HIV Sentinel Surveillance 2010-11

A Technical Brief

National AIDS Control Organisation

India's voice against AIDS

Department of AIDS Control

Ministry of Health & Family Welfare, Government of India

6th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001

www.nacoonline.org

National AIDS Control Organisation

India's voice against AIDS

Department of AIDS Control

Ministry of Health & Family Welfare, Government of India

Decembe 2012

HIV Sentinel Surveillance 2010-11

A Technical Brief

National AIDS Control Organisation

India's voice against AIDS

Department of AIDS Control

Ministry of Health & Family Welfare, Government of India

Decembe 2012

Contents

Acronyms

ANC	Antenatal Clinic
DAPCU	District AIDS Prevention and Control Unit
DBS	Dried Blood Spot
EQAS	External Quality Assurance Scheme
FSW	Female Sex Worker
HIV	Human Immuno-deficiency Virus
HRG	High Risk Group
HSS	HIV Sentinel Surveillance
ICMR	Indian Council of Medical Research
IDU	Injecting Drug Users
LDT	Long Distance Truckers
MSM	Men who have Sex with Men
NACO	National AIDS Control Organisation
NACP	National AIDS Control Programme
NIHFW	National Institute of Health and Family Welfare
NIMS	National Institute of Medical Statistics
OBG	Obstetrics & Gynaecology
RI	Regional Institute
SACS	State AIDS Control Society
SMM	Single Male Migrant
STD	Sexually Transmitted Disease
TG	Transgender
TI	Targeted Intervention
TRG	Technical Resource Group
UNAIDS	United Nations Programme on HIV/AIDS
WHO	World Health Organisation

Executive Summary

1 HIV Sentinel Surveillance (HSS) is a vital component of second generation surveillance system to monitor the levels and trends of HIV epidemic among different population groups in the country. Data from HSS is also used for estimation of HIV burden in the country. It is implemented with the support of two national institutes and six regional public health institutes of India. The methodology adopted is Consecutive Sampling with Unlinked Anonymous Testing. In eight states, Random sampling method is adopted at High Risk Group (HRG) sites.

2. HIV Sentinel Surveillance 2010-11 was conducted at 1,359 sentinel sites – 696 ANC sites, 184 STD sites and 479 sites among high risk groups (Female Sex Workers-FSW, Men who have Sex with Men-MSM, Transgenders-TG & Injecting Drug Users-IDU) and bridge population (Single Male Migrants-SMM & Long Distance Truckers-LDT). A total of 4,27,559 samples were collected and tested during HIV Sentinel Surveillance 2010-11.

3. HIV prevalence among different population groups in 2010-11 shows that HIV is concentrated among High Risk Groups – Transgenders (8.82%), IDU (7.14%), MSM (4.43%) and FSW (2.67%) while HIV prevalence among ANC clinic attendees, considered proxy for general population, is low at 0.40%. Bridge population groups have HIV prevalence of 0.99% among migrants and 2.59% among truckers.

4. Analysis of consistent sites shows that the trend of HIV prevalence at national level is declining among general population, FSW & MSM, while it is stable among IDU. Data is inadequate to interpret the trends among TG, migrants and truckers.

5. For the first time, all states have shown less than 1% HIV prevalence among ANC clinic attendees. Overall, 84 sites have shown HIV prevalence of 1% or more among ANC clinic attendees. Out of these, 18 sites are in the moderate and low prevalence states of Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh.

6. An overall decline in HIV prevalence among ANC clinic attendees has been noted at national level, in all high prevalence states and some low prevalence states. However, rising trend among ANC clinic attendees has been observed in some moderate and low prevalence states, including states of Assam, Chhattisgarh, Gujarat, Haryana, Jharkhand, Odisha, Punjab and

Uttarakhand. Higher ANC prevalence in rural than urban population, higher prevalence among pregnant women with migrant spouses and very low levels of HIV among HRG, coupled with evidence generated beyond HSS, point towards possible role of migration in the spread of epidemic in some low prevalence states of North India.

7. Among FSW, only three states of Maharashtra (6.89%), Andhra Pradesh (6.86%) and Karnataka (5.10%) have shown more than 5% HIV prevalence. Thirty nine sites have recorded HIV prevalence of 5% or more among FSW, which also include FSW sites in low prevalence states of West Bengal and Bihar. Out of these, 11 FSW sites have shown 10% or higher HIV prevalence among FSW that include 5 sites in Maharastra, 4 in Andhra Pradesh, 1 each in Karnataka and Tamil Nadu. Among FSW, further declines are noted in South Indian states while rising trends at a lower level are observed in Bihar, Assam and Madhya Pradesh.

8. Expanded surveillance among MSM has revealed more than 5% HIV prevalence in 9 states namely Chhattisgarh (15%), Nagaland (13.6%), Manipur (10.5%), Andhra Pradesh (10.1%), Maharashtra (9.6%), Madhya Pradesh (7.9%), Karnataka (5.4%), Delhi (5.3%), and West Bengal (5.1%). Overall, thirty MSM surveillance sites recorded HIV prevalence of 5% or more. Declining Trends of HIV Prevalence among MSM are observed at national level as well as in states of Gujarat, Tamil Nadu and Puducherry. Rising Trends of HIV Prevalence among MSM are observed in Chandigarh, Delhi, Goa and Maharashtra including Mumbai.

9. Among IDUs, Punjab (21.1%), Delhi (18.3%), Maharashtra (14.2%), Manipur (12.9%), Mizoram (12%), Chandigarh (7.2%), Odisha (7.2%), Meghalaya (6.4%) and Madhya Pradesh (5.1%) have shown HIV prevalence of 5% or more. Overall, 29 sites recorded prevalence of more than 5% among IDUs including sites in states of Bihar, Madhya Pradesh, Kerala and West Bengal. The trend among IDUs has been stable at national level. Among north-eastern states, declining trends are observed in Nagaland and Manipur. Rising trends at high levels are noted in Chandigarh, Punjab and Mizoram.

10. New sentinel sites were set up at migrant destination points during HSS 2010-11. Data shows that the HIV prevalence ranges from 0% to 3.85% at various sites, while the national average comes to 0.99%. As new sites are set up only in the last round of HSS, there is no reliable data on trends of HIV among migrants.

11. Expanded surveillance among truckers revealed moderate level of HIV prevalence among truckers. At the national level, the observed prevalence among Truckers is 2.59% while it ranges from 0% to 8.06% at various sites. Similar to migrants, data is inadequate to monitor HIV trends among truckers.

12. Thus, HIV epidemic in India is concentrated in nature and heterogeneous in geographic spread. Possible impact of interventions could be noted in places where HIV was visible and interventions were started earlier. However, emerging epidemics are observed in some of low and very low prevalence states. Pockets of high HIV and greater vulnerability continue to exist in general population as well as in high risk groups which require cognizance and focused attention.

1. Introduction

HIV Sentinel Surveillance is one of the key components of second generation surveillance system in India to track the HIV epidemic in the country with the objective of understanding the level and trends of HIV epidemic among different population groups as well as to identify the spread of the epidemic to new pockets.

Objectives of HIV Sentinel Surveillance

1. To monitor trends in prevalence of HIV infection over time
2. To monitor the distribution and spread of HIV prevalence in different population subgroups and in different geographical areas
3. To identify emerging pockets of HIV epidemic in the country

Important Applications of HIV Sentinel Surveillance data

1. To estimate and project burden of HIV at state & national levels
2. To support programme prioritization and resource allocation
3. To assist evaluation of programme impact
4. Advocacy

Expansion of Surveillance System

In 1998, NACO formalized annual sentinel surveillance for HIV infection across the country. Over the years, the surveillance network has expanded from 176 in 1998 to 1,359 sites in 2011 when almost all districts are covered under surveillance system (Table 1).

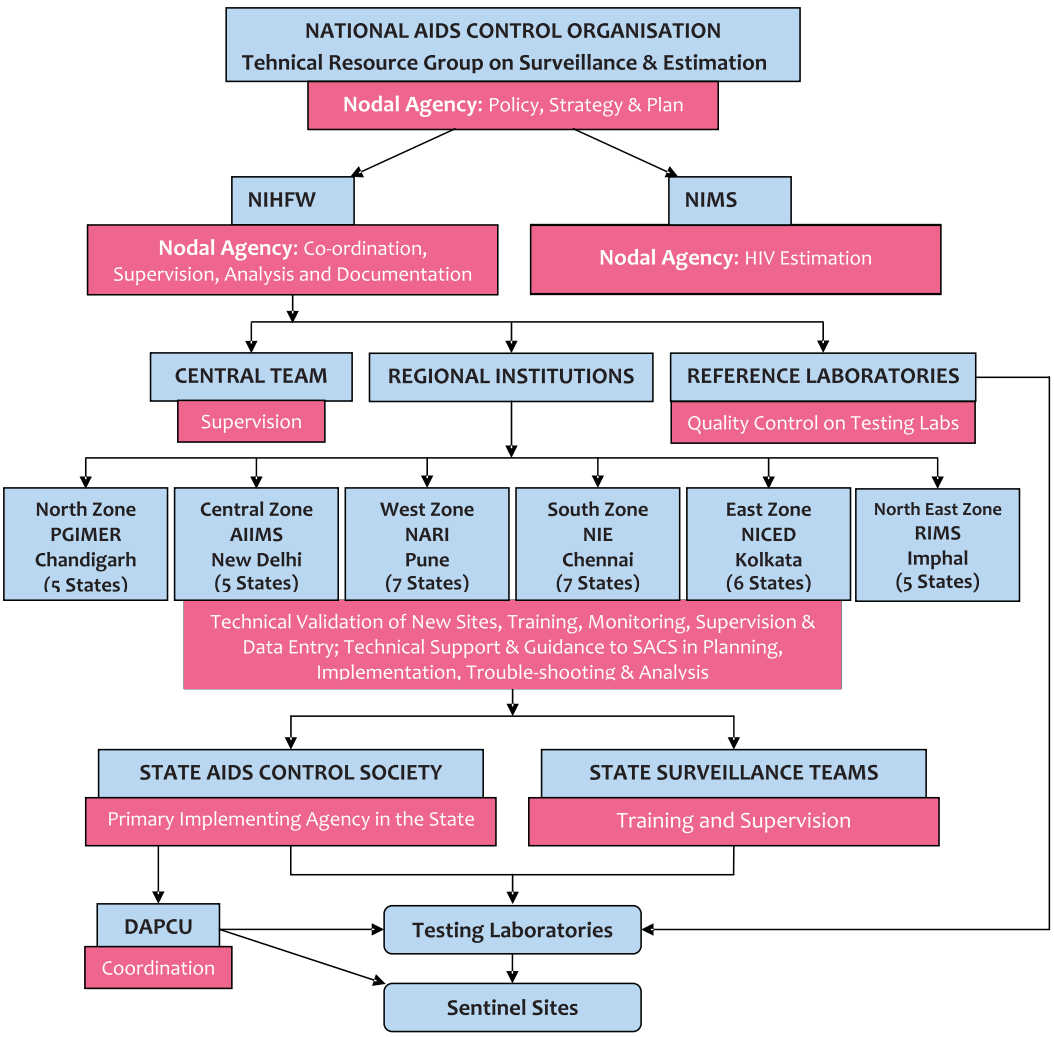
Table 1: Scale-up of sentinel sites in India, 1998-2011

Site Type	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008-09	2010-11
STD	76	75	98	133	166	163	171	175	251	248	217	184
ANC	92	93	111	172	200	266	268	267	470	484	498	506
ANC (Rural)	-	-	-	-	-	210	122	124	158	162	162	182
ANC (Youth)	-	-	-	-	-	-	-	-	8	8	8	8
IDU	5	6	10	10	13	18	24	30	51	52	61	79
MSM	-	-	3	3	3	9	15	18	31	40	67	96
FSW	1	1	2	2	2	32	42	83	138	137	194	261
Migrant	-	-	-	-	-	-	-	1	6	3	8	20
TG	-	-	-	-	-	-	-	1	1	1	1	3
Truckers	-	-	-	-	-	-	-	-	15	7	7	20
TB	2	2	-	-	-	-	7	4	-	-	-	-
Fisher-Folk/ Seamen	-	-	-	-	-	1	-	-	1	-	-	-
Total	**176**	**177**	**224**	**320**	**384**	**699**	**649**	**703**	**1130**	**1142**	**1223**	**1359**

Implementation Structure

HIV Sentinel Surveillance has a robust structure for planning, implementation and supervision at national, regional and state levels. The structure and key functions of each agency involved in HSS are shown in Figure 1.

Figure 1: Implementation Structure of HIV Sentinel Surveillance



Methodology

Key elements of the methodology of HSS are summarized in Table 2.

