIV prevalence (%)



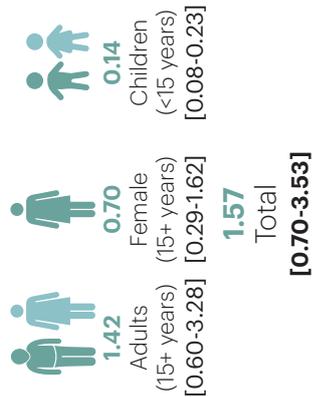
### Number of people living with HIV (in thousand)



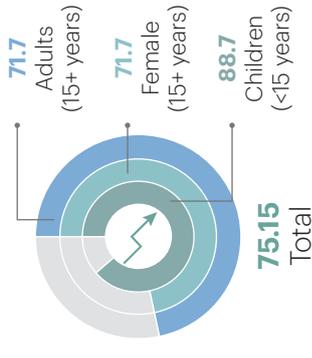
### HIV incidence per 1,000 uninfected population



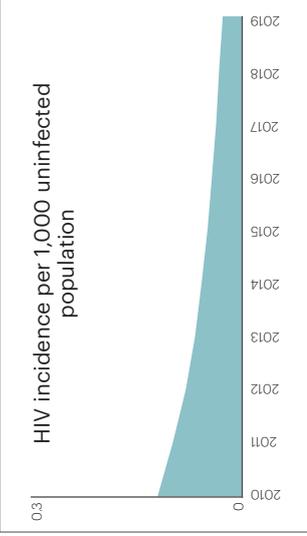
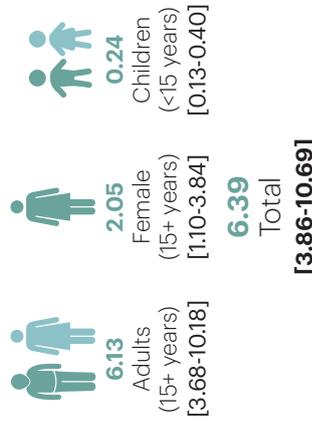
### New HIV infections (in thousand)



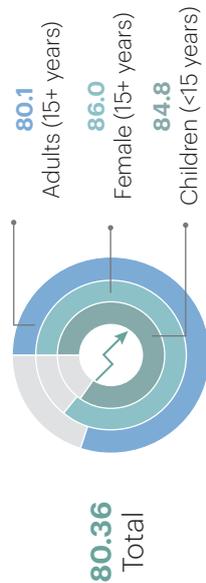
### Decline in new HIV infections since 2010 (%)



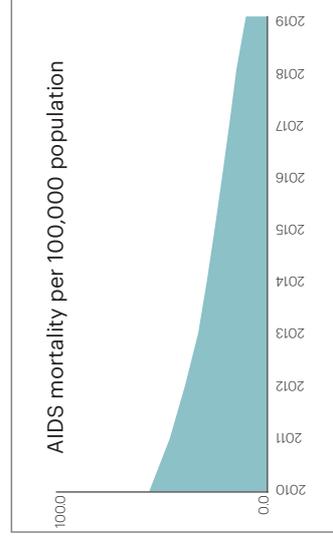
### AIDS-related mortality (in thousand)



### Decline in AIDS-related mortality since 2010 (%)

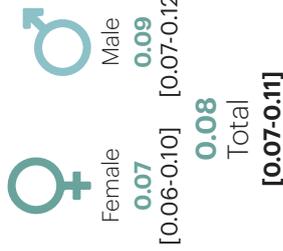


### Need for services to prevent mother-to-child transmission of HIV (in thousand)



AIDS mortality per 100,000 population

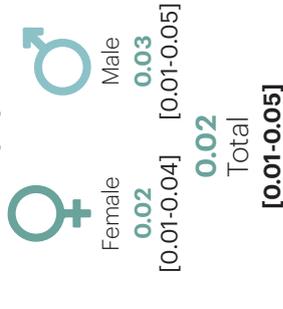
## Adult (15-49 yrs) HIV prevalence (%)



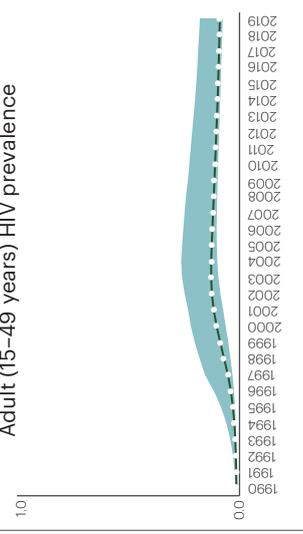
## Number of people living with HIV (in thousand)



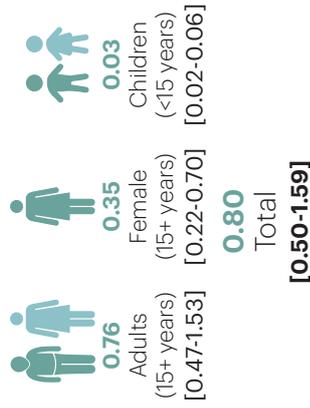
## HIV incidence per 1,000 uninfected population



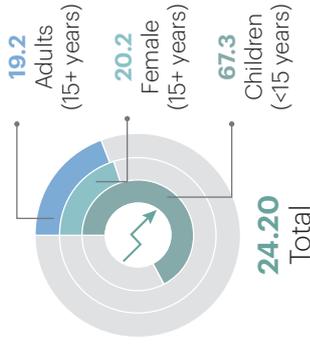
## Adult (15-49 years) HIV prevalence



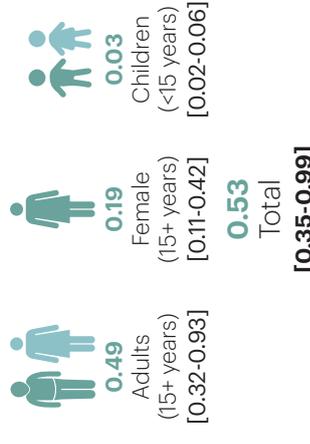
## New HIV infections (in thousand)



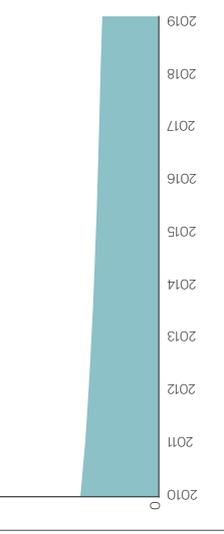
## Decline in new HIV infections since 2010 (%)



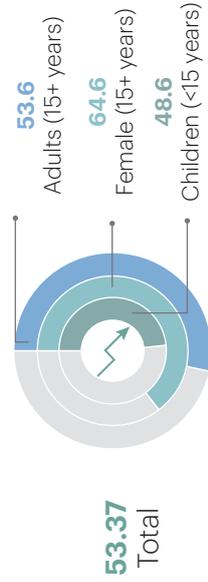
## AIDS-related mortality (in thousand)



## HIV incidence per 1,000 uninfected population



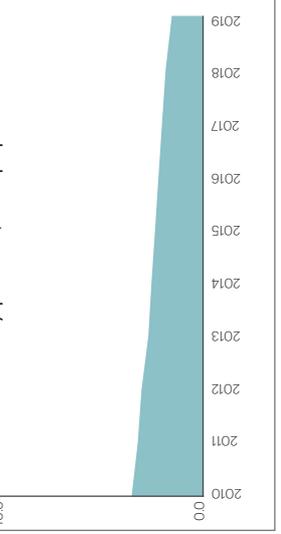
## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)

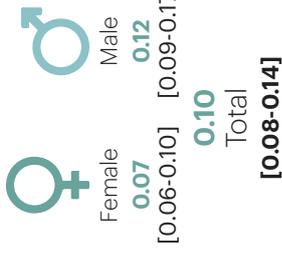


## AIDS mortality per 100,000 population



# Madhya Pradesh

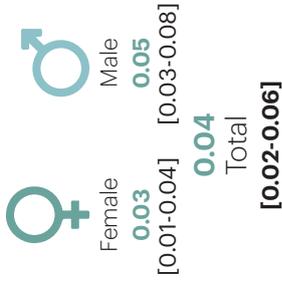
## Adult (15-49 yrs) HIV prevalence (%)



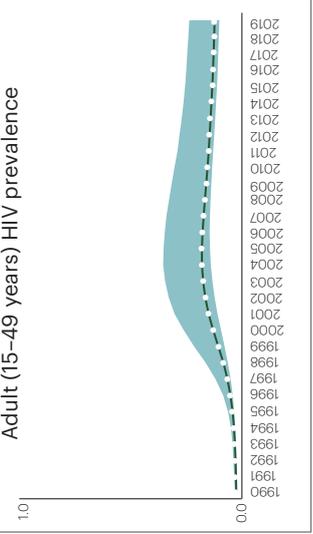
## Number of people living with HIV (in thousand)



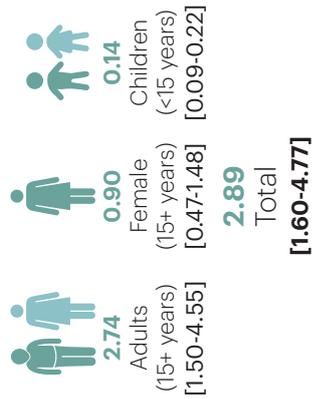
## HIV incidence per 1,000 uninfected population



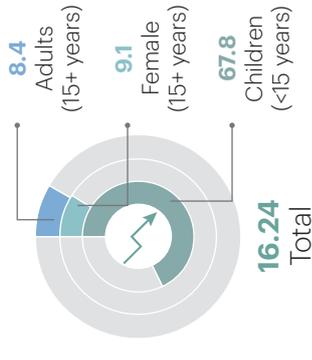
## Adult (15-49 years) HIV prevalence



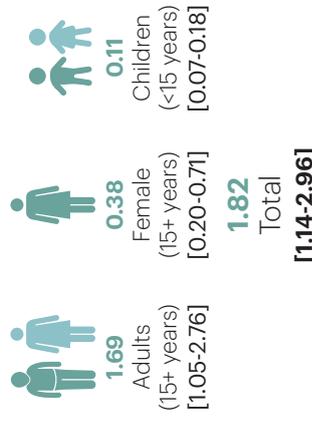
## New HIV infections (in thousand)



