

Documenting the geographic variation in HIV-1, its determinants and intervention coverage in 115 districts in Southern India

Annex – Comparison of Indian AIDS Initiative – Avahan Districts with Non-Avahan Districts

November 23, 2006

ISHA Collaborators - Chris Pupp (1), Prakash Bhatia (2), Ajay Goel (1), Mathew Silvaggio (1), Prem Mony (3), Panchapakesan Subramaniyam (4), Shreelata Rao Seshadri (1), Vendhan Gajalakshmi (5), Sreevidya Subramoney (6), Kathleen Kenny (1), Neeraj Dhingra (7), Prakash Doke (8), Prakash Gupta (6), Ajay Khera (9), Li Chen (1), Rajesh Kumar (10), Aparajita Ramakrishnan (11), Virginia Loo (11), Gina Dallabetta (11), Ashok Alexander (11), Prabhat Jha (1).

1. Centre for Global Health Research, University of Toronto, St. Michael's Hospital
2. Osmania Medical College, Hyderabad
3. Institute of Population Health and Clinical Research, Bangalore
4. Centre for Development Research & Training, Chennai
5. Epidemiological Research Center, Chennai
6. Healis Sekhsaria Institute for Public Health, Navi Mumbai
7. Regional Health Training Centre, Najafgarh, Delhi
8. Directorate of Health Services, Government of Maharashtra, Mumbai
9. National AIDS Control Organization, Government of India, Delhi
10. Post Graduate Institute of Medical Education and Research, Chandigarh
11. India AIDS Initiative – Avahan, Bill & Melinda Gates Foundation, Delhi

On behalf of the International Studies of HIV/AIDS (ISHA) Collaborators

Corresponding author:

Prabhat Jha

Centre for Global Health Research, St. Michael's Hospital, University of Toronto
70 Richmond Street East, 2nd Floor, Toronto, Ontario M5C 1N8, Canada

Prabhat.jha@utoronto.ca



70 Richmond Street East
Toronto, Ontario M5C 1N8, Canada
Tel: +1 416-864-6042
Fax: +1 416-864-5256
www.cghr.org



ACKNOWLEDGEMENTS

Collaborators from the Centre for Global Health Research gratefully acknowledge the contributions made by the following organizations in making this data collection effort possible: India AIDS Initiative – Avahan, Indian Institute of Health Management Research, the National AIDS Control Organization, the State AIDS Control Societies of Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu, Hindustan Latex Limited in Andhra Pradesh, and Pathfinder International in Mumbai.

GLOSSARY OF TERMS

ANC/ANC R: urban ante natal clinic/rural ante natal clinic

Avahan: India AIDS Initiative funded by the Bill and Melinda Gates Foundation

BSS: Behavioural Surveillance Survey

CAPACS: Corporation AIDS Prevention and Control Society

CGHR: Centre for Global Health Research

FHI: Family Health International

FSW: female sex worker

GUD: genital ulcer disease

IBBA: Integrated Biological and Behavioural Assessment (district-level)