Table 2: Methodology of HIV Sentinel Surveillance

	High Risk Groups: IDU/ MSM/ FSW/ TG	Bridge Population: STD patients/ SMM/ LDT	General Population: Pregnant women attending ANC Clinics
Sentinel Site	Targeted Interventions (TI) Projects	STD clinic; TI Projects	Antenatal clinic
Sample Size	250	250	400
Duration	3 months	3 months	3 months
Frequency	Once in 2 years	Once in 2 years	Once in 2 years
Sampling Method	Consecutive/ Random	Consecutive	Consecutive
Age Group	15-49 years	15-49 years	15-49 years
Testing Strategy	Unlinked Anonymous with informed consent	Unlinked Anonymous at STD; with Informed consent at TI Sites	Unlinked Anonymous
Blood Specimen	Dried Blood Spot	Serum at STD; DBS at TI sites	Serum
Testing Protocol	Two Test Protocol	Two Test Protocol	Two Test Protocol

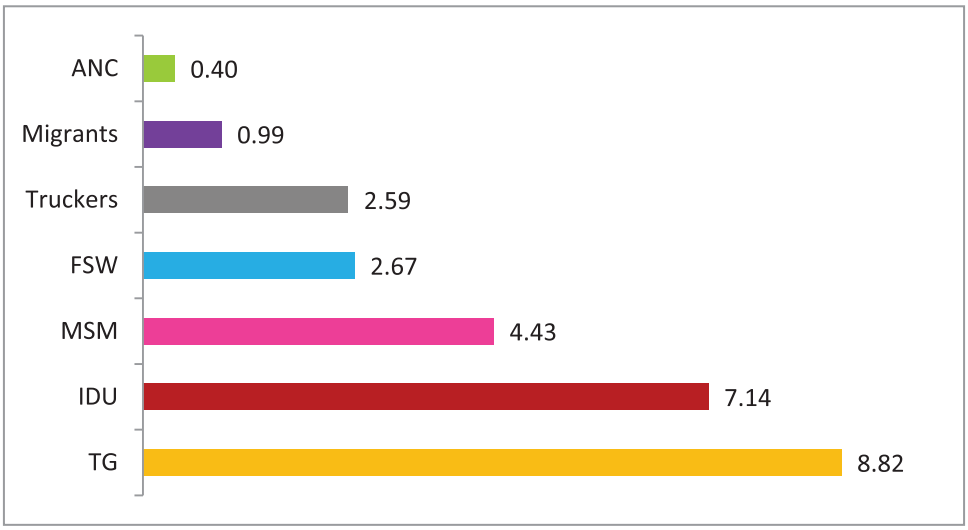
Key Initiatives during HSS 2010-11

1. Expansion of High Risk Group (HRG) & Bridge Population sites
2. Introduction of rural composite ANC sites (at PHC level) to capture effect of migration in heavy out-migration districts
3. Random Sampling at select HRG sites with validated line lists in 8 states
4. Dried Blood Spot (DBS) method & Informed consent continued at HRG sites
5. DBS Method introduced at select ANC/STD sites in remote places
6. User-specific Operational Manuals and Site-specific Wall Charts developed & distributed
7. Introduction of Bi-lingual data forms with instructions for the first time; Data forms translated into Hindi & 7 regional languages
8. Development of web-based (SIMS) Application for HSS with separate modules for Data entry, Data monitoring, Lab monitoring & Field monitoring
9. Streamlined External Quality Assurance mechanisms through online reporting
10. Special focus on strengthening Field Supervision – 100% sites covered through supervisory visits in most of the states

2. Overview of HIV Levels & Trends at National Level

HIV prevalence among different population groups in 2010-11 shows that HIV is concentrated among High Risk Groups – Transgenders (8.82%), IDU (7.14%), MSM (4.43%) and FSW (2.67%) while HIV prevalence among ANC clinic attendees, considered proxy for general population, is low at 0.40%. Bridge population groups have HIV prevalence of 0.99% among migrants and 2.59% among truckers. (Fig. 2)

Figure 2: HIV Prevalence (%) among different risk groups, India, 2010-11



Trends among different population groups at national as well as state level are derived using three year moving average of HIV prevalence at consistent sites from 2003 to 2011. At national level, declining trends are noted among ANC, FSW & MSM; while a stable trend is recorded among IDU (Fig. 3). Data is inadequate to interpret trends among TG, migrants & truckers.

3. HIV Levels and Trends in General Population

Under HIV Sentinel Surveillance, data from the pregnant women at Antenatal clinics is considered as a surrogate for general population. During HSS 2010-11, around 2,70,391 samples were collected and tested from 696 ANC sentinel sites across the country. 672 sites achieved valid sample size of 300 (75% of target) and only data from valid sites is used for this analysis.

Figure 3: HIV Prevalence trend across different groups, India, 2010-11[1]

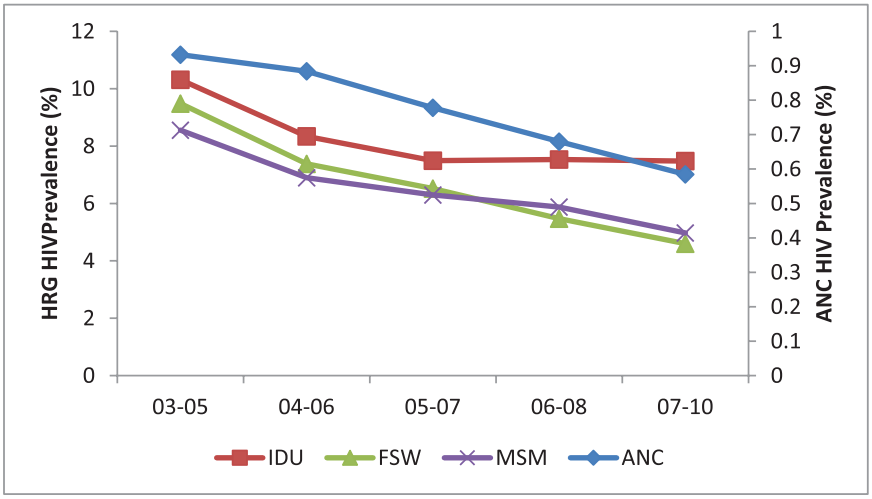


Figure 4 shows state-wise HIV prevalence among ANC clinic attendees. Considerable differences continue to exist in the prevalence rates across different geographical regions. It is worth noting that none of the states showed a prevalence of 1% or more among ANC attendees during 2010-11 round of HSS for the first time. Highest prevalence was recorded at Manipur (0.78%), followed by Andhra Pradesh (0.76%), Karnataka (0.69%), and Nagaland (0.66%). Low prevalence states of Gujarat (0.46%), Jharkhand (0.45%), Odisha (0.43%) and Chhattisgarh (0.43%) recorded a higher prevalence than the national average.

[1]3-yr moving averages based on consistent sites; ANC–385 sites, FSW–89 sites, MSM–22 sites, IDU–38 sites

Figure 4: HIV Prevalence (%) among pregnant women attending ANC clinics, India and States, 2010-11

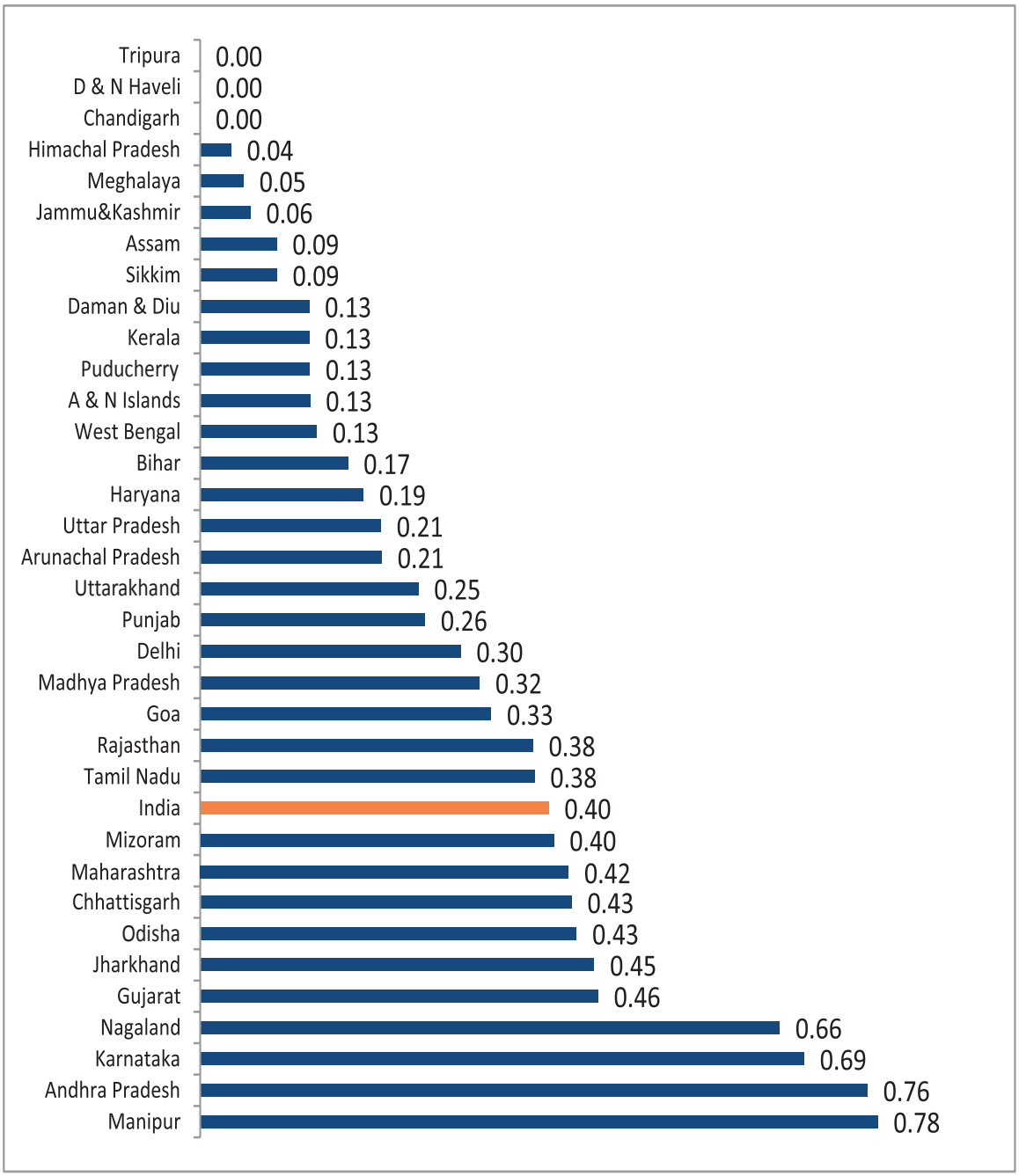


Table 3 summarizes the distribution of pockets of high HIV prevalence among ANC clinic attendees in India. HIV prevalence among ANC clinic attendees at different sentinel sites shows the heterogeneous distribution of HIV epidemic and also the emerging pockets of HIV infection.

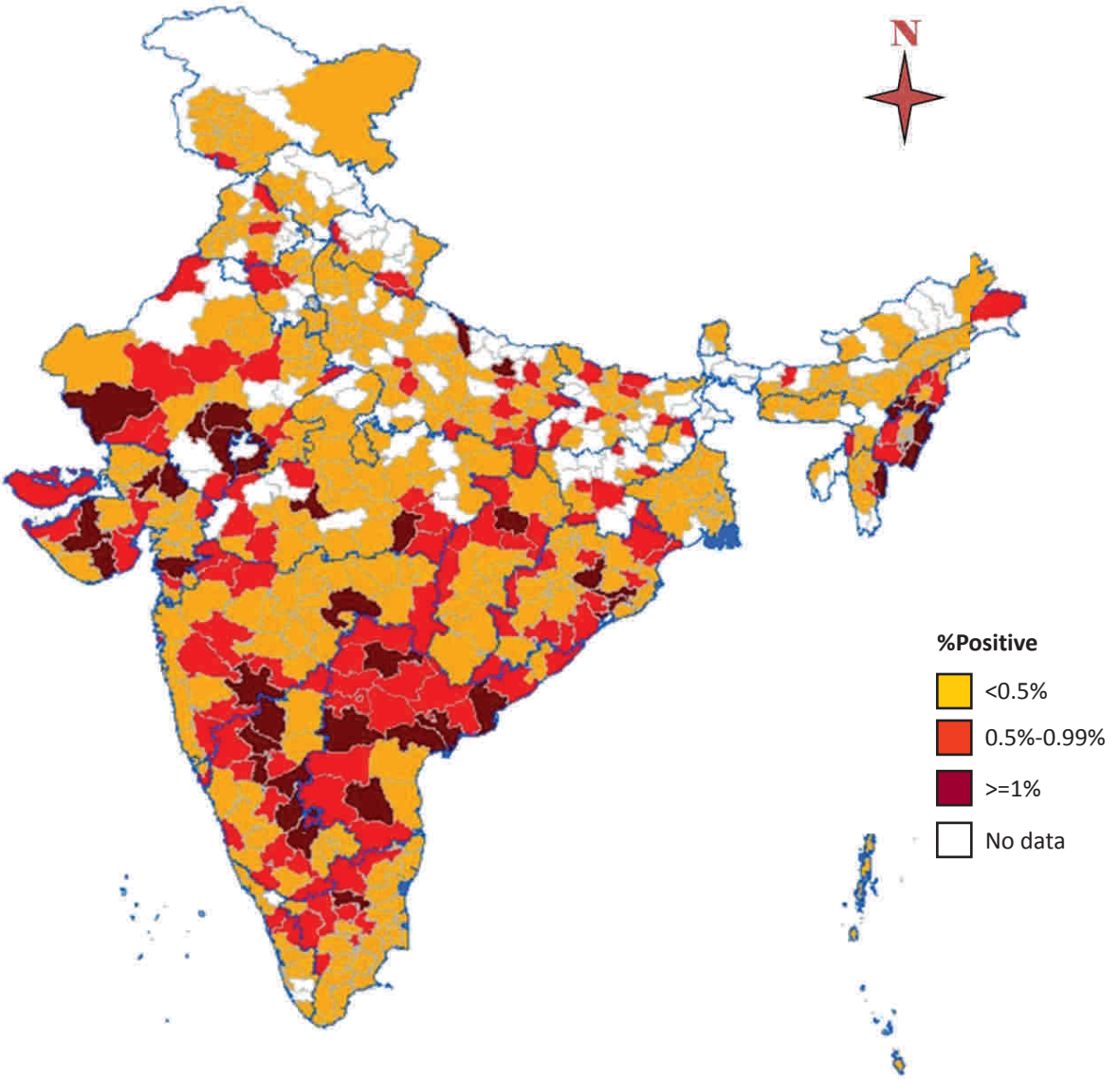
There were 84 sites across 71 districts which recorded HIV prevalence of 1% or more (Table 3). Around three fourth of these sites (66) were in Southern and North-eastern states of Andhra Pradesh, Karnataka, Maharastra, Tamilnadu, Manipur, Mizoram and Nagaland. However, among the low prevalence states, Chhattisgarh, Gujarat, Madhya Pradesh, Odisha and Rajasthan have 2 or more sites with HIV Prevalence 1% or more among ANC attendees. Sites with ANC HIV prevalence of 1% or more have also been observed in Jharkhand and Uttar Pradesh. Out of these 84 sites, 10 sites showed HIV prevalence of 2% or more.

There were 183 sites across 161 districts in 25 states that showed moderate HIV prevalence of 0.50-0.99%. Fig 5 shows the maps of India where districts are color-coded into low (<0.5%), moderate (0.50-0.99%) and high ($\geq$ 1%) based on HIV prevalence among ANC clinic attendees. This map highlights the heterogeneous spread of the epidemic in India. This is also evident in certain low prevalence states such as Uttar Pradesh, Bihar, Gujarat and Madhya Pradesh. Though overall ANC HIV prevalence in Uttar Pradesh and Bihar is low, districts in eastern part of Uttar Pradesh and northern Bihar show higher prevalence.

Table 3: ANC HSS Sites with high HIV prevalence, State-wise, HSS 2010-11

State	No. of Sites with ANC HIV prevalence of 1% or more	No. of Sites with ANC HIV prevalence of 2% or more
Andhra Pradesh	20	3
Chhattisgarh	3	-
Gujarat	5	-
Jharkhand	1	-
Karnataka	16	3
Madhya Pradesh	2	1
Maharashtra	13	-
Manipur	3	1
Mizoram	1	-
Nagaland	4	1
Odisha	4	-
Rajasthan	2	-
Tamil Nadu	9	1
Uttar Pradesh	1	-
Total	**84**	**10**

Figure 5: HIV prevalence among ANC clinic attendees, district-wise, 2010-11



Further review of high prevalence pockets over time shows that the number of ANC sentinel sites with high prevalence (1% or more) has decreased from 135 in 2004 to 65 in high prevalence states. During the same period, the number of such sites has increased from 8 to 24 in low prevalence states. In certain low prevalence state such as Gujarat and Madhya Pradesh, while the overall trends of ANC HIV prevalence are declining, there are regions and districts where the trends are rising. These indicate emerging pockets of HIV epidemic in these states.

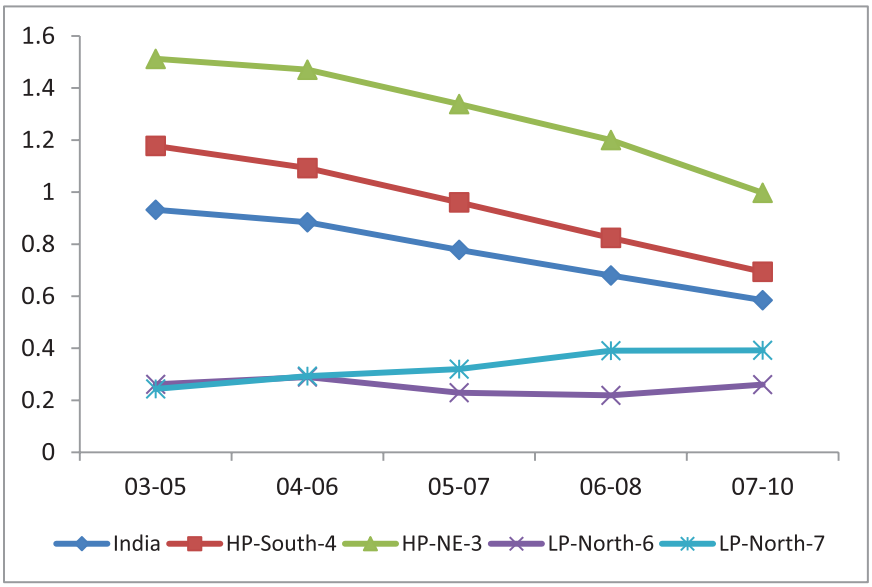
Though the overall number of high prevalence pockets has come down, it is also noted that 57 sites in 48 districts have persistently recorded high prevalence over the last 6-8 yrs. Table 4 gives the list of districts where ANC HIV prevalence remained at 1% or more during at least three out of six rounds of HSS from 2004 to 2011, including the last round of HSS 2010-11. While most of them (44) are in high prevalence states, Gujarat (Mehsana & Surat) and Odisha (Anugul and Ganjam) also have two districts each in this group. These are pockets which require sustained high-intensity prevention interventions

Table 4: State-wise districts with persistent high HIV prevalence sites at ANC sites (2004-11)

State	Districts where ANC HIV levels persist over 1%
Andhra Pr. (14)	Anantapur, Cuddapah, East Godavari, Guntur, Hyderabad, Karimnagar, Khammam, Krishna, Kurnool, Mahbubnagar, Nalgonda, Visakhapatnam, Warangal, West Godavari
Gujarat (2)	Mehsana, Surat
Karnataka (11)	Bagalkot, Belgaum, Bellary, Bijapur, Chamrajnagar, Davangere, Dharwad, Gadag, Hassan, Kodagu, Tumkur
Maharashtra (7)	Mumbai, Ahmadnagar, Dhule, Kolhapur, Sangli, Solapur, Yavatmal
Manipur (3)	Chandel, Thoubal, Ukhrul
Mizoram (1)	Champai
Nagaland (4)	Dimapur, Kohima, Phek, Tuensang
Odisha (2)	Anugul, Ganjam
Tamil Nadu (4)	Coimbatore, Erode, Salem, Tiruchirapalli

At the national level as well as in the high prevalence states, decline in HIV trends is very evident among ANC clinic attendees. Low prevalence states of north India show stable to rising trends. While all the high prevalence states have recorded declining trend, some of low prevalence states like Kerala, Goa, Madhya Pradesh and West Bengal has also recorded declining prevalence. Rising trends are observed in low prevalence states of Chhattisgarh, Gujarat, Jharkhand and Odisha. Rising trends are also observed among very low prevalence states of Assam, Haryana, Punjab and Uttarakhand. (Fig. 6-10)

Figure 6: Regional trends in ANC HIV Prevalence[2]



[2]3-yr moving averages based on consistent sites; India – 385; HP-South-4 (Andhra Pradesh,Tamil Nadu,Karnataka,Maharastra) – 233, HP-NE-3 (Manipur, Nagaland, Mizoram) – 31, LP-North-6 (Bihar, Delhi ,Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh) – 45, LP-North-7 (Assam, Chhatisgarh, Gujarat, Haryana, Jharkhand, Odisha, Uttarakhand) – 33

Figure 7: State-wise trends in ANC HIV Prevalence based on consistent sites[3]

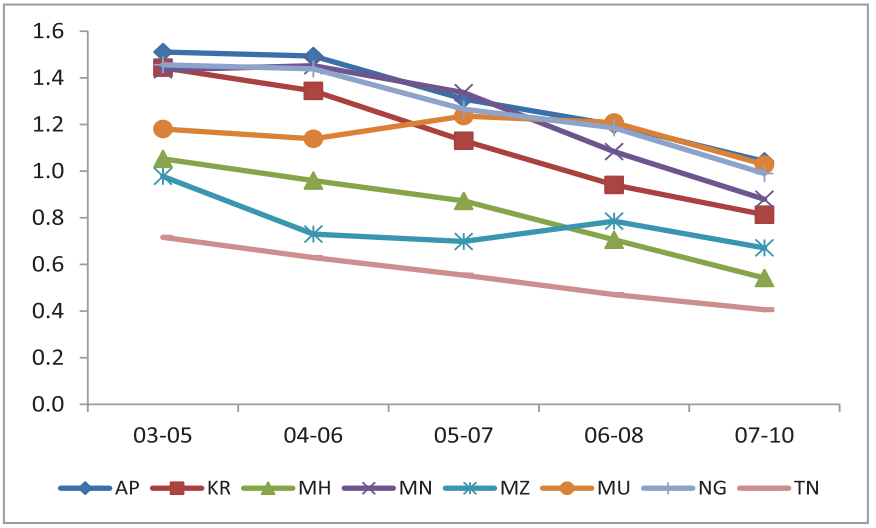
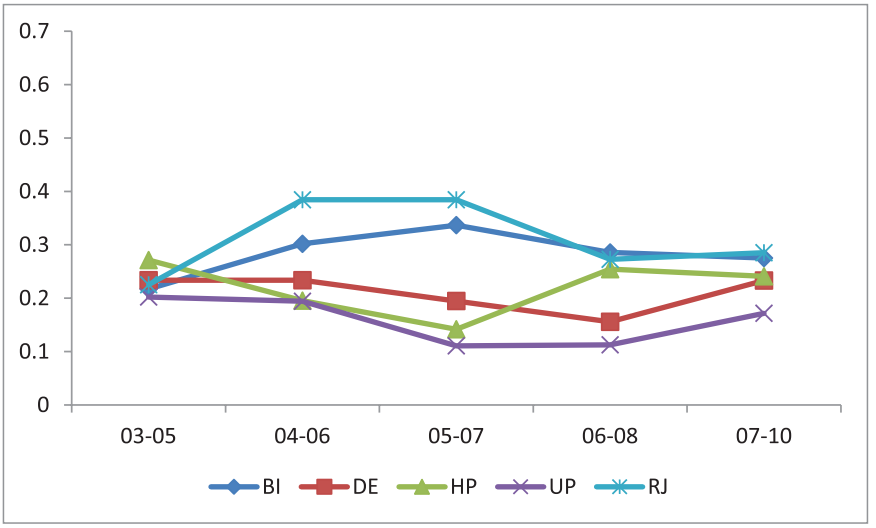


Figure 8: State-wise trends in ANC HIV Prevalence based on consistent sites[4]



[3]3-yr moving averages based on consistent sites; AP (Andhra Pradesh)-44 (2003) & 8 (2006); KR (Karnataka)-54 (2003) & 4 (2006); MH (Maharastra)-66 (2003); MN (Manipur)-14 (2003); MZ (Mizoram)-4 (2003) & 4 (2006); MU (Mumbai)-6 (2003); NG (Nagaland)-13 (2003) & 6 (2006); TN (Tamil Nadu)-63 (2003)

[4]3-yr moving averages based on consistent sites; BI (Bihar)-7 (2003) & 16 (2006); DE (Delhi)-4 (2003) & 1 (2006); HP (Himachal Pradesh)-6 (2003) & 2 (2006); UP (Uttar Pradesh)-17 (2003) & 37 (2006); RJ (Rajasthan)-5 (2003) & 20 (2006)

Figure 9: State-wise trends in ANC HIV Prevalence based on consistent sites[5]

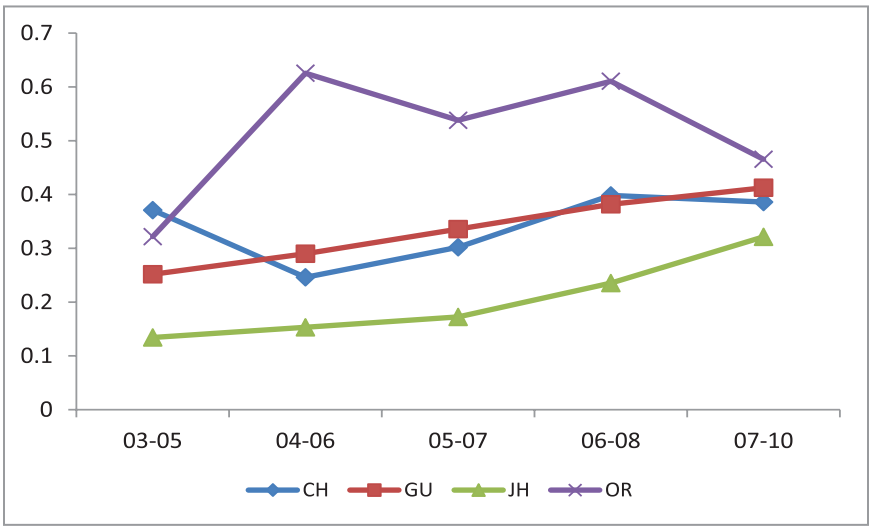
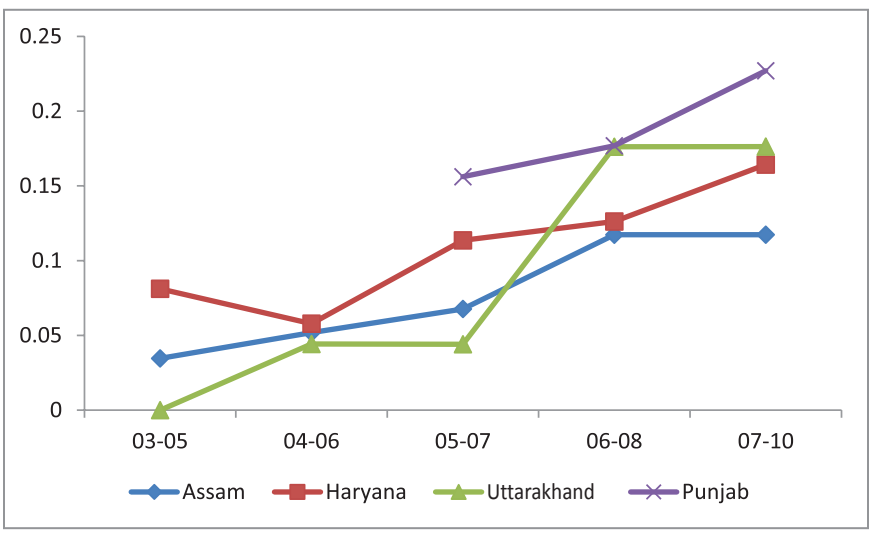


Figure 10: State-wise trends in ANC HIV Prevalence based on consistent sites[6]



[5]3-yr moving averages based on consistent sites; CH (Chhattisgarh)-5 (2003) & 13 (2006); GU (Gujarat)-8 (2003) & 17 (2006); JH (Jharkhand)-5 (2003) & 10 (2006); OR (Odisha)-5 (2003) & 26 (2006);

[6]3-yr moving averages based on consistent sites; Assam-3 (2003) & 13 (2006); Haryana-4 (2003) & 8 (2006); Uttarakhand-3 (2003) & 6 (2006); Punjab-7 (2003) & 13 (2006)

4. HIV Levels and Trends among High Risk Group Population

As mentioned above, HIV epidemic in India is concentrated in nature with high prevalence among high risk groups. Heterosexual mode of transmission is still the predominant mode of HIV transmission in India. Though HIV trends among high risk groups have mixed patterns, there are pockets of high HIV prevalence among high risk groups in many parts of the country. Table 5 summarises the distribution of pockets of high HIV prevalence among high risk groups in India. Pockets with high HIV prevalence among FSW are largely in High Prevalence states while pockets with high HIV prevalence among MSM & IDU are spread over all the states.