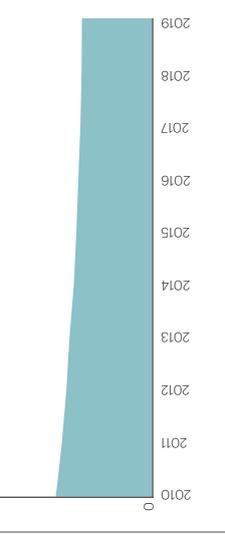
## Decline in new HIV infections since 2010 (%)



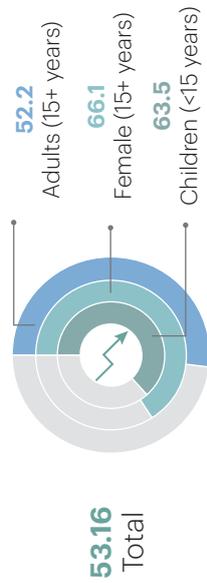
## AIDS-related mortality (in thousand)



## HIV incidence per 1,000 uninfected population



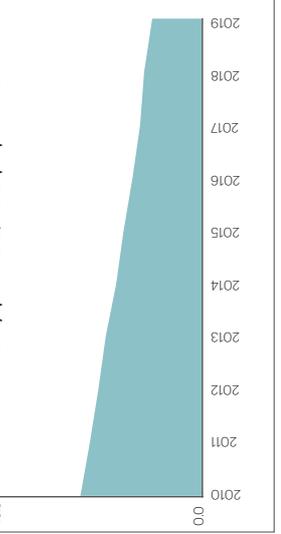
## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)

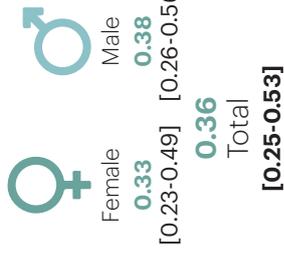


## AIDS mortality per 100,000 population

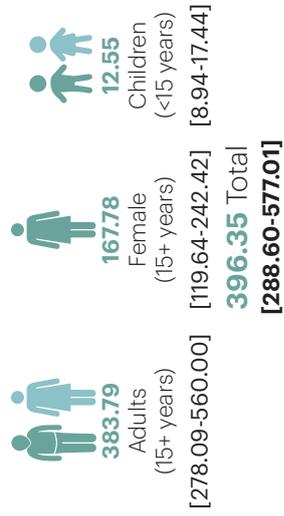


# Maharashtra

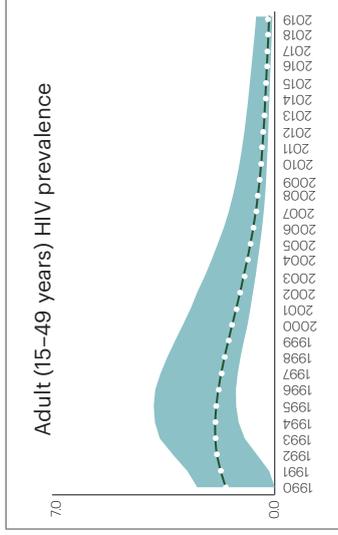
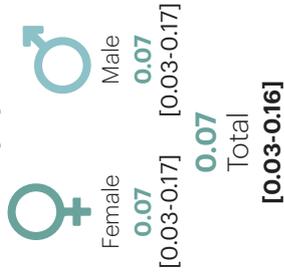
## Adult (15-49 yrs) HIV prevalence (%)



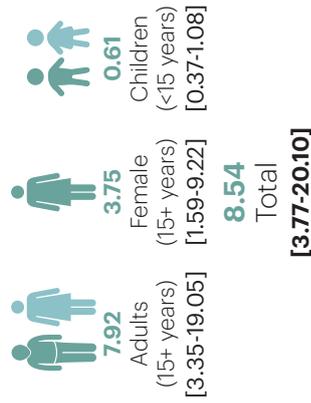
## Number of people living with HIV (in thousand)



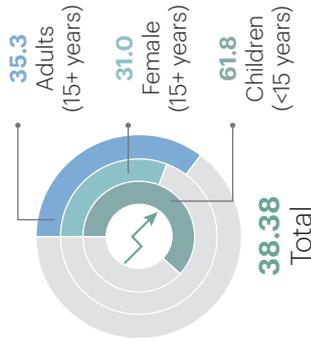
## HIV incidence per 1,000 uninfected population



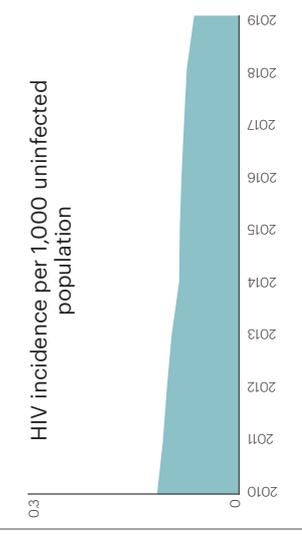
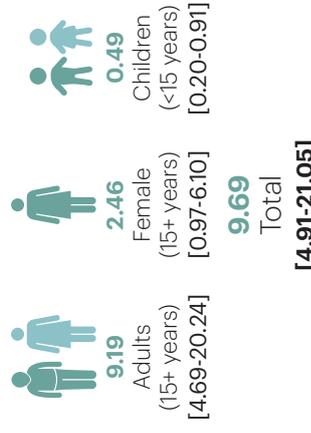
## New HIV infections (in thousand)



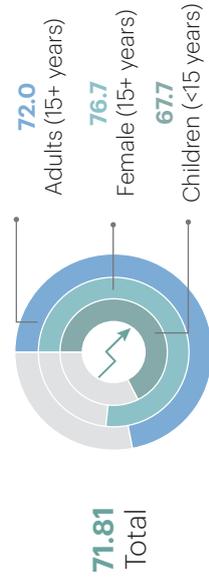
## Decline in new HIV infections since 2010 (%)



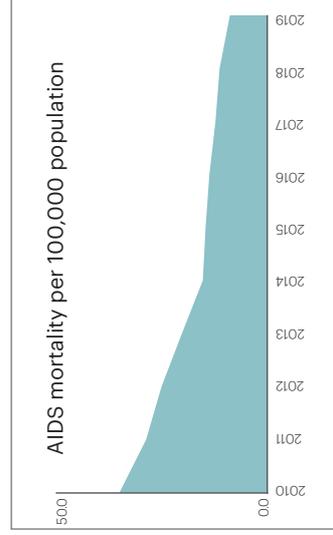
## AIDS-related mortality (in thousand)

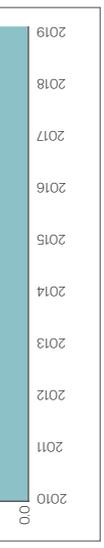
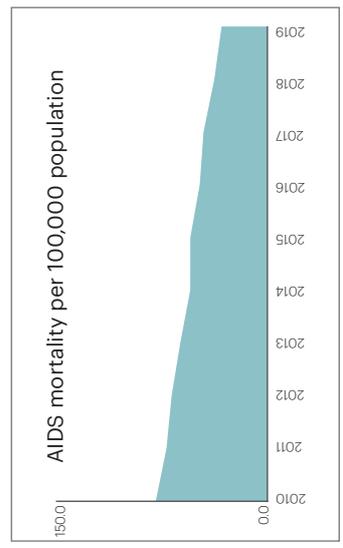
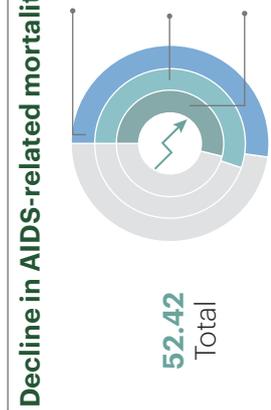
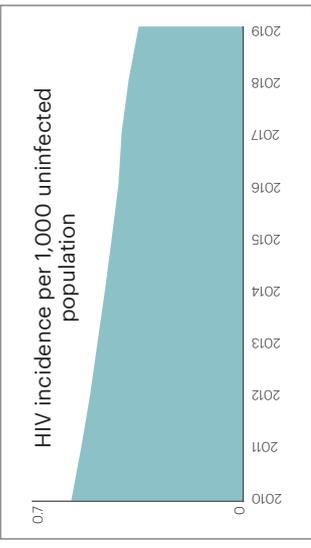
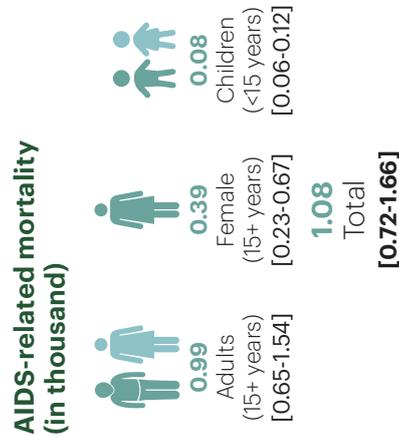
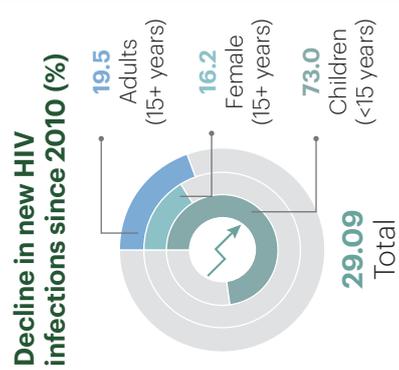
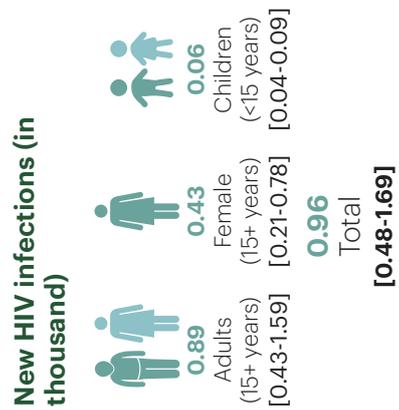
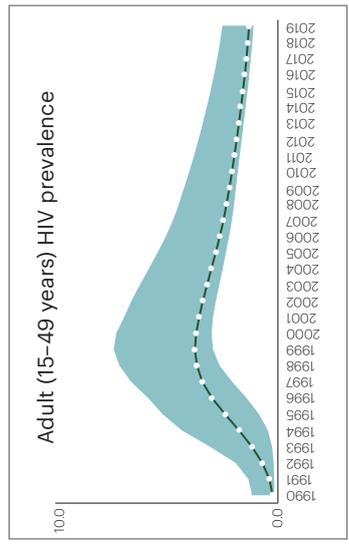
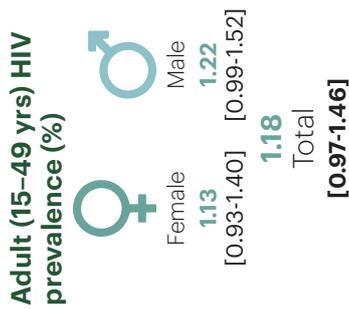