IHMR: Indian Institute of Health Management Research

Incidence: number of instances of new persons falling ill

HIV-1: Human Immuno-deficiency Virus

MSM: men who have sex with men

NACO: National AIDS Control Organization

NGO: non-governmental organization

Prevalence: number of instances of a disease in a population at a given time

RCH: Rapid Household Survey

SACS: State AIDS Control Society

SERC: Social and Environmental Research Centre

STI clinic: sexually transmitted infection clinic

VCTC: voluntary testing and counselling centre

VDRL: venereal disease research laboratory

1.0 KEY FINDINGS ON INDIA AIDS INITIATIVE - AVAHAN

Key findings on India AIDS Initiative – Avahan (hereafter Avahan) will provide a descriptive overview of baseline levels of HIV-1 prevalence, risk factors and intervention responses in the states of Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu. A particular emphasis will be placed on data similarities and differences according in districts characterized by Avahan programming, Avahan with IBBA HIV-1 testing sites and/or non-Avahan partners. Avahan prevention programs and IBBA sites were implemented through a non-random selection of target districts, initiated in 2003 in Andhra Pradesh and Karnataka, and in 2004 in Maharashtra and Tamil Nadu. Among the 115 districts studied over four states, 63 districts are characterized by Avahan prevention programs, of which 24 districts are Avahan with IBBA sites and 18 districts are characterized both by Avahan and non-Avahan intervention partners (Table 1). The majority of Avahan districts (60%) are located in the states of Andhra Pradesh and Karnataka, where Avahan administers prevention programs in 22 of 23 districts and 16 of 25 districts, respectively. Fewer Avahan districts are found in the other two states, where Avahan is intervening in 14 of 35 districts in Maharashtra and 11 of 30 districts in Tamil Nadu. It should be noted that other intervention partners are also present in many districts, operating in both Avahan and non-Avahan jurisdictions. Descriptions of findings and related issues will be presented in the following ordered subsections: 1) summary of key findings; 2) HIV and STI hotspots; 3) demographic and spatial risk factors; 4) district-level HIV-1 time trends; 5) district-level HIV and STI outcomes; 6) district-level public sector condom distribution; and 7) district-level estimates of FSWs.

1.1 Summary of Key Findings

Emphasizing similarities and differences in data according to districts characterized by Avahan programming, Avahan with IBBA testing sites and/or non-Avahan partners, overall key findings suggest:

- Avahan prevention programming is targeting many of the districts in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu where the risk for HIV-1 is more advanced compared to non-Avahan districts. This is evidenced by 2003 and 2004 distributions of HIV-1 prevalence, genital ulcers and venereal diseases.
- Avahan with IBBA districts appear to be generally active in areas of heightened risk for HIV-1 and genital ulcers, and of lower risk for venereal disease compared to Avahan and non-Avahan districts.
- Avahan programming is observed to be operating in half of the districts with documented increases in HIV-1 prevalence between 2002 and 2004.
- Avahan programming is targeting districts with intensified risk, evidenced by higher percentages of FSWs, urban populations, and married women

under the age of 18 compared to non-Avahan districts. Relatedly, Avahan with IBBA activities are reported to be targeting districts with higher proportions of risk factors compared to Avahan and non-Avahan districts.

- Avahan is active in districts with a higher concentration of haltpoint interventions, noting higher numbers of intervening NGOs, counselling services and STI services compared to non-Avahan districts.
- Avahan with IBBA initiatives are shown to be present in districts with slightly more intervening NGOs and counselling services at haltpoints, and fewer STI services compared to Avahan and non-Avahan districts.
- Non-Avahan districts are found to have slightly fewer cities with a million or more inhabitants and lower populations of Muslims, while also numbering higher quantities of trucks halting for 24 hours, and an almost equal number of coastal ports as Avahan districts.
- Non-Avahan intervention partners are uniquely targeting almost half of the districts with observable increases in HIV-1 prevalence between 2002 and 2004.
- Non-Avahan intervention partners are operating concurrently with Avahan in 18 districts, of which 12 districts show decreasing HIV-1 prevalence.
- Non-Avahan intervention coverage is generally observed in districts with lower HIV-1 prevalence compared to Avahan districts. An exception being Tamil Nadu, where HIV-1 prevalence data shows Avahan and non-Avahan districts to be equally present in the high prevalence range.
- Concurrent activity by Avahan and other partners appears to be located in districts characterized by higher venereal disease prevalence compared to unique Avahan or non-Avahan districts. In Maharashtra, other partnering organizations are reported in all districts, and data shows HIV prevalence to be highest in districts characterized by Avahan, IBBA and other partnering organization initiatives.

1.2 HIV and STI Hotspots

Looking to overall study results for all four states, we observe Avahan districts to be targeting districts with high prevalence of HIV-1 compared to non-Avahan districts (Table 2a). This is observable and significance tested in 2004 data from samples of ANC urban populations of women, STI HIV clinic populations, and VCTC populations, all of which demonstrate Avahan districts to be associated with higher prevalence of HIV-1. Results further indicate that Avahan is targeting those districts with high prevalence of HIV risk factors, such as venereal diseases and genital ulcers, reflected in 2004 data from samples of STI GUD clinic populations and STI VDRL clinic populations; and 2003 data from samples

of ANC VDRL populations of women. Comparing Avahan with IBBA to non-IBBA districts (Table 2b), we observe higher prevalence of HIV-1 in the 24 districts targeted by both Avahan and IBBA compared to non-IBBA sites, as evidenced by 2004 HIV-1 prevalence data taken from samples of ANC urban populations