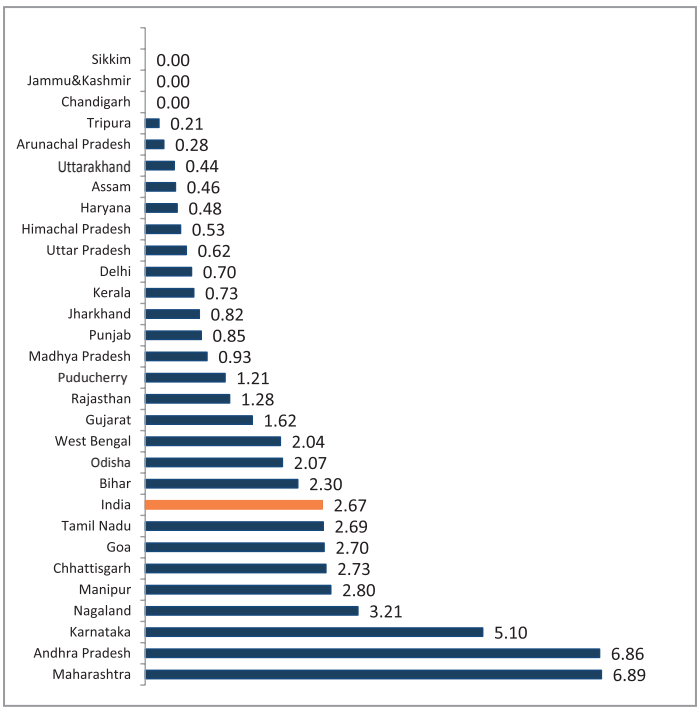
Table 5: HRG sites with high HIV prevalence, State-wise, HSS 2010-11

State	No. of Sites with HIV Prevalence of 5% or more			No. of Sites with HIV Prevalence of 10% or more		
	FSW	MSM	IDU	FSW	MSM	IDU
Andhra Pradesh	11	7	1	4	5	0
Bihar	1	0	1	0	0	0
Chandigarh	0	0	1	0	0	0
Chhattisgarh	0	1	0	0	1	0
Delhi	0	2	1	0	0	1
Gujarat	0	1	0	0	0	0
Karnataka	10	3	0	1	0	0
Kerala	0	0	1	0	0	1
MP	0	2	1	0	0	0
Maharashtra	11	6	1	5	4	1
Manipur	1	1	10	0	1	6
Meghalaya	0	0	1	0	0	0
Mizoram	0	0	3	0	0	2
Nagaland	0	1	0	0	1	0
Odisha	0	2	2	0	0	1
Punjab	0	0	5	0	0	4
Tamil Nadu	4	2	0	1	0	0
West Bengal	1	2	1	0	0	0
India	**39**	**30**	**29**	**11**	**12**	**16**

Female Sex Workers

Figure 11 depicts state wise prevalence among FSWs as recorded during 12th round of HSS. Twenty nine states in country had HSS among FSWs and HIV prevalence among them ranged from 0% (Sikkim, Jammu & Kashmir and Chandigarh) to more than 6%. Most of the states have recorded less than 5% prevalence among FSWs except for Karnataka (5.10%), Andhra Pradesh (6.86%) and Maharastra (6.89%). Eight states recorded prevalence higher than the national average including two low prevalence states of Goa and Chhattisgarh. Overall, 39 sites have shown more than 5% HIV prevalence among FSWs which includes 11 sites each in Andhra Pradesh and Maharashtra, 4 in Tamil Nadu, 10 in Karnataka, and 1 site each in Bihar, Manipur and West Bengal. Fig 12 shows district wise map of India with HIV prevalence among FSWs in 2010-11.

Figure 11: HIV Prevalence (%) among FSWs, India and states, 2010-11



Among FSWs, there is a decline in HIV prevalence at the national level as well as in high prevalence south Indian states, Gujarat, West Bengal and Uttar Pradesh. Nagaland is the only high prevalence state with rising trend among FSWs while many of low prevalence states (Assam, Bihar, Himachal Pradesh, Jharkhand, Madhya Pradesh and Puducherry) have shown rising prevalence. Stable Trends of HIV Prevalence among FSWs was recorded in Manipur, Tamil Nadu, Rajasthan and Kerala. (Figs. 13-16)

Figure 12: HIV prevalence among FSWs, district-wise, 2010-11

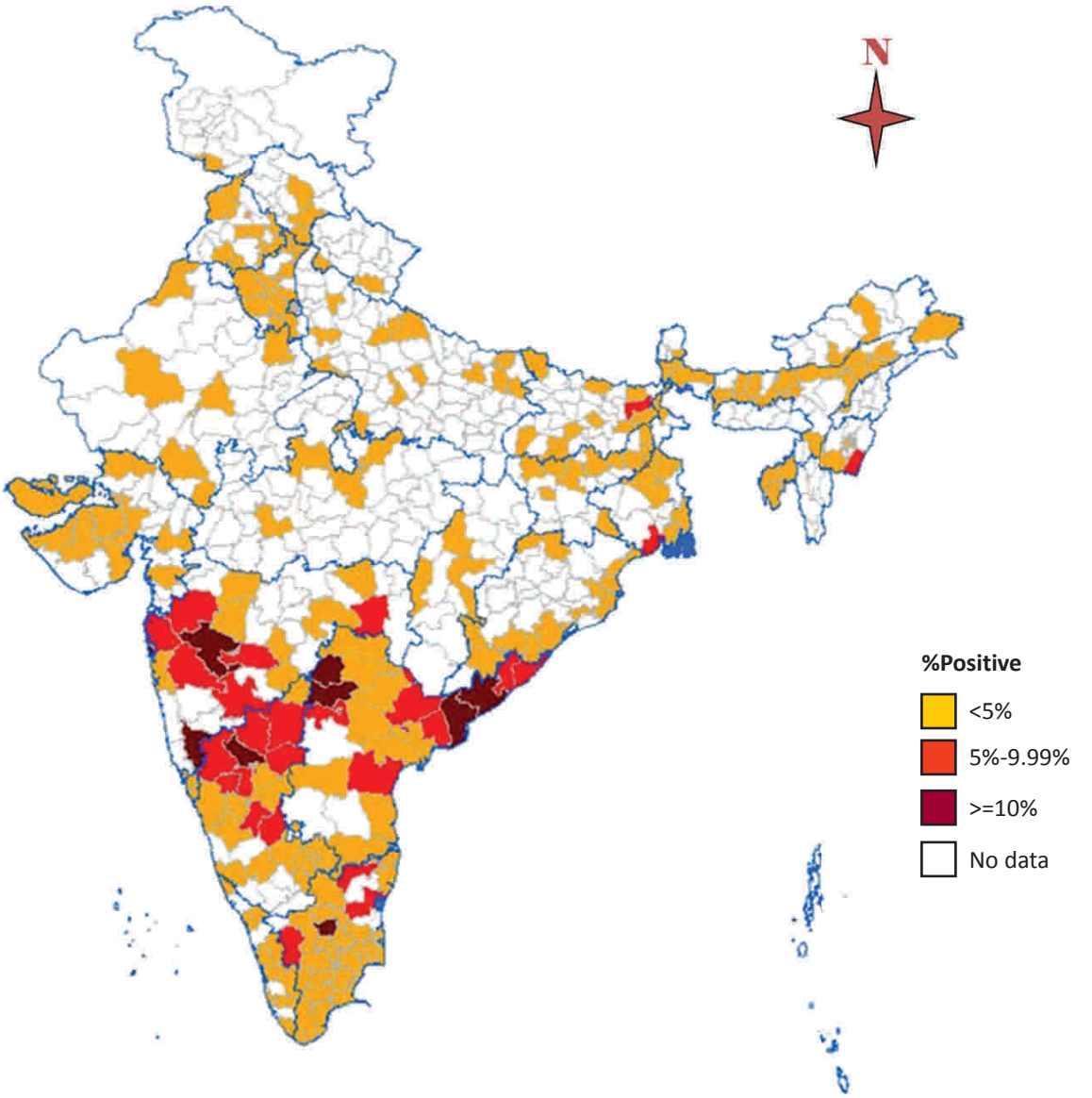


Figure 13: State-wise trends in FSW HIV Prevalence based on consistent sites[7]

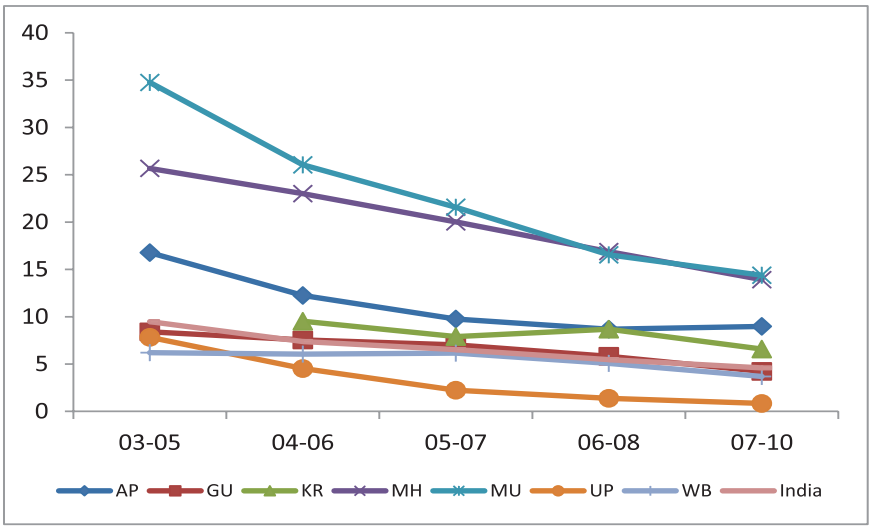
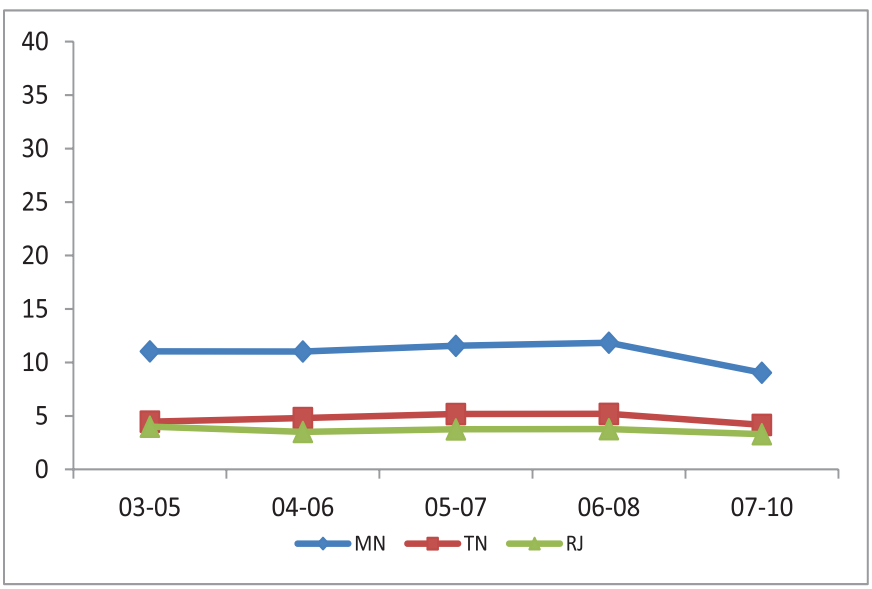


Figure 14: State-wise trends in FSW HIV Prevalence based on consistent sites[8]



[7] *3-yr moving averages based on consistent sites; AP (Andhra Pradesh)-6, GU (Gujarat)-3, KR (Karnataka)-3, MH (Maharastra)-8, MU (Mumbai)-3, UP (Uttar Pradesh)-5, WB (West Bengal)-8, India-89*

[8] *3-yr moving averages based on consistent sites; MN (Manipur) – 3, TN (Tamil Nadu) – 6, RJ (Rajasthan) - 4*

Figure 15: State-wise trends in FSW HIV Prevalence based on consistent sites[9]