## Decline in AIDS-related mortality since 2010 (%)



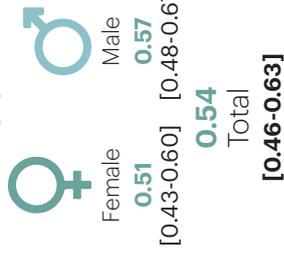
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



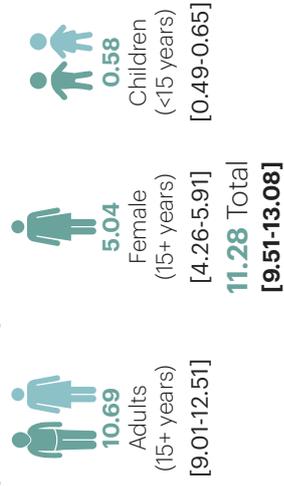


# Meghalaya

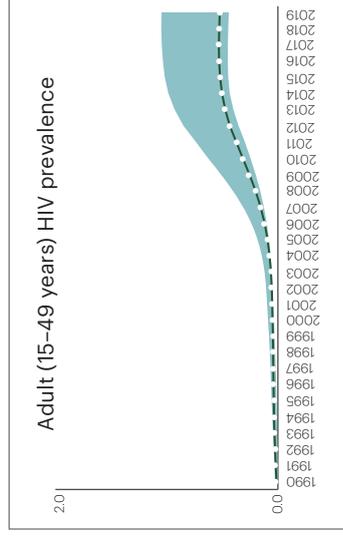
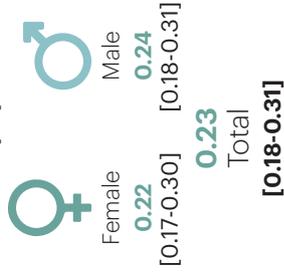
## Adult (15-49 yrs) HIV prevalence (%)



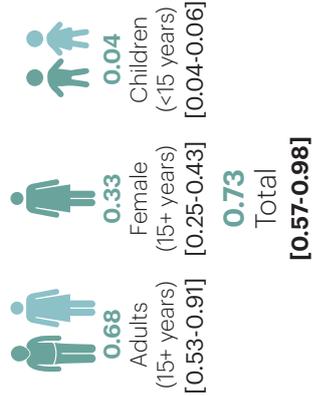
## Number of people living with HIV (in thousand)



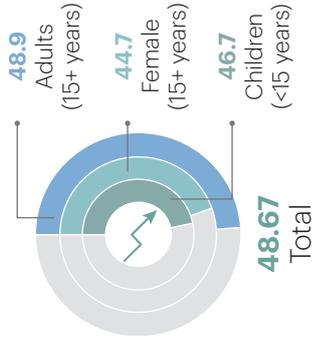
## HIV incidence per 1,000 uninfected population



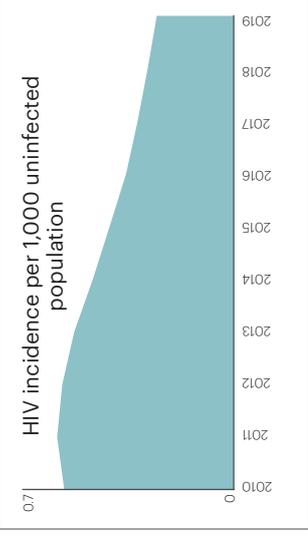
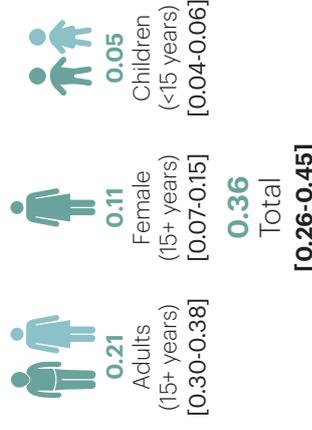
## New HIV infections (in thousand)



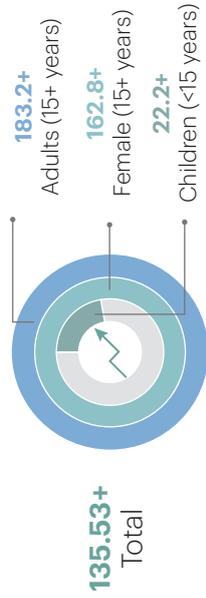
## Decline in new HIV infections since 2010 (%)



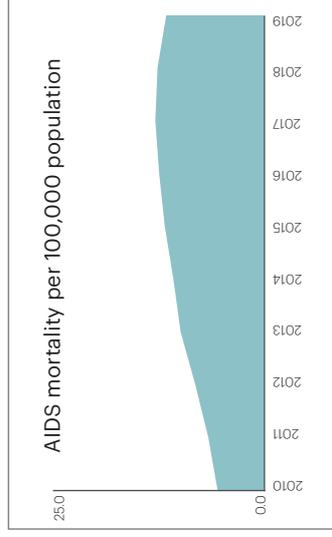
## AIDS-related mortality (in thousand)



## Increase in AIDS-related mortality since 2010 (%)



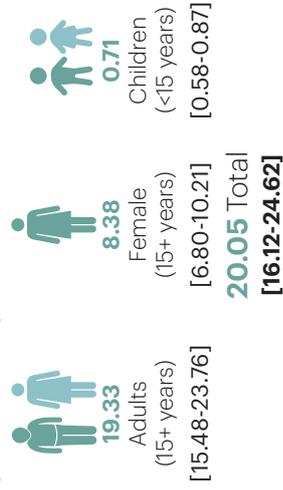
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



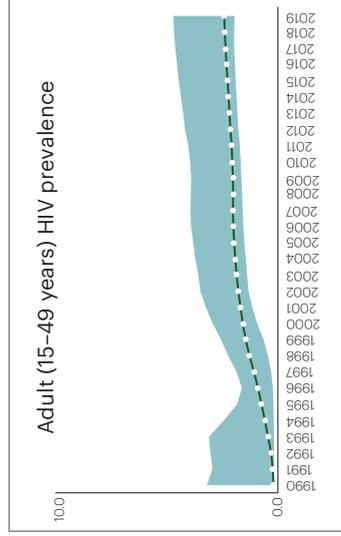
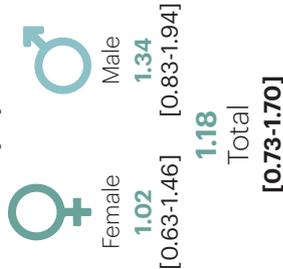
### Adult (15-49 yrs) HIV prevalence (%)



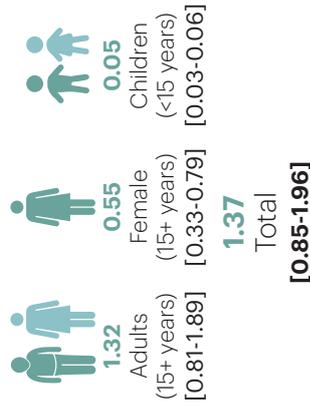
### Number of people living with HIV (in thousand)



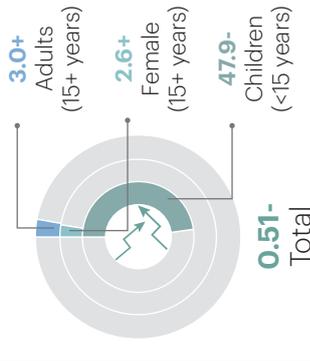
### HIV incidence per 1,000 uninfected population



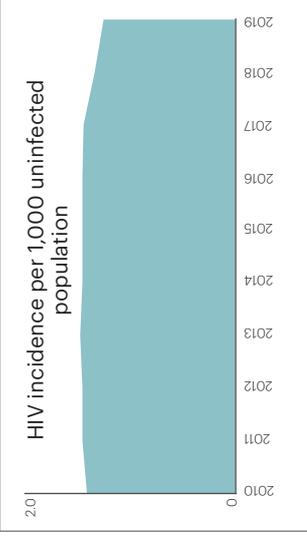
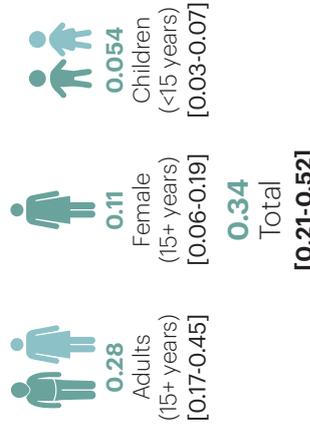
### New HIV infections (in thousand)



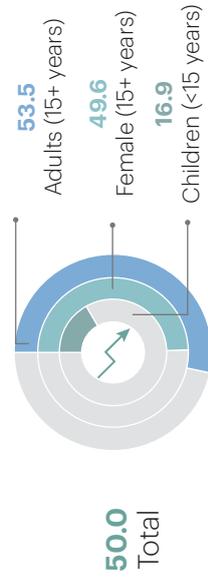
### Increase/Decline in new HIV infections since 2010 (%)



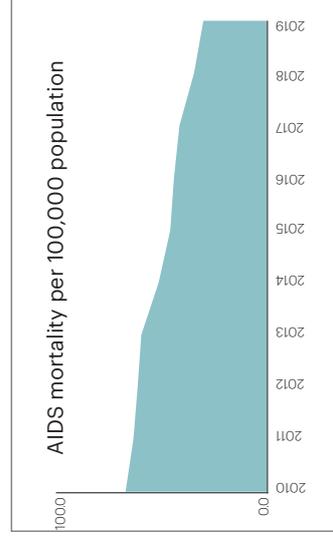
### AIDS-related mortality (in thousand)