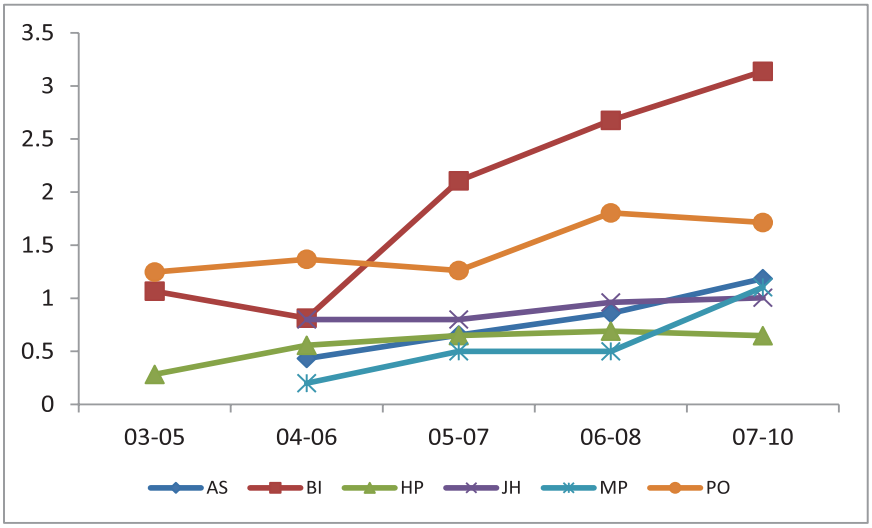
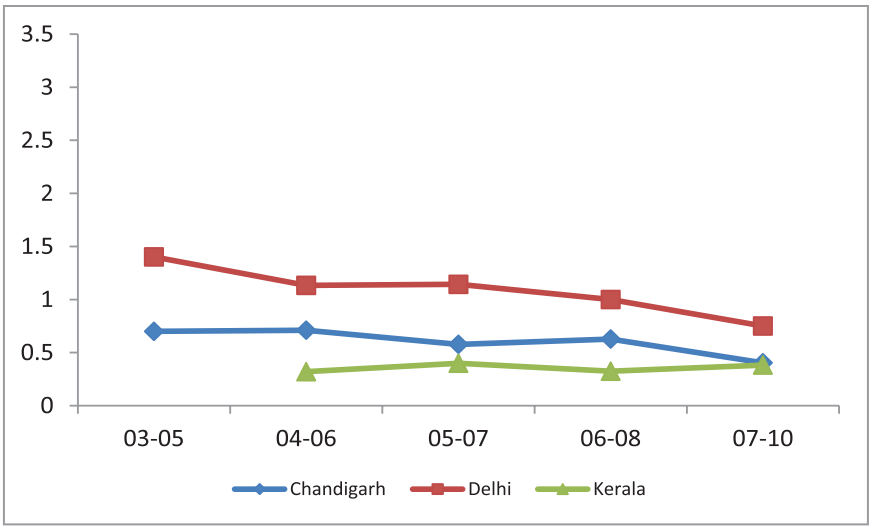


Figure 16: State-wise trends in FSW HIV Prevalence based on consistent sites[10]



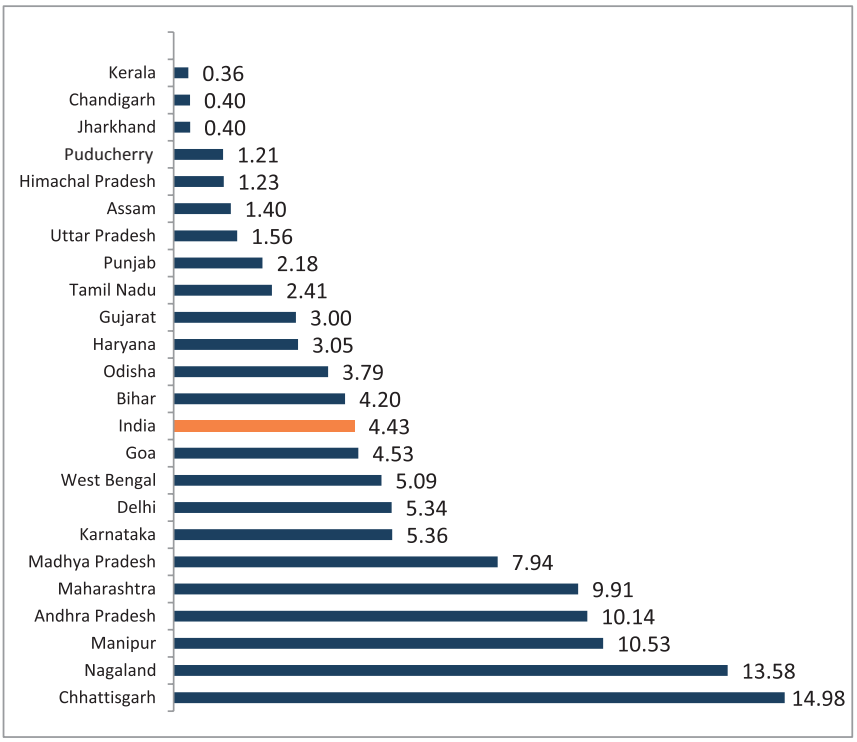
[9]3-yr moving averages based on consistent sites; AS (Assam) – 2, BI (Bihar) – 8, HP (Himachal Pradesh) – 3, JH (Jharkhand) – 2, MP (Madhya Pradesh) – 2, PO (Puducherry) - 3

[10]3-yr moving averages based on consistent sites; Chandigarh – 3, Delhi – 3, Kerala - 5

Men who have Sex with Men

Expansion of surveillance sites among MSM was a priority during NACP III and surveillance sites increased from 40 in 2007 to 96 sites across 23 states in 2010-11. Almost one third (30) of HSS sites among MSM in 2010-11 showed high prevalence including those in states of Chhattisgarh, Delhi, Gujarat, Madhya Pradesh, Odisha and West Bengal. Among MSM, highest HIV prevalence is recorded in the state of Chhattisgarh (15%) followed by Nagaland (13.6%), Manipur (10.5%), Andhra Pradesh (10.1%) and Maharashtra (9.9%). In total, 9 states have shown greater than 5% HIV prevalence among MSM including 4 low prevalence states. Figure 17 shows state-wise HIV prevalence among MSMs and Fig 18 shows district wise map of India with HIV prevalence among MSMs in 2010-11.

Figure 17: HIV Prevalence (%) among MSMs, India and states, 2010-11



Declining Trends of HIV Prevalence among MSMs are observed at national level and in Gujarat, Tamil Nadu & Puducherry while stable trends of HIV Prevalence are observed at consistent sites in Andhra Pradesh, Bihar, Manipur, West Bengal. Rising Trends of HIV Prevalence among MSM are observed at consistent sites at Chandigarh, Delhi, Goa & Maharashtra including Mumbai. (Fig. 19-21)

Figure 18: HIV prevalence among MSMs, district-wise 2010-11.

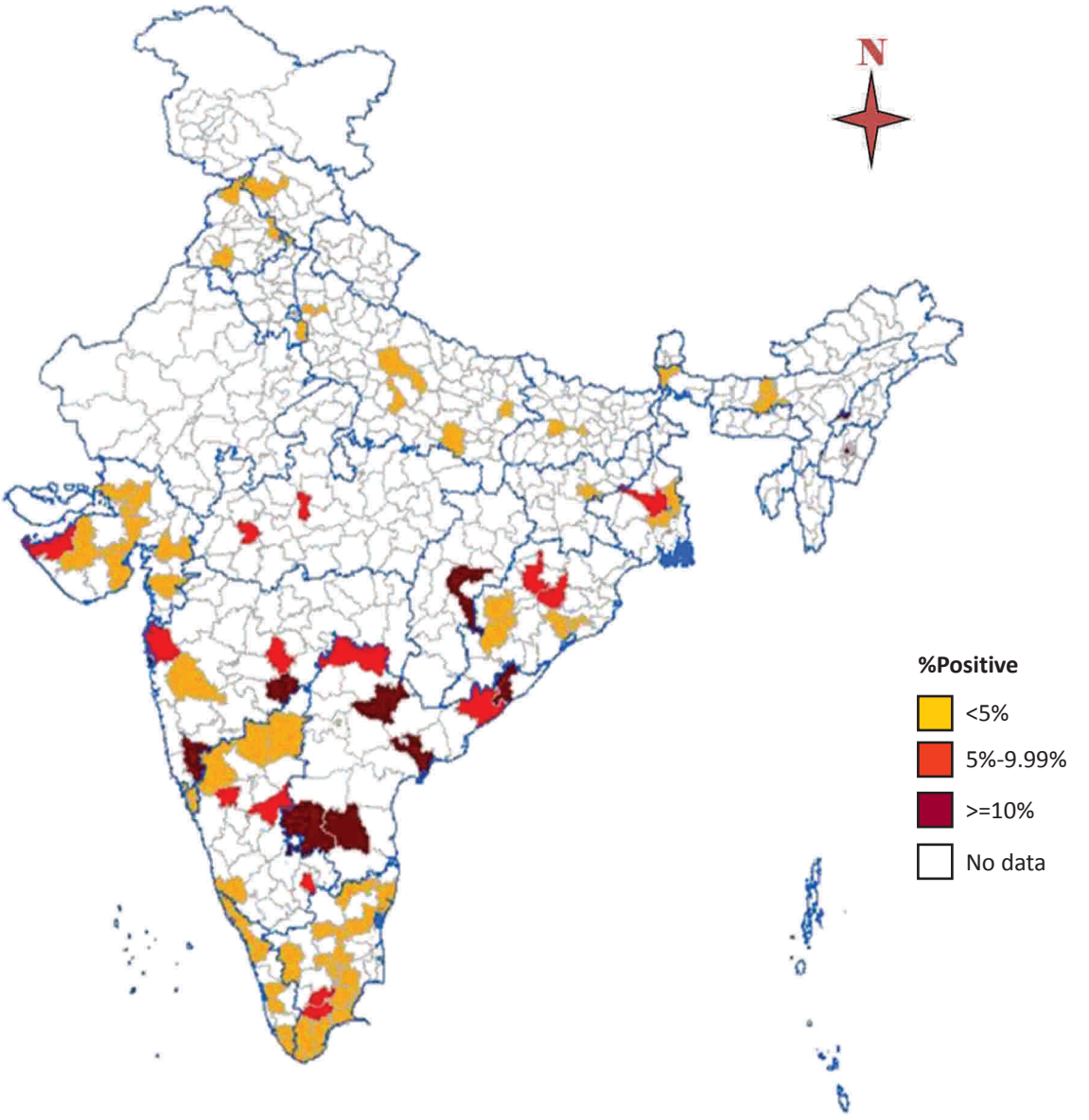


Figure 19: State-wise trends in MSM HIV Prevalence (%) based on consistent sites[11]

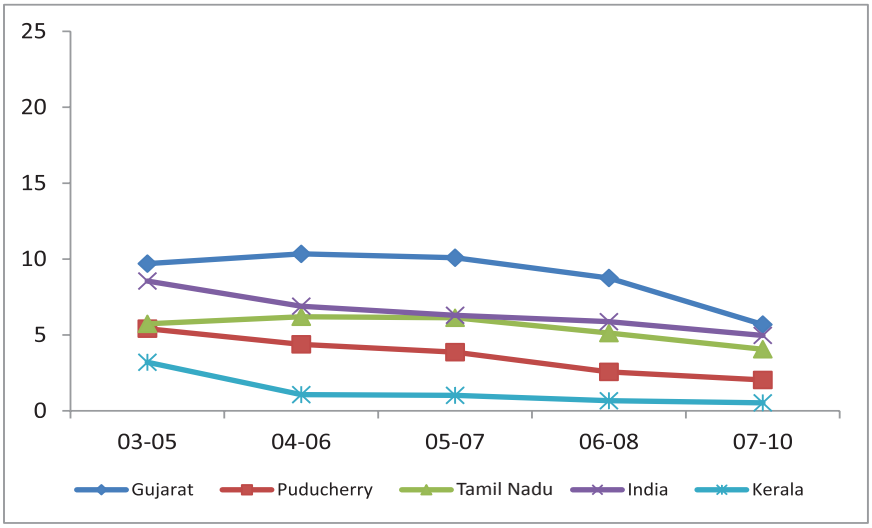
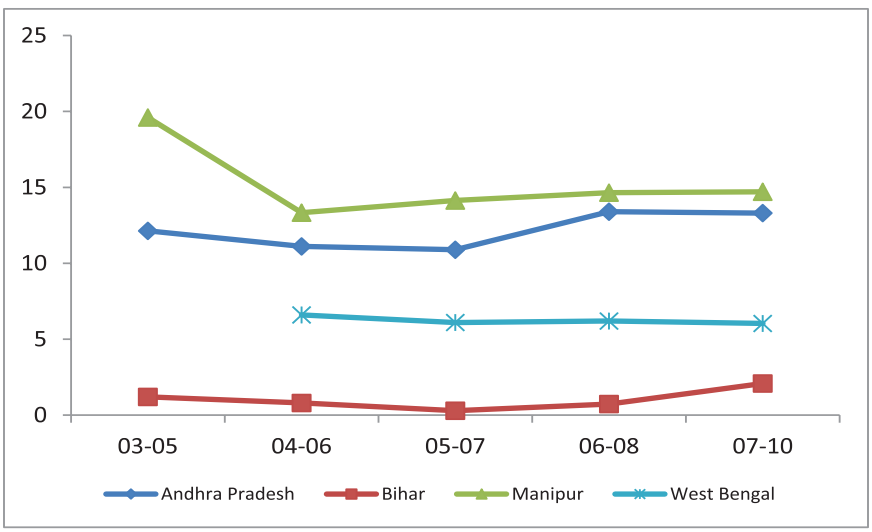
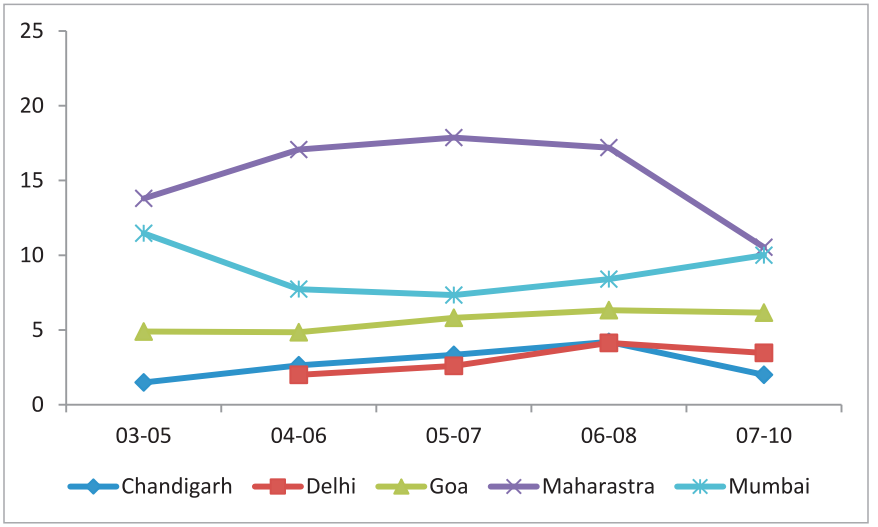