### Decline in AIDS-related mortality since 2010 (%)

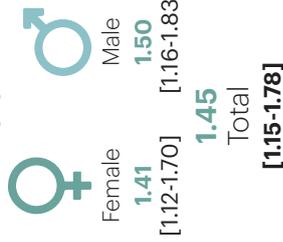


### Need for services to prevent mother-to-child transmission of HIV (in thousand)

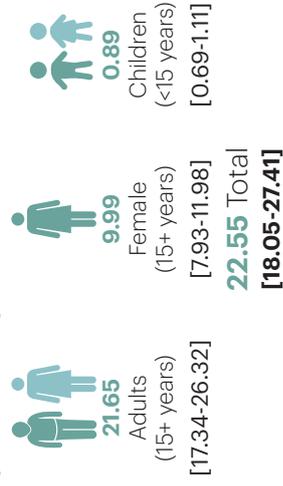


# Nagaland

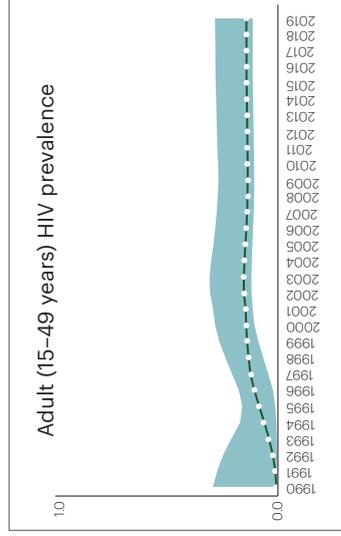
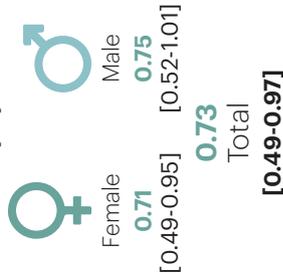
## Adult (15-49 yrs) HIV prevalence (%)



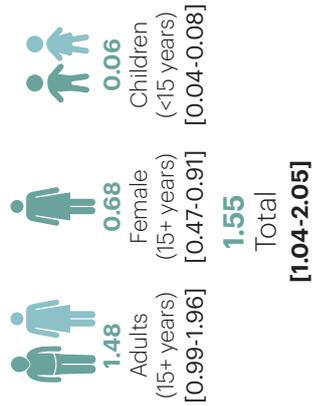
## Number of people living with HIV (in thousand)



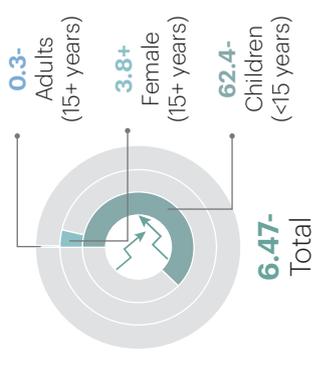
## HIV incidence per 1,000 uninfected population



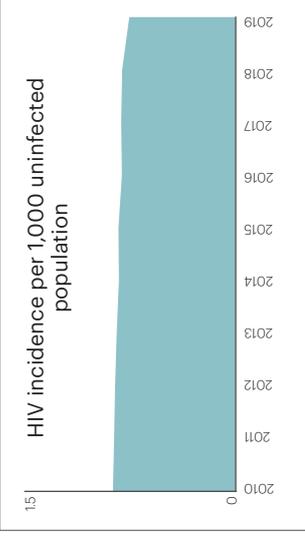
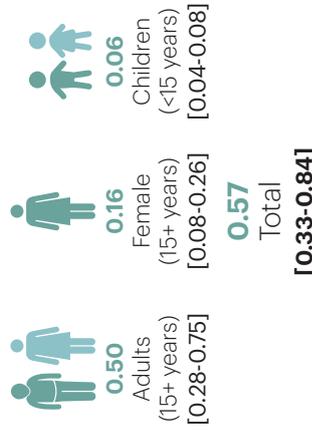
## New HIV infections (in thousand)



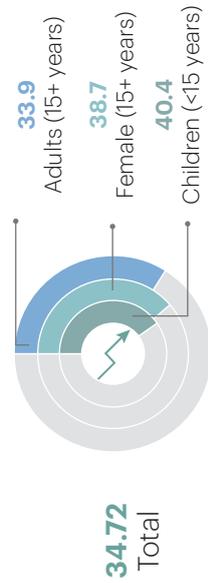
## Increase/Decline in new HIV infections since 2010 (%)



## AIDS-related mortality (in thousand)



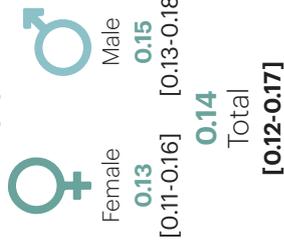
## Decline in AIDS-related mortality since 2010 (%)



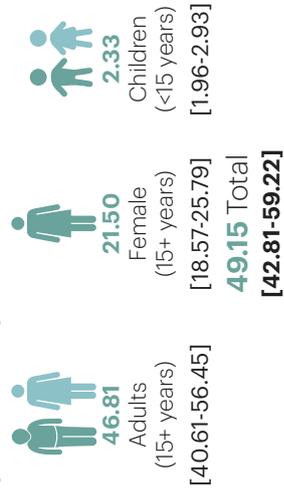
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



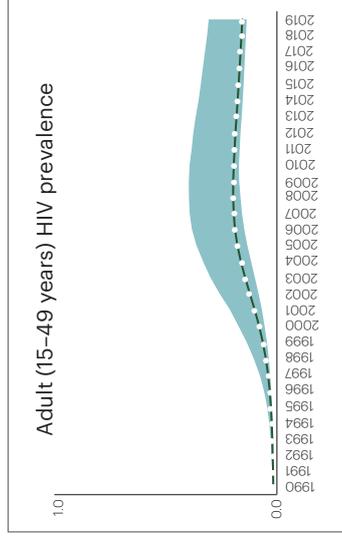
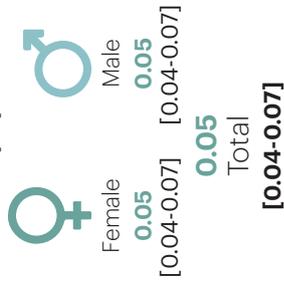
### Adult (15-49 yrs) HIV prevalence (%)



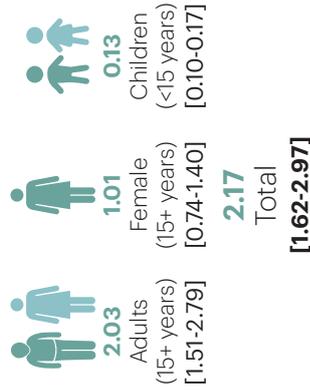
### Number of people living with HIV (in thousand)



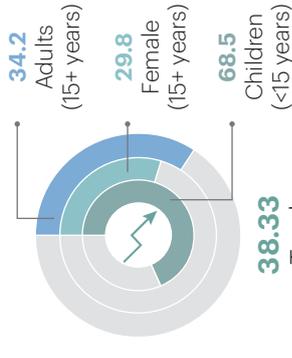
### HIV incidence per 1,000 uninfected population



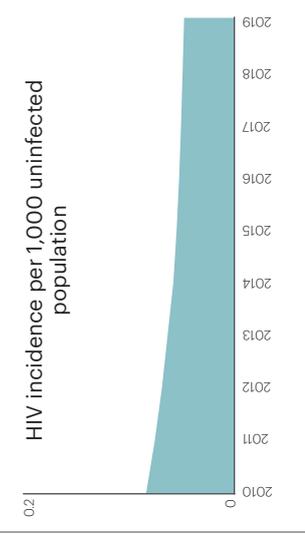
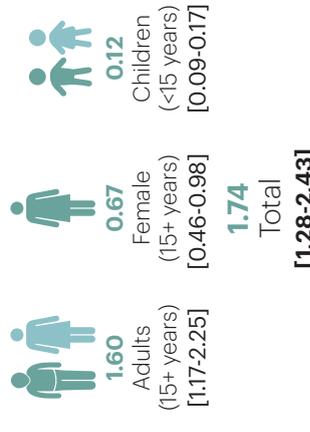
### New HIV infections (in thousand)



### Decline in new HIV infections since 2010 (%)



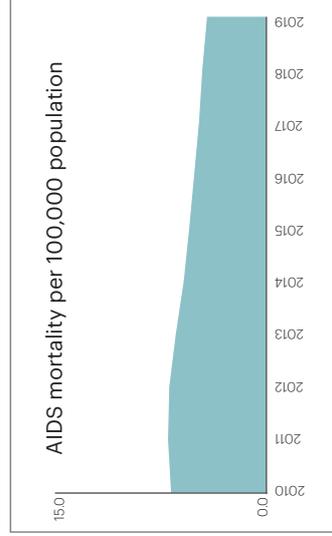
### AIDS-related mortality (in thousand)



### Decline in AIDS-related mortality since 2010 (%)



### Need for services to prevent mother-to-child transmission of HIV (in thousand)

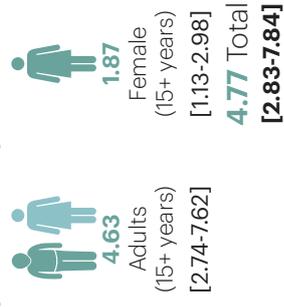


# Puducherry

## Adult (15-49 yrs) HIV prevalence (%)



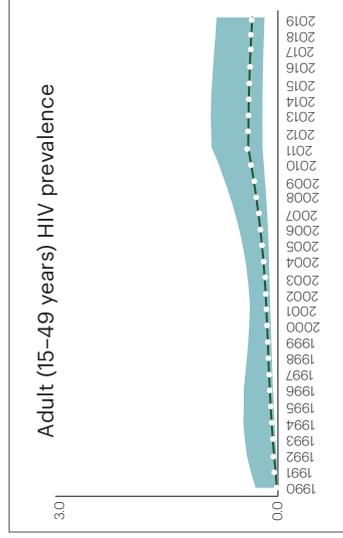
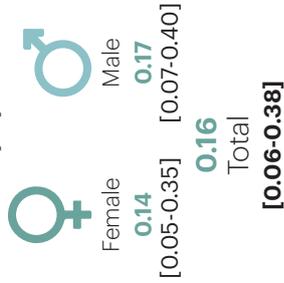
## Number of people living with HIV (in thousand)



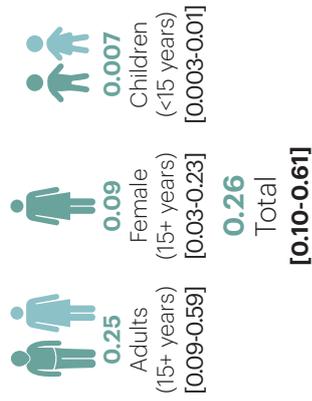
## Number of people living with HIV (in thousand)