Figure 20: State-wise trends in MSM HIV Prevalence (%) based on consistent sites[12]



[11] *3-yr moving averages based on consistent sites; Gujarat – 3, Puducherry – 1, Tamil Nadu – 2, India - 22*
[12] *3-yr moving averages based on consistent sites; Andhra Pradesh – 1, Bihar – 1, Manipur – 1, West Bengal - 2*

Figure 21: State-wise trends in MSM HIV Prevalence (%) based on consistent sites[13]



Injecting Drug Users

HSS among IDUs expanded from 52 sites in 2007 to 79 sites in 2010-11. Highest prevalence among IDUs was recorded in Punjab (21.1%) followed by Delhi (18.3%), Maharastra (14.2%), Manipur (12.9%) and Mizoram (12%). Overall, 9 states in India recorded a prevalence of more than 5% among IDUs including states of Madhya Pradesh, Odisha and Chandigarh. (Fig. 22)

Twenty nine sites in 2010-11 round of surveillance recorded a prevalence of more than 5% including sites in states of Bihar, Kerala, Madhya Pradesh, Odisha and West Bengal, besides North East & Punjab. Five out of six IDU sites in Punjab have shown HIV prevalence of 5% or more in 2010-11. Fig 23 shows district wise map of India with HIV prevalence among IDUs in 2010-11.

Declining Trends of HIV Prevalence among IDU at consistent sites are observed at select states including Manipur & Nagaland. Stable trend but at higher level (>5%) are observed at country level as well as in states of Delhi, Kerala, Odisha & West Bengal. Rising Trends of HIV Prevalence among IDU at higher levels (>5%) are noted in Chandigarh and Mizoram, while rising trends at low level are observed in Haryana, Jharkhand & Bihar (Fig. 24-26). HSS among IDUs in Punjab was initiated in 2007 at three sites. Analysis of consistent sites for three year indicated high and rising prevalence among IDUs in state.

[13] *3-yr moving averages based on consistent sites; Chandigarh – 1, Delhi – 1, Goa – 1, Maharastra – 1, Mumbai - 1*

Figure 22: HIV Prevalence (%) among IDU, India and states, 2010-11

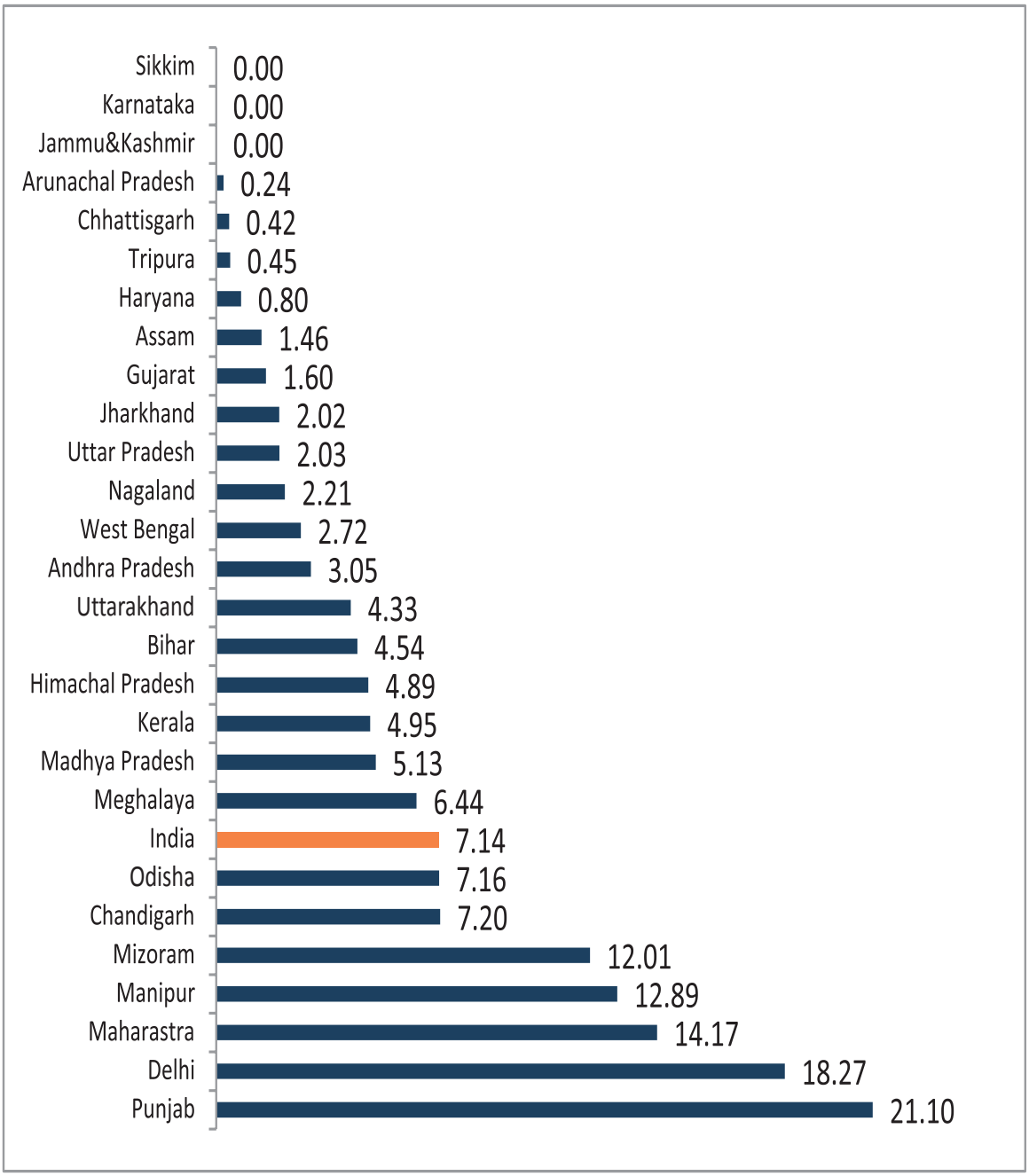


Figure 23: HIV prevalence among IDUs, district-wise, 2010-11

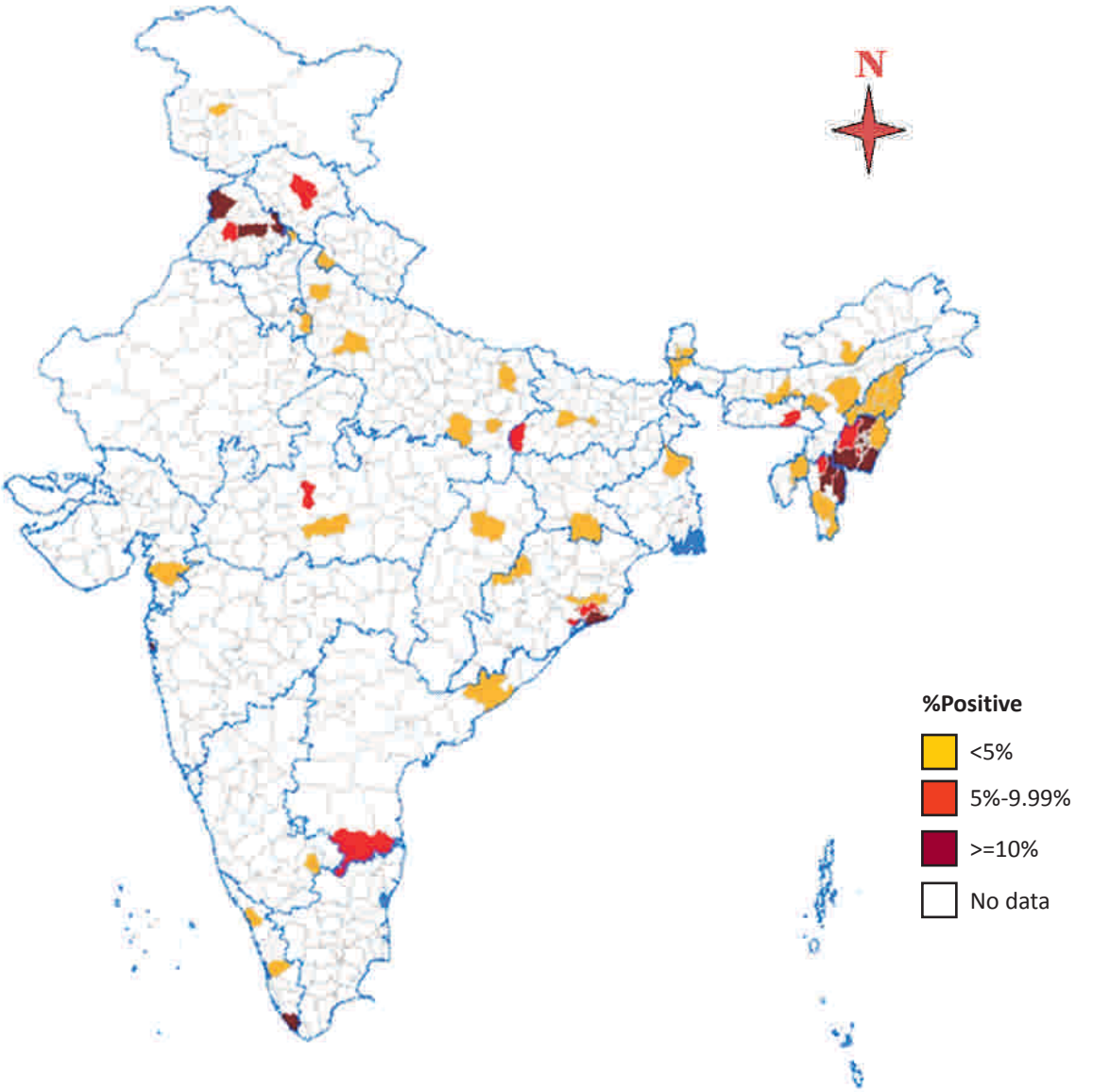


Figure 24: State-wise HIV Prevalence (%) trends in IDU based on consistent sites[14]

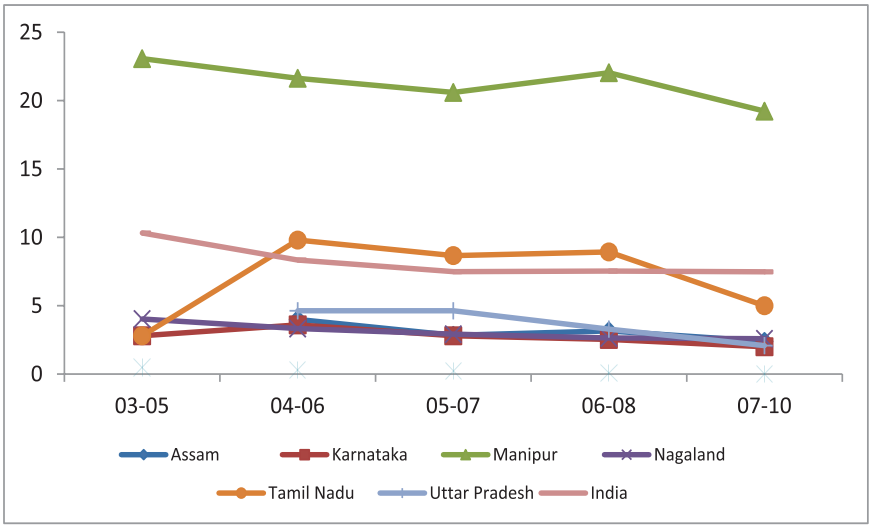
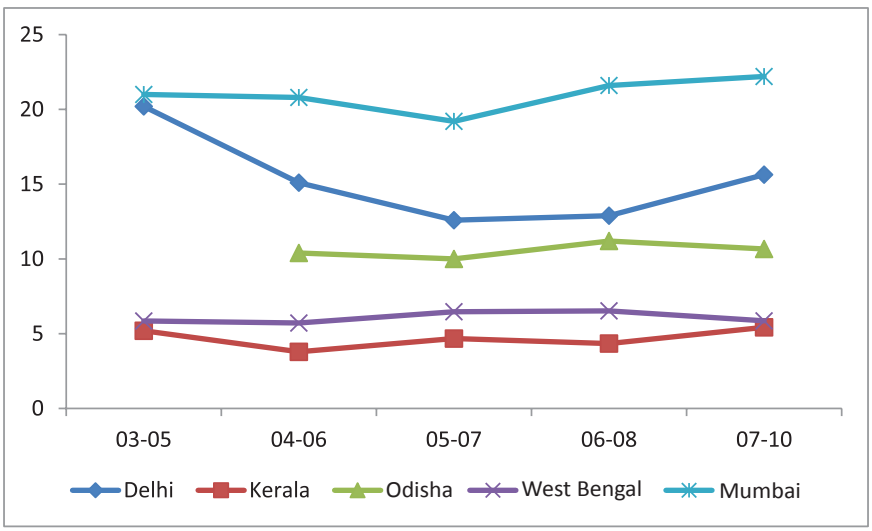