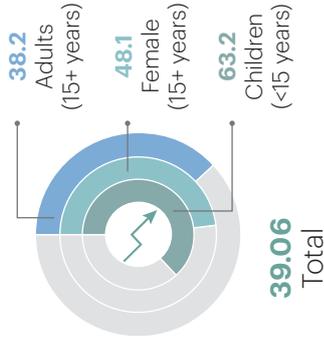
## HIV incidence per 1,000 uninfected population



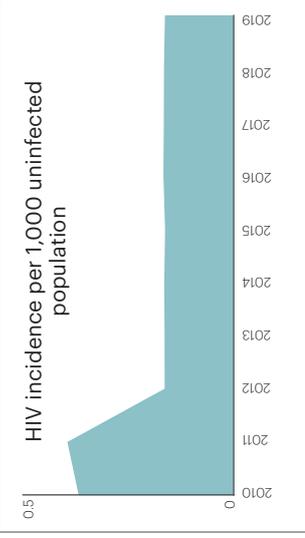
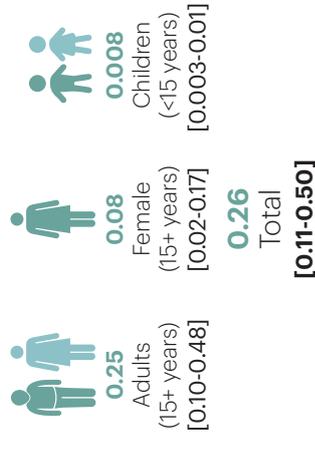
## New HIV infections (in thousand)



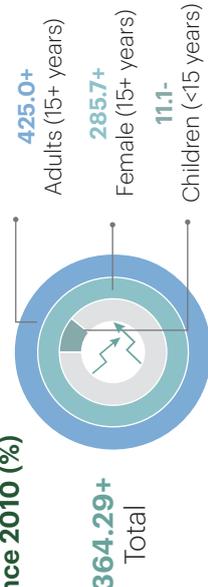
## Decline in new HIV infections since 2010 (%)



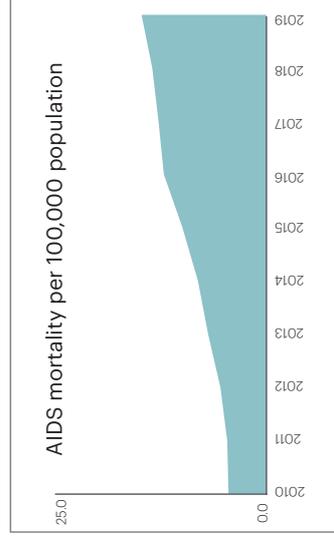
## AIDS-related mortality (in thousand)

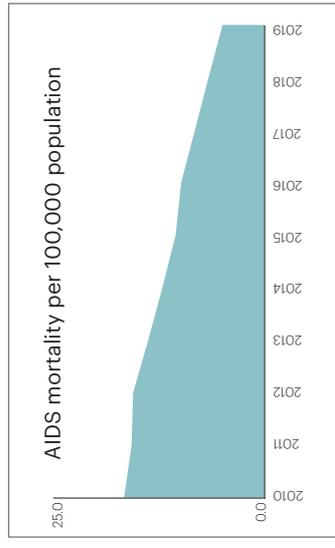
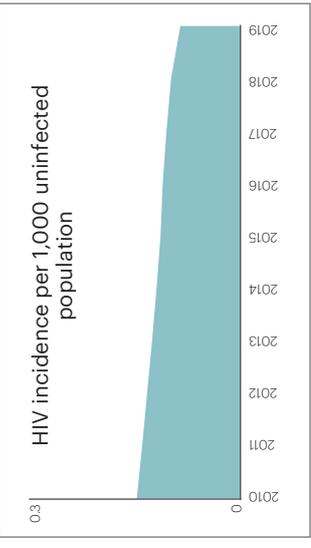
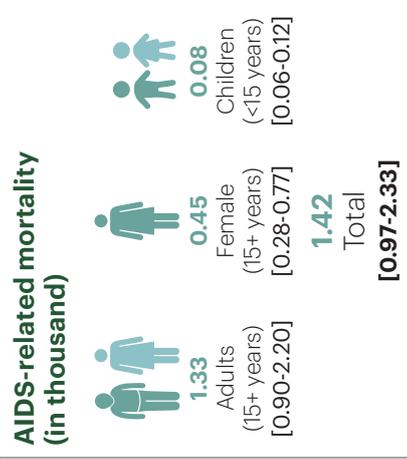
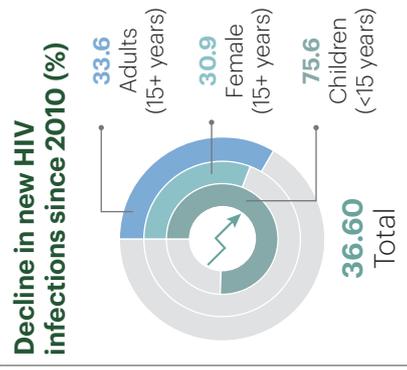
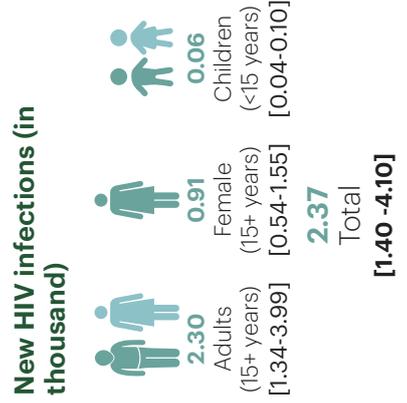
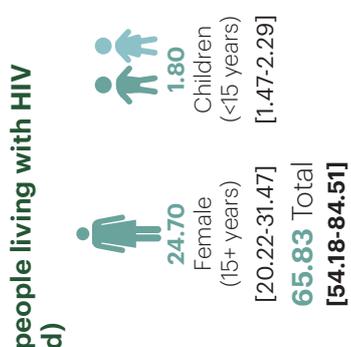
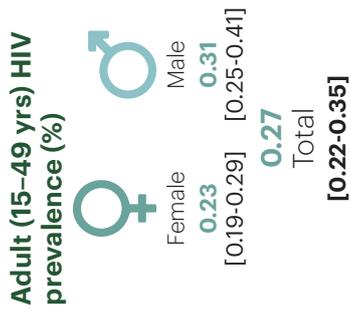


## Increase/Decline in AIDS-related mortality since 2010 (%)



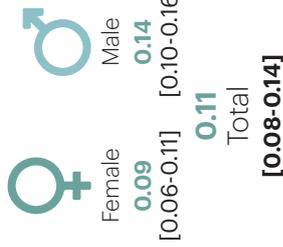
## Need for services to prevent mother-to-child transmission of HIV (in thousand)



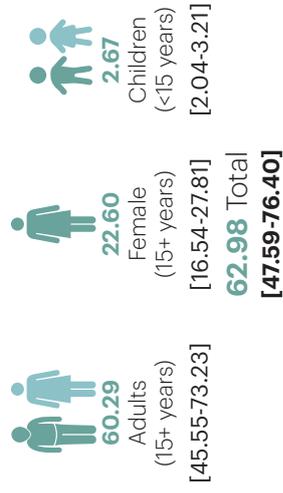


# Rajasthan

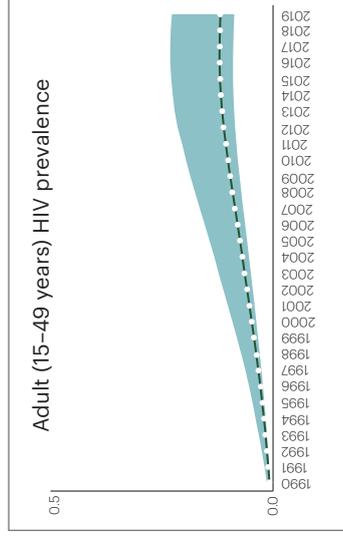
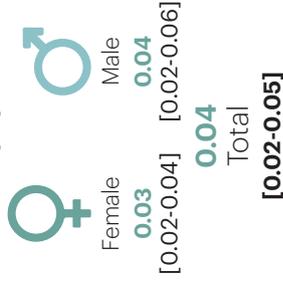
## Adult (15-49 yrs) HIV prevalence (%)



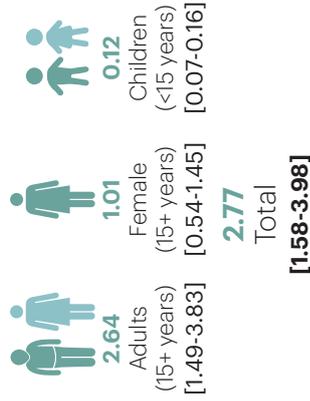
## Number of people living with HIV (in thousand)



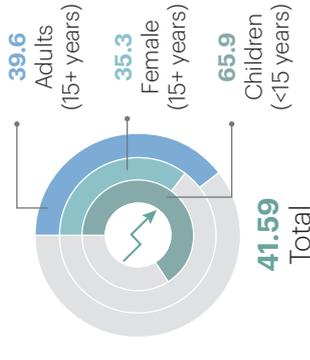
## HIV incidence per 1,000 uninfected population



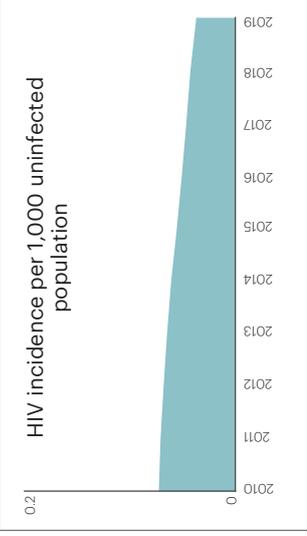
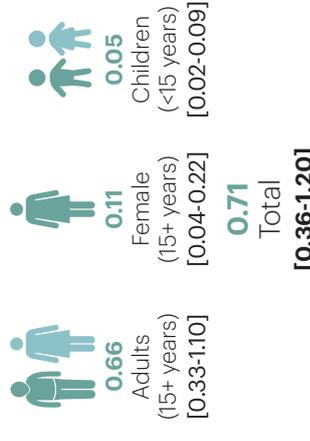
## New HIV infections (in thousand)



## Decline in new HIV infections since 2010 (%)



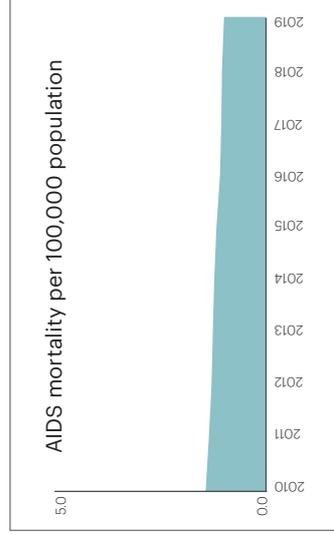
## AIDS-related mortality (in thousand)



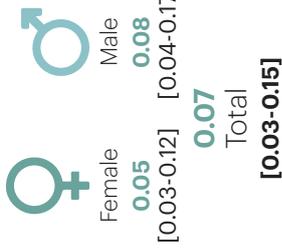
## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)



### Adult (15-49 yrs) HIV prevalence (%)



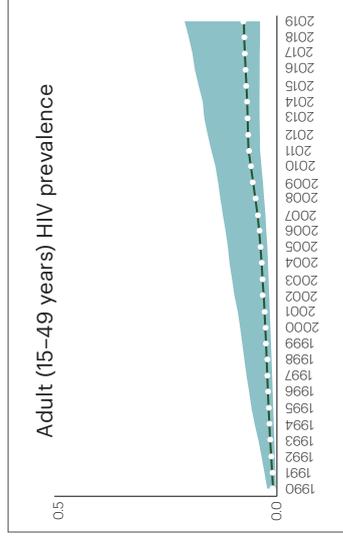
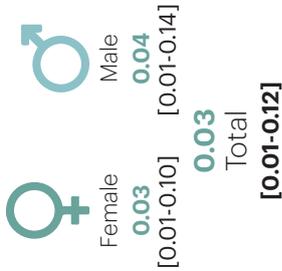
### Number of people living with HIV (in thousand)



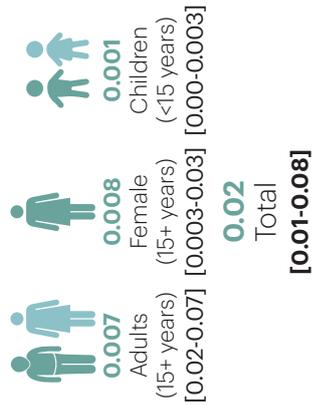
### Number of people living with HIV (<15 years)



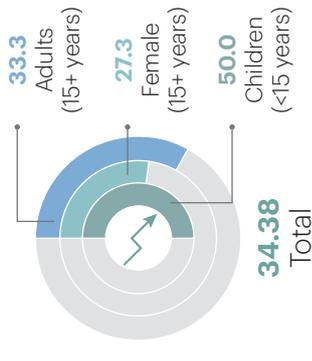
### HIV incidence per 1,000 uninfected population



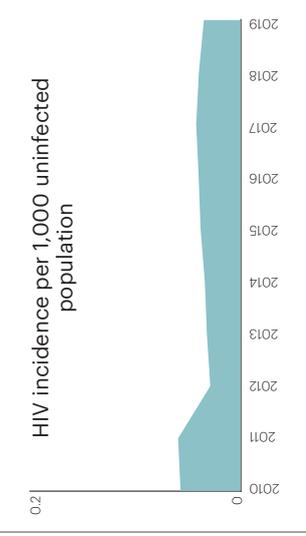
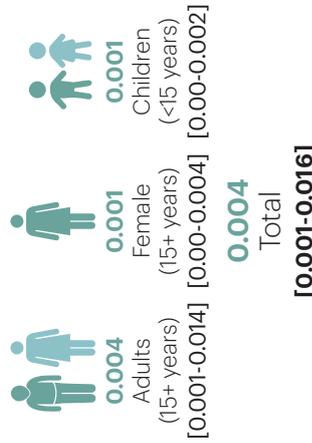
### New HIV infections (in thousand)



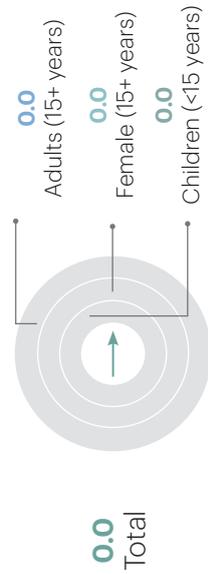
### Decline in new HIV infections since 2010 (%)



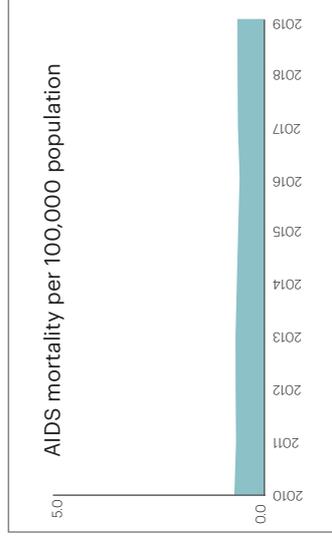
### AIDS-related mortality (in thousand)



### Stability in AIDS-related mortality since 2010 (%)



### Need for services to prevent mother-to-child transmission of HIV (in thousand)

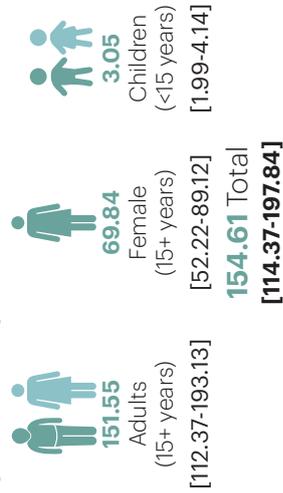


# Tamil Nadu

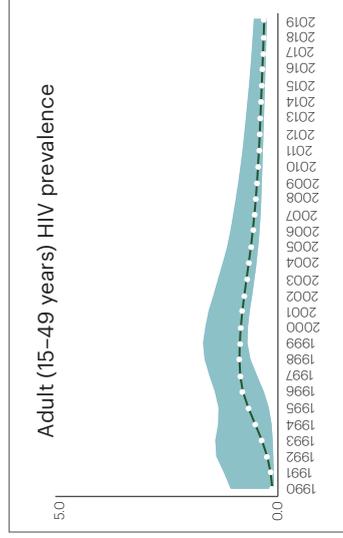
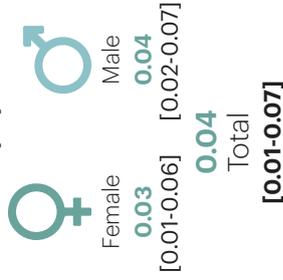
## Adult (15-49 yrs) HIV prevalence (%)



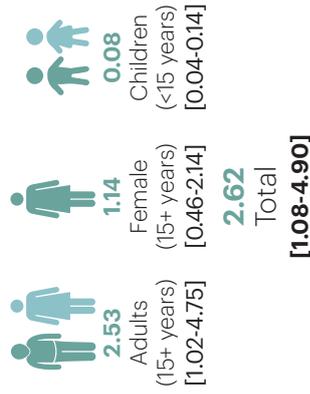
## Number of people living with HIV (in thousand)



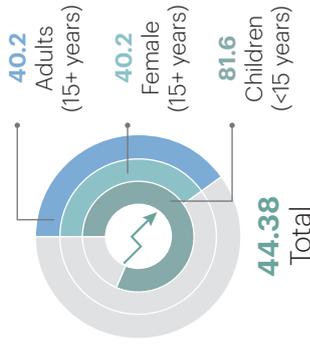
## HIV incidence per 1,000 uninfected population



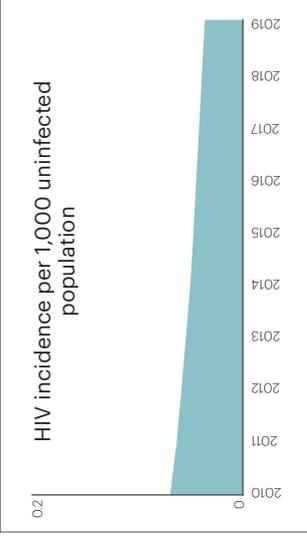
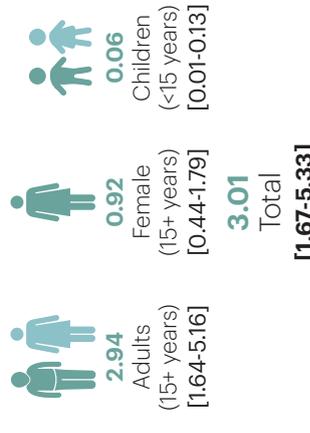
## New HIV infections (in thousand)



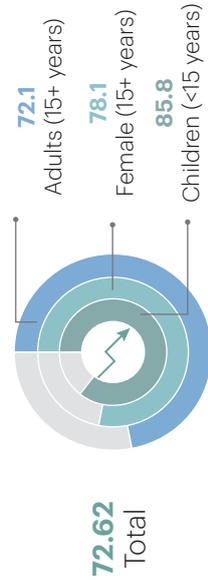
## Decline in new HIV infections since 2010 (%)



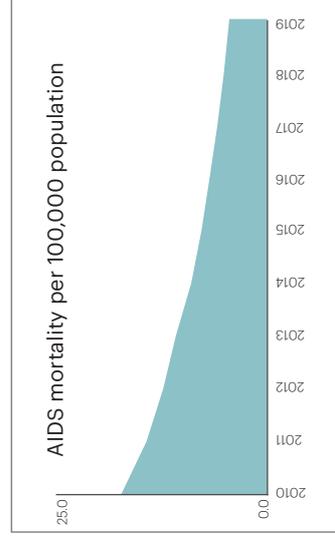
## AIDS-related mortality (in thousand)