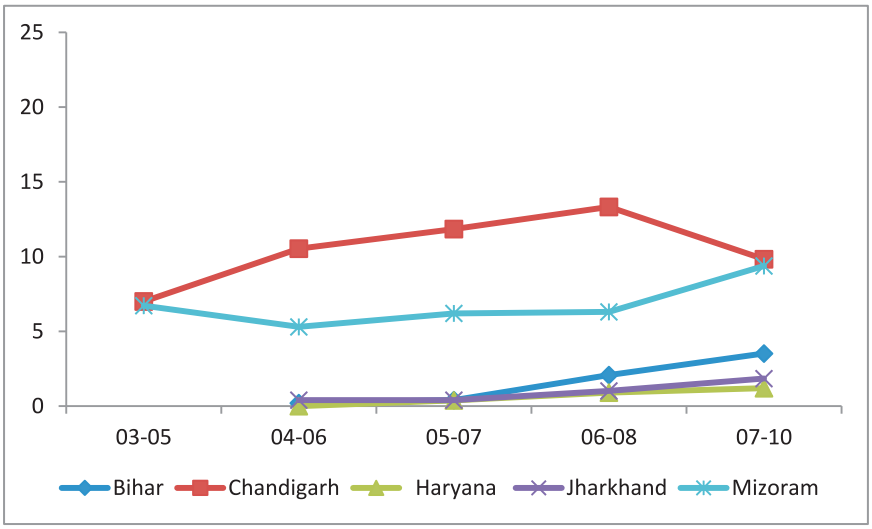
Figure 25: State-wise HIV Prevalence (%) trends in IDU based on consistent sites[15]



[14] 3-yr moving averages based on consistent sites; Assam – 2, Karnataka – 1, Manipur – 4, Nagaland – 8, Tamil Nadu – 1, Uttar Pradesh – 1, India - 38

[15] 3-yr moving averages based on consistent sites; Delhi – 2, Kerala – 2, Odisha – 1, Mumbai – 1, West Bengal - 4

Figure 26: State-wise HIV Prevalence (%) trends in IDU based on consistent sites[16]



Transgenders

There were 3 HSS sites (one in Maharastra and two in Tamil Nadu) among Transgenders (TG) during 2010-11 round of HSS. Observed HIV prevalence at TG HSS sites ranged from 0.8% to 18.8%.

5.HIV Levels among Bridge Population

HSS among long distance truckers and single male migrants was initiated to get an estimate of epidemic among bridge population. There were 20 sites among each of the groups during 2010-11 and many of these were new sites. Observed prevalence among migrants was low (0.99%) while among truckers, prevalence was moderate (2.6%). There was significant inter-site variation in both groups. Prevalence at migrant sites ranged from 0% to more than 3% at Sonipat and Mumbai (sub-urban) site (Fig. 27). Similarly, prevalence at trucker's sites ranged from 0% to more than 8% at Kachchh and Jalpaiguri sites. Overall, half of truckers sites recorded a prevalence of 2% or higher during HSS 2010. (Fig. 28)

[16]3-yr moving averages based on consistent sites; Bihar – 2, Chandigarh – 1, Haryana – 1, Jharkhand – 1, Mizoram – 4,

Figure 27: HIV Prevalence (%) among Single Male Migrants, 2010-11

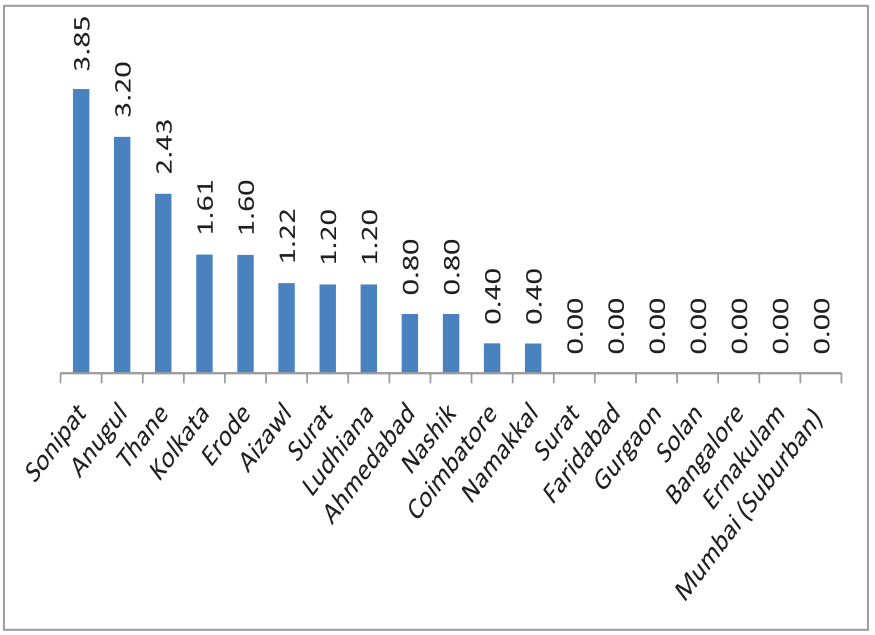
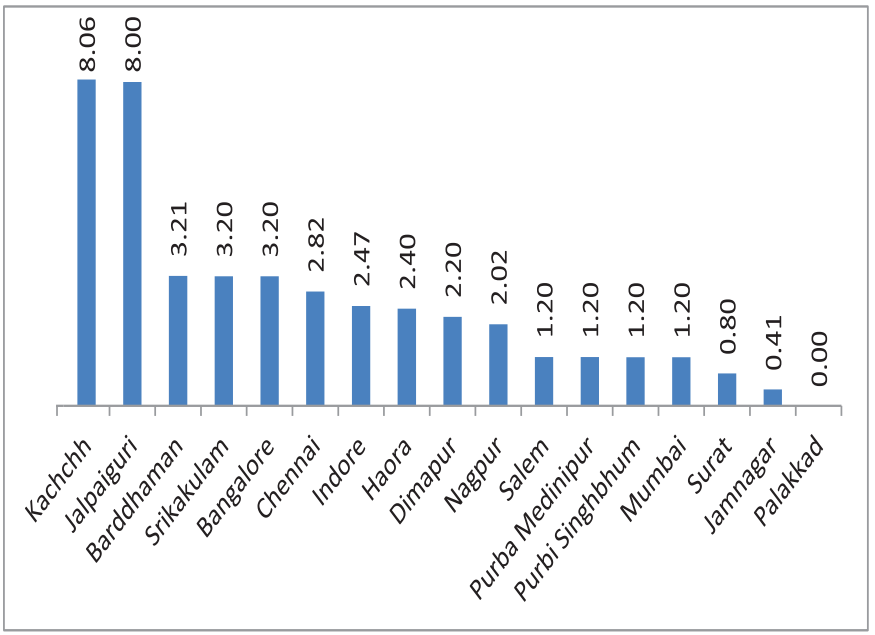


Figure 28: HIV Prevalence (%) among Long Distance Truckers, 2010-11



6. Conclusion

India has the largest and one of the best HIV surveillance systems in the world. HIV Sentinel Surveillance provides insights into the levels and trends of HIV among different population groups almost covering all districts in India. Data from HSS is also used for HIV estimations. Findings from HSS 2010-11 corroborate the fact that National AIDS Control Programme is on the track to contain the epidemic. However, at the same time, the data also highlights the emerging epidemics, albeit at low level, in low prevalence states.

It is worth noting that, for the first time in HSS 2010-11, none of the states have shown HIV prevalence of 1% or more among ANC clinic attendees. While declining trends are noted at national level among general population, Female Sex Worker and Men who have Sex with Men, stable trends are recorded among Injecting Drug Users warranting increased attention to emerging pockets of IDU in different states. While north eastern states of Manipur and Nagaland have shown declining trends among IDU, higher levels and rising trends are noted in Chandigarh, Mizoram and Punjab. High prevalence is also noted among MSM in many states and districts. Limited sites among transgenders in Mumbai and Chennai show HIV prevalence ranging from 1% to 19%. Similarly, low to moderate levels are noted among bridge population groups of migrants and truckers. Data on trends among bridge population is limited.

Emerging pockets of higher HIV prevalence among general population have been observed in low prevalence states of North India. Higher ANC prevalence in rural than urban population, higher prevalence among pregnant women with migrant spouses and very low levels of HIV among HRG, coupled with evidence generated beyond HSS, point towards possible role of migration in the spread of epidemic in some of these states.

The above scenario indicates that long standing and focused prevention interventions can bring about successful control of HIV epidemic as reflected in declines in high prevalence states. However, the strategies and approaches should be customized to the patterns of vulnerabilities in other states where emerging epidemics are observed. Network dynamics among MSM and IDU in newer pockets needs to be closely studied. Equally important is to understand the transmission dynamics at source states from where migration to high prevalence areas is increasingly being recognized as a driver in spread of HIV. Surveillance data helps the programme in identifying these pockets and understanding the patterns of vulnerability, thereby guiding appropriate programme response to contain HIV epidemic in the country.

ANNEX 1: Distribution of HIV sentinel sites, state-wise and typology-wise (2010-11)

State	ANC	STD	FSW	MSM	IDU	LDT	SMM	TG	Total
A & N Islands	4	1	0	0	0	0	0	0	**5**
Andhra Pradesh	63	0	20	8	2	1	0	0	**94**
Arunachal Pradesh	6	7	3	0	2	0	0	0	**18**
Assam	20	9	17	2	2	0	0	0	**50**
Bihar	23	24	11	1	2	0	0	0	**61**
Chandigarh	1	2	3	1	1	0	0	0	**8**
Chhattisgarh	18	4	3	1	1	0	0	0	**27**
D & N Haveli	1	0	0	0	0	0	0	0	**1**
Daman & Diu	2	0	0	0	0	0	0	0	**2**
Delhi	5	5	5	3	2	0	0	0	**20**
Goa	3	0	2	2	0	0	0	0	**7**
Gujarat	25	4	9	8	1	3	3	0	**53**
Haryana	12	10	11	2	2	0	3	0	**40**
Himachal Pradesh	8	5	4	1	1	1	1	0	**21**
Jammu &Kashmir	15	6	2	0	1	0	0	0	**24**
Jharkhand	15	11	12	1	1	1	0	0	**41**
Karnataka	60	0	27	7	2	1	1	0	**98**
Kerala	10	0	10	8	3	1	1	0	**33**
Madhya Pradesh	37	10	5	2	2	1	0	0	**57**
Maharastra	75	1	22	7	1	3	3	1	**113**
Manipur	14	2	4	1	11	0	0	0	**32**
Meghalya	7	3	0	0	1	0	0	0	**11**
Mizoram	9	2	1	0	5	0	1	0	**18**
Nagaland	19	1	1	1	8	1	0	0	**31**
Odisha	32	7	12	6	4	0	2	0	**63**
Puducherry	2	3	3	2	0	0	0	0	**10**
Punjab	13	3	10	3	6	0	1	0	**36**
Rajasthan	28	12	7	1	0	0	0	0	**48**
Sikkim	3	1	1	0	2	0	0	0	**7**
Tamil Nadu	68	0	27	17	2	2	3	2	**121**
Tripura	2	7	4	0	1	0	0	0	**14**
Uttar Pradesh	65	28	11	6	5	0	0	0	**115**
Uttarakhand	9	7	2	0	2	0	0	0	**20**
West Bengal	22	9	12	5	6	5	1	0	**60**
India	**696**	**184**	**261**	**96**	**79**	**20**	**20**	**3**	**1,359**
Note:- (1) No HSS site in Lakshadweep									

ANNEX 2: HIV Prevalence among ANC clinic attendees, state-wise (2003-11)