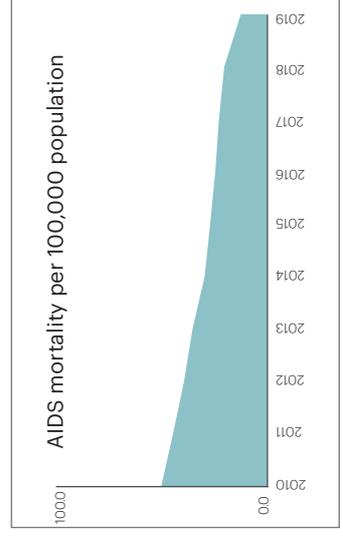
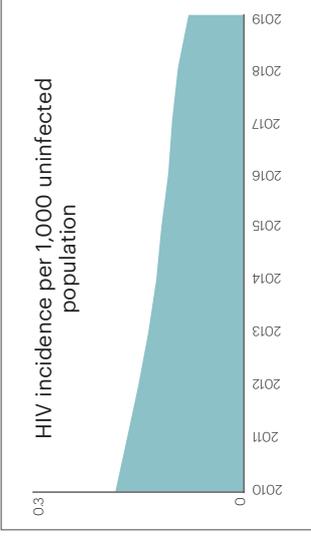
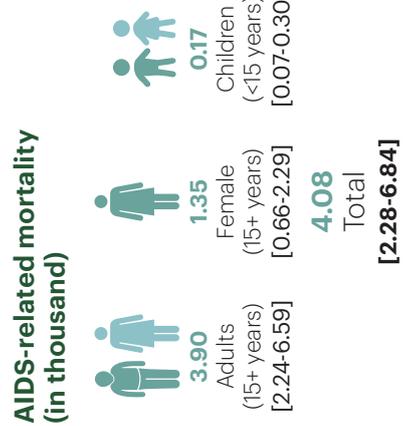
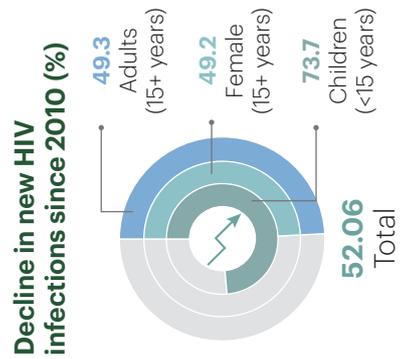
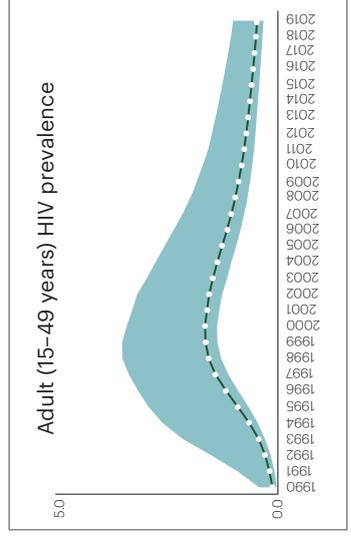
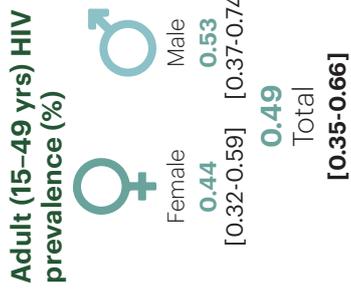


## Decline in AIDS-related mortality since 2010 (%)

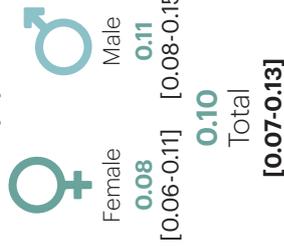


## Need for services to prevent mother-to-child transmission of HIV (in thousand)

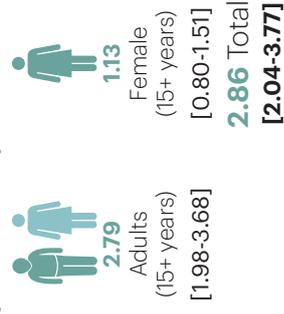




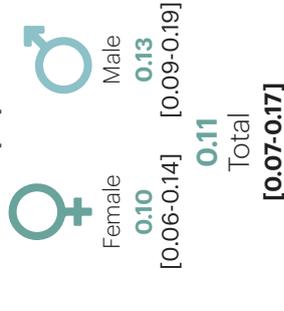
## Adult (15-49 yrs) HIV prevalence (%)



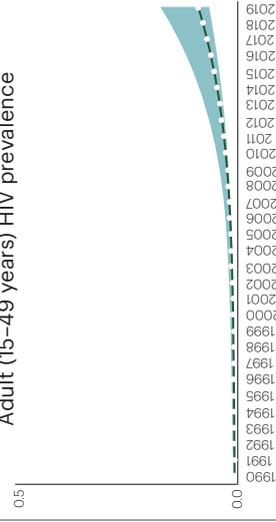
## Number of people living with HIV (in thousand)



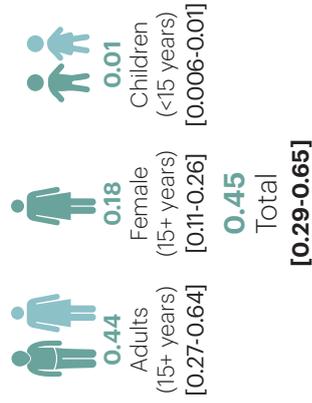
## HIV incidence per 1,000 uninfected population



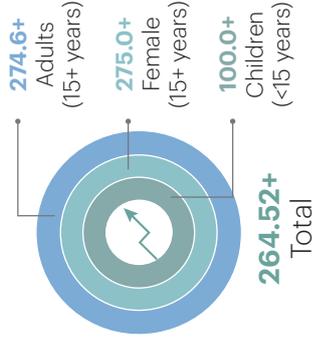
## Adult (15-49 years) HIV prevalence



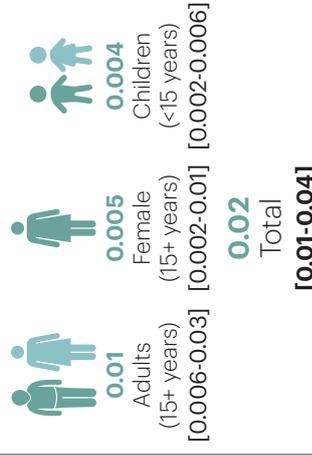
## New HIV infections (in thousand)



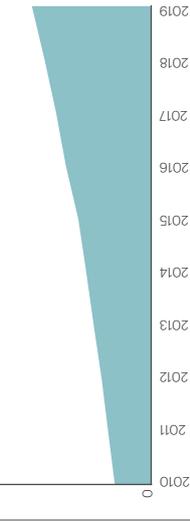
## Increase in new HIV infections since 2010 (%)



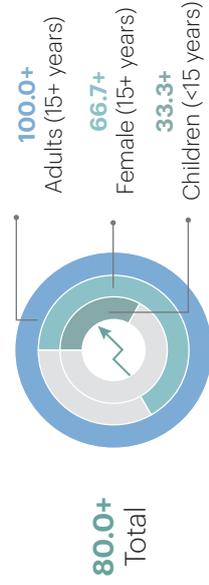
## AIDS-related mortality (in thousand)



## HIV incidence per 1,000 uninfected population



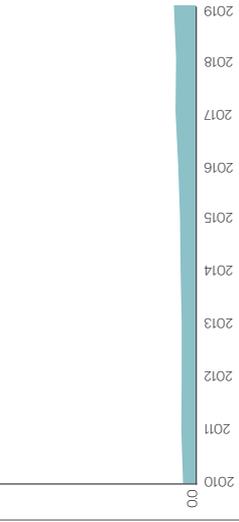
## Increase in AIDS-related mortality since 2010 (%)

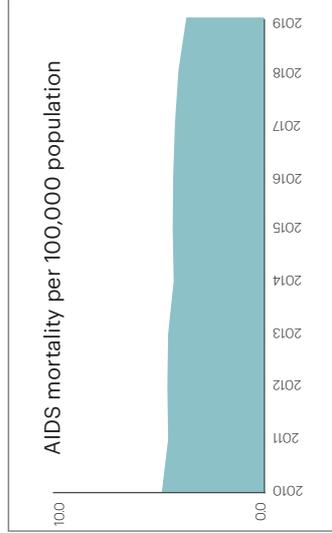
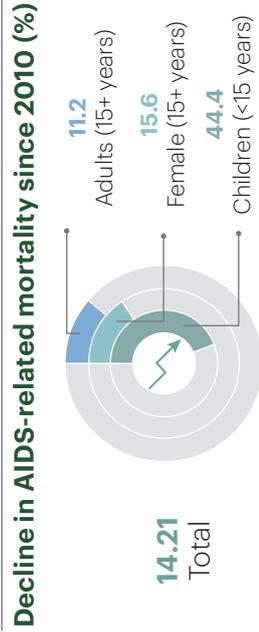
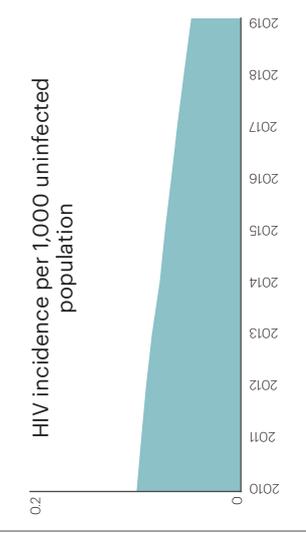
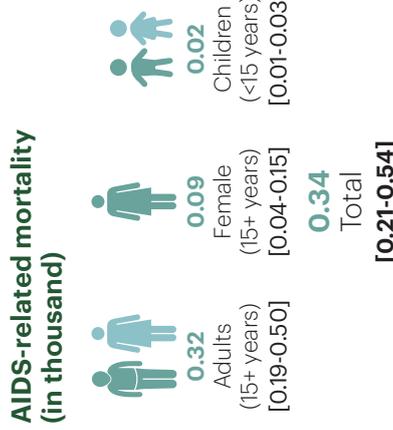
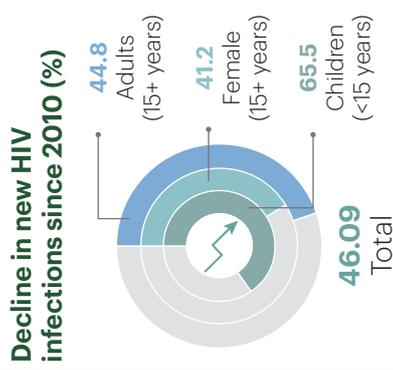
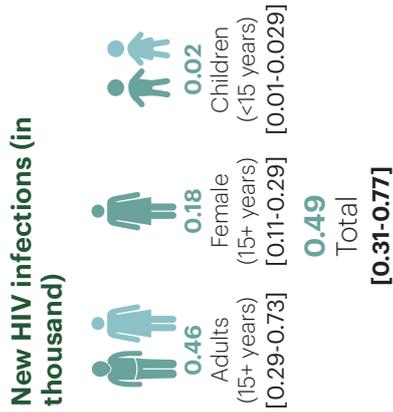
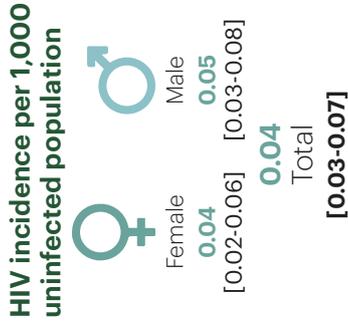
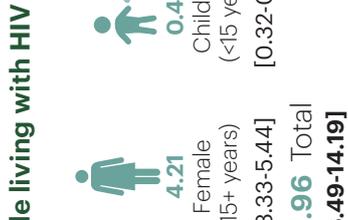
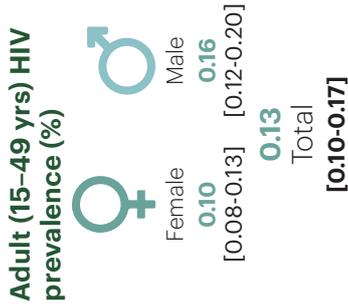