State	2003	2004	2005	2006	2007	2008-09	2010-11
A & N Islands	0.45	0.00	0.00	0.17	0.25	0.06	0.13
Andhra Pradesh	1.45	1.70	1.67	1.41	1.07	1.22	0.76
Arunachal Pradesh	0.00	0.20	0.46	0.27	0.00	0.46	0.21
Assam	0.00	0.14	0.00	0.04	0.11	0.13	0.09
Bihar	0.11	0.22	0.38	0.36	0.34	0.30	0.17
Chandigarh	0.22	0.50	0.00	0.25	0.25	0.25	0.00
Chhattisgarh	0.76	0.00	0.32	0.31	0.29	0.41	0.43
D & N Haveli	0.13	0.00	0.25	0.00	0.50	0.00	0.00
Daman & Diu	0.27	0.38	0.13	0.00	0.13	0.38	0.13
Delhi	0.13	0.31	0.31	0.10	0.20	0.20	0.30
Goa	0.48	1.13	0.00	0.50	0.18	0.68	0.33
Gujarat	0.38	0.19	0.38	0.55	0.34	0.44	0.46
Haryana	0.27	0.00	0.19	0.17	0.16	0.15	0.19
Himachal Pradesh	0.25	0.25	0.22	0.06	0.13	0.51	0.04
Jammu & Kashmir	0.00	0.08	0.00	0.04	0.05	0.00	0.06
Jharkhand	0.08	0.05	0.14	0.13	0.13	0.38	0.45
Karnataka	1.43	1.52	1.49	1.12	0.86	0.89	0.69
Kerala	0.09	0.42	0.32	0.21	0.46	0.21	0.13
Madhya Pradesh	0.42	0.38	0.27	0.26	0.25	0.26	0.32
Maharastra	1.15	0.97	1.07	0.87	0.76	0.61	0.42
Manipur	1.34	1.66	1.30	1.39	1.31	0.54	0.78
Meghalya	0.35	0.00	0.00	0.09	0.00	0.04	0.05
Mizoram	1.70	1.50	0.81	0.94	0.85	0.72	0.40
Nagaland	1.69	1.85	1.97	1.36	1.10	1.14	0.66
Odisha	0.00	0.50	0.60	0.55	0.23	0.73	0.43
Puducherry	0.13	0.25	0.25	0.25	0.00	0.25	0.13
Punjab	0.13	0.44	0.25	0.20	0.12	0.31	0.26
Rajasthan	0.15	0.23	0.50	0.29	0.19	0.19	0.38
Sikkim	0.21	0.00	0.25	0.10	0.09	0.00	0.09
Tamil Nadu	0.83	0.81	0.54	0.54	0.58	0.35	0.38
Tripura	0.00	0.25	0.00	0.42	0.25	0.00	0.00
Uttar Pradesh	0.22	0.44	0.15	0.25	0.08	0.18	0.21
Uttarakhand	0.06	0.00	0.00	0.11	0.06	0.22	0.25
West Bengal	0.46	0.43	0.89	0.38	0.40	0.17	0.13
India	**0.80**	**0.95**	**0.90**	**0.60**	**0.49**	**0.49**	**0.40**

Note:- (1) Based on valid sites (75% of target achieved) (2) No HSS site in Lakshadweep (3) All figures in percentage

ANNEX 3: HIV Prevalence among Female Sex Workers, state-wise (2003-11)

State	2003	2004	2005	2006	2007	2008-09	2010-11
A & N Islands	-	0.50	0.40	-	-	-	-
Andhra Pradesh	20.00	16.97	12.97	7.32	9.74	11.14	6.86
Arunachal Pradesh	-	-	-	0.00	-	0.00	0.28
Assam	0.00	0.00	0.76	0.46	0.44	0.80	0.46
Bihar	4.80	0.20	2.24	1.68	3.40	2.98	2.30
Chandigarh	0.60	0.80	0.67	0.67	0.40	0.82	0.00
Chhattisgarh	-	-	-	1.57	1.43	-	2.73
D & N Haveli	-	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-	-
Delhi	1.61	4.60	3.15	2.80	3.15	2.17	0.70
Goa	30.15	-	-	-	-	6.40	2.70
Gujarat	-	9.20	8.13	6.40	6.53	3.74	1.62
Haryana	-	-	2.00	1.19	0.91	1.55	0.48
Himachal Pradesh	0.00	0.80	0.00	0.66	0.87	0.55	0.53
Jammu & Kashmir	-	-	-	0.00	-	0.00	0.00
Jharkhand	-	0.00	0.80	0.88	1.09	0.94	0.82
Karnataka	14.40	21.60	18.39	8.64	5.30	14.40	5.10
Kerala	1.94	-	-	0.32	0.87	1.46	0.73
Madhya Pradesh	-	-	1.82	1.07	0.67	-	0.93
Maharastra	54.29	41.69	23.62	19.57	17.91	10.77	6.89
Manipur	12.80	12.40	10.00	11.60	13.07	10.87	2.80
Meghalya	-	-	-	-	-	-	-
Mizoram	-	13.69	14.00	10.40	7.20	9.20	-
Nagaland	4.40	4.44	10.80	16.40	8.91	14.06	3.21
Odisha	-	5.18	2.60	1.00	0.80	2.40	2.07
Puducherry	-	1.94	0.28	1.44	1.30	-	1.21
Punjab	0.00	-	-	1.36	0.65	0.97	0.85
Rajasthan	3.92	2.31	3.72	2.55	4.16	3.58	1.28
Sikkim	-	-	-	-	0.00	0.44	0.00
Tamil Nadu	8.80	4.00	5.49	4.62	4.68	6.22	2.69
Tripura	-	-	-	-	-	-	0.21
Uttar Pradesh	6.60	8.00	3.50	1.52	0.78	1.03	0.62
Uttarakhand	-	-	-	-	-	-	0.44
West Bengal	6.47	4.11	6.80	6.12	5.92	4.12	2.04
India	**10.33**	**9.43**	**8.44**	**4.90**	**5.06**	**4.94**	**2.67**

Note:- (1) Based on valid sites (75% of target achieved) (2) No HSS site in Lakshadweep (3) All figures in percentage

ANNEX 4: HIV Prevalence among Men who have sex with Men, state-wise (2003-11)

State	2003	2004	2005	2006	2007	2008-09	2010-11
A & N Islands	1.25	-	-	-	-	-	-
Andhra Pradesh	13.20	16.00	6.45	10.25	17.04	23.60	10.14
Arunachal Pradesh	-	-	-	-	-	-	-
Assam	-	-	-	0.78	2.78	0.41	1.40
Bihar	1.60	1.60	0.40	0.30	0.00	1.64	4.20
Chandigarh	-	1.36	1.60	4.80	3.60	2.79	0.40
Chhattisgarh	-	-	-	-	-	-	14.98
D & N Haveli	-	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-	-
Delhi	27.42	6.67	20.40	12.27	11.73	7.87	5.34
Goa	9.09	1.68	4.90	4.80	7.93	6.40	4.53
Gujarat	-	6.80	10.67	11.20	8.40	5.48	3.00
Haryana	-	-	-	0.00	5.39	3.20	3.05
Himachal Pradesh	-	-	-	0.44	0.00	0.40	1.23
Jammu & Kashmir	-	-	-	-	-	-	-
Jharkhand	-	-	-	-	-	2.00	0.40
Karnataka	10.80	10.00	11.61	19.20	17.60	12.52	5.36
Kerala	-	0.89	3.20	0.64	0.96	0.75	0.36
Madhya Pradesh	-	-	-	-	-	-	7.94
Maharastra	18.80	11.20	10.40	15.60	11.80	11.90	9.91
Manipur	29.20	14.00	15.60	10.40	16.40	17.21	10.53
Meghalya	-	-	-	-	-	-	-
Mizoram	-	-	-	-	-	-	-
Nagaland	-	-	-	-	-	-	13.58
Odisha	-	-	-	-	7.37	4.19	3.79
Puducherry	-	5.22	5.60	2.47	2.00	-	1.21
Punjab	-	-	-	4.80	1.22	3.00	2.18
Rajasthan	-	-	-	0.00	-	-	-
Sikkim	-	-	-	-	-	-	-
Tamil Nadu	4.20	6.80	6.20	5.60	6.60	5.24	2.41
Tripura	-	-	-	-	-	-	-
Uttar Pradesh	-	-	-	-	0.40	4.07	1.56
Uttarakhand	-	-	-	-	-	-	-
West Bengal	-	1.33	0.54	6.60	5.61	4.90	5.09
India	**8.47**	**7.47**	**8.74**	**6.41**	**7.41**	**7.30**	**4.43**

Note:- (1) Based on valid sites (75% of target achieved) (2) No HSS site in Lakshadweep (3) All figures in percentage

ANNEX 5: HIV Prevalence among Injecting Drug Users, state-wise (2003-11)

State	2003	2004	2005	2006	2007	2008-09	2010-11
A & N Islands	-	-	-	-	-	-	-
Andhra Pradesh	-	-	-	-	3.71	6.90	3.05
Arunachal Pradesh	-	-	-	0.00	0.00	0.23	0.24
Assam	5.56	4.48	7.86	2.86	2.14	3.64	1.46
Bihar	-	-	-	0.20	0.60	5.47	4.54
Chandigarh	-	4.80	9.20	17.60	8.64	13.60	7.20
Chhattisgarh	-	-	-	-	-	-	0.42
D & N Haveli	-	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-	-
Delhi	14.40	17.60	22.80	10.00	10.10	18.60	18.27
Goa	-	-	-	-	-	-	-
Gujarat	-	-	-	-	-	-	1.60
Haryana	-	-	-	0.00	0.80	2.00	0.80
Himachal Pradesh	-	-	-	-	-	0.65	4.89
Jammu & Kashmir	0.00	0.00	0.00	2.50	-	0.00	0.00
Jharkhand	-	-	-	0.40	-	1.65	2.02
Karnataka	2.80	0.00	-	3.60	2.00	2.00	0.00
Kerala	-	2.58	5.19	9.57	7.85	3.04	4.95
Madhya Pradesh	-	-	-	-	-	-	5.13
Maharastra	22.89	29.20	12.80	20.40	24.40	20.00	14.17
Manipur	24.47	21.00	24.10	19.80	17.90	28.65	12.89
Meghalya	0.00	0.00	0.00	3.33	4.17	-	6.44
Mizoram	6.40	6.80	4.80	3.05	7.53	5.28	12.01
Nagaland	8.43	3.22	4.51	2.39	1.91	3.17	2.21
Odisha	-	-	-	10.40	7.33	7.20	7.16
Puducherry	-	-	-	-	-	-	-
Punjab	-	-	-	13.80	13.79	26.36	21.10
Rajasthan	-	-	-	-	-	-	-
Sikkim	-	-	0.48	0.20	0.47	1.45	0.00
Tamil Nadu	63.81	39.92	18.00	24.20	16.80	9.48	-
Tripura	-	-	10.92	0.00	0.00	0.42	0.45
Uttar Pradesh	-	-	-	4.63	1.29	2.46	2.03
Uttarakhand	-	-	-	-	-	-	4.33
West Bengal	2.61	3.83	7.41	4.64	7.76	6.90	2.72
India	**13.15**	**11.16**	**10.16**	**6.92**	**7.23**	**9.19**	**7.14**
Note:- (1) Based on valid sites (75% of target achieved) (2) No HSS site in Lakshadweep (3) All figures in percentage							

ANNEX 6: HIV Prevalence among Single Male Migrants, Long Distance Truckers and Transgenders, state-wise (2005-11)

State	SMM					LDT				TG			
	2005	2006	2007	2009	2011	2006	2007	2009	2011	2006	2007	2009	2011
A & N Islands	-	-	-	-	-	-	-	-	-	-	-	-	-
Andhra Pradesh	-	-	-	-	-	-	-	-	3.20	-	-	-	-
Arunachal Pradesh	-	-	-	-	-	-	-	-	-	-	-	-	-
Assam	-	-	-	-	-	-	-	-	-	-	-	-	-
Bihar	-	-	-	-	-	-	-	-	-	-	-	-	-
Chandigarh	-	-	-	-	-	-	-	-	-	-	-	-	-
Chhattisgarh	-	-	-	-	-	-	-	-	-	-	-	-	-
D & N Haveli	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-	-	-	-	-	-	-	-
Delhi	-	-	-	-	-	-	-	-	-	-	-	-	-
Goa	-	-	-	-	-	-	-	-	-	-	-	-	-
Gujarat	-	-	-	1.80	0.67	-	-	-	3.09	-	-	-	-
Haryana	-	-	-	-	1.33	-	-	-	-	-	-	-	-
Himachal Pradesh	-	-	0.00	0.00	0.00	-	0.40	-	-	-	-	-	-
Jammu &Kashmir	-	-	-	-	-	-	-	-	-	-	-	-	-
Jharkhand	-	-	-	-	-	-	-	-	1.20	-	-	-	-
Karnataka	-	-	-	-	0.00	-	-	-	3.20	-	-	-	-
Kerala	-	-	-	-	0.00	2.40	3.60	0.80	0.00	-	-	-	-
Madhya Pradesh	-	-	-	-	-	-	-	-	2.47	-	-	-	-
Maharastra	-	2.40	1.60	3.00	1.07	-	-	-	1.61	29.60	42.21	16.40	18.80
Manipur	-	-	-	-	-	-	-	-	-	-	-	-	-
Meghalya	-	-	-	-	-	-	-	-	-	-	-	-	-
Mizoram	-	-	-	0.80	1.22	-	-	-	-	-	-	-	-
Nagaland	-	-	-	-	-	-	-	-	-	-	-	-	-
Odisha	-	1.44	-	3.60	3.20	2.73	-	-	-	-	-	-	-
Puducherry	-	-	-	-	-	-	-	-	-	-	-	-	-
Punjab	-	-	-	-	1.20	1.07	-	-	-	-	-	-	-
Rajasthan	-	-	-	-	-	-	-	-	-	-	-	-	-
Sikkim	-	-	-	-	-	-	-	-	-	-	-	-	-
Tamil Nadu	-	-	-	-	0.80	-	-	-	2.01	-	-	-	3.82
Tripura	-	-	-	-	-	-	-	-	-	-	-	-	-
Uttar Pradesh	-	-	-	-	-	-	-	-	-	-	-	-	-
Uttarakhand	-	-	-	-	-	-	-	-	-	-	-	-	-
West Bengal	-	-	9.27	2.42	1.61	2.72	2.72	1.75	3.71	-	-	-	-
India	**0.00**	**1.60**	**3.61**	**2.17**	**0.99**	**2.37**	**2.87**	**1.57**	**2.59**	**29.60**	**42.21**	**16.40**	**8.82**

Note:- (1) Based on valid sites (75% of target achieved) (2) No HSS site in Lakshadweep (3) All figures in percentage