## Need for services to prevent mother-to-child transmission of HIV (in thousand)



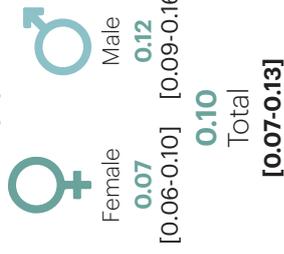
## AIDS mortality per 100,000 population



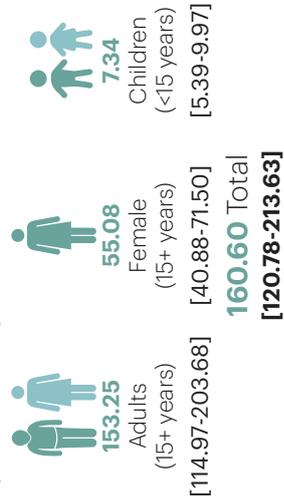


# Uttar Pradesh

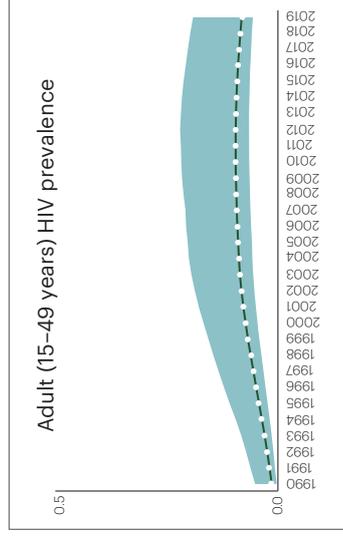
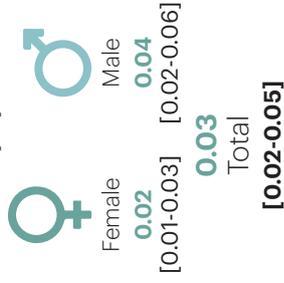
## Adult (15-49 yrs) HIV prevalence (%)



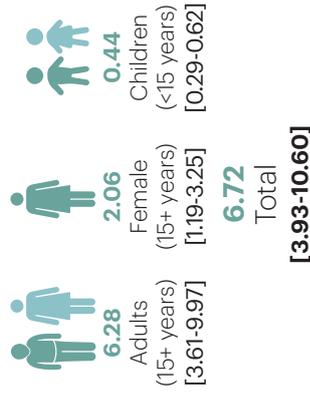
## Number of people living with HIV (in thousand)



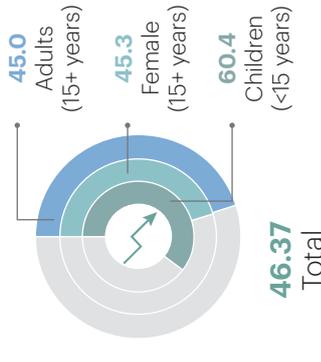
## HIV incidence per 1,000 uninfected population



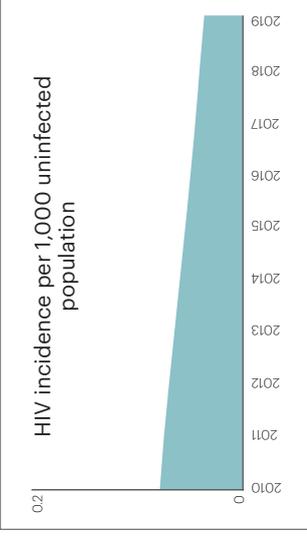
## New HIV infections (in thousand)



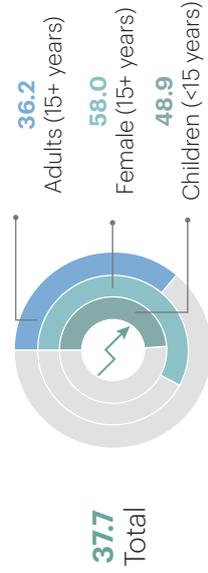
## Decline in new HIV infections since 2010 (%)



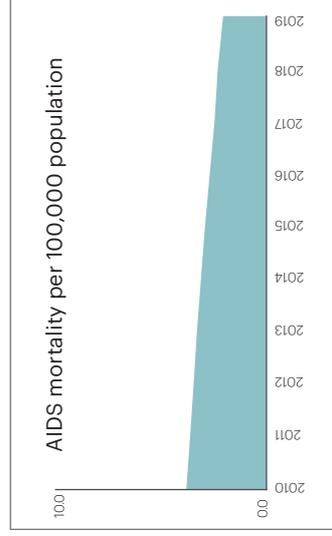
## AIDS-related mortality (in thousand)

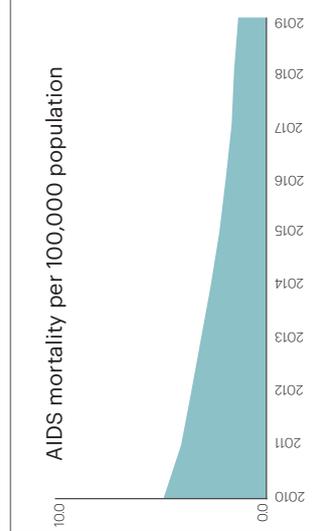
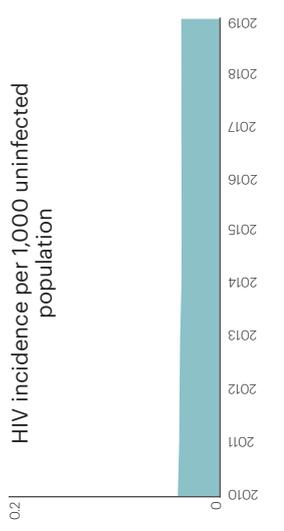
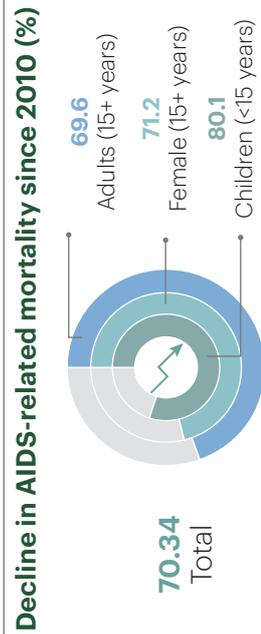
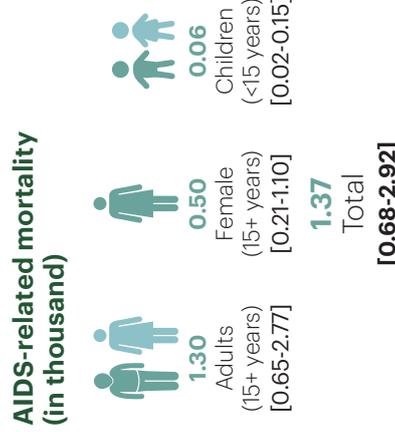
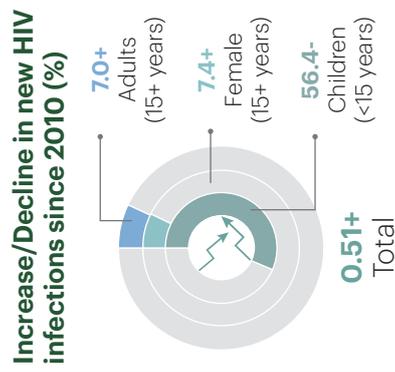
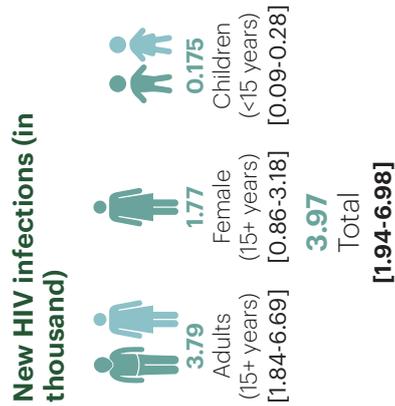
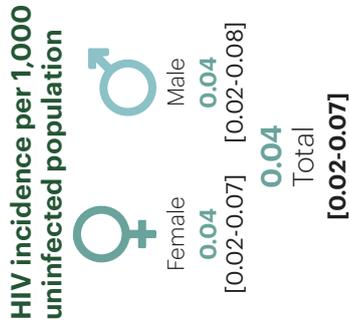
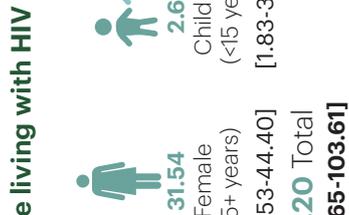
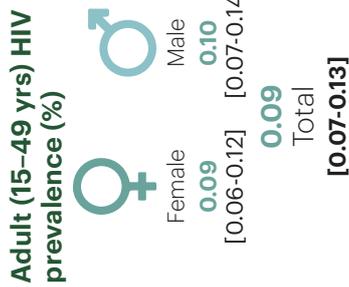


## Decline in AIDS-related mortality since 2010 (%)



## Need for services to prevent mother-to-child transmission of HIV (in thousand)











Model-based biennial HIV estimations is undertaken under National AIDS Control Programme to provide update on the current status of the HIV epidemic on key epidemiological parameters of prevalence, incidence, AIDS-related mortality and EMTCT need. HIV Estimations 2019 is the latest round in the series of HIV Estimations process. This report presents the method and State/UT-wise findings on key epidemiological parameters from HIV Estimations 2019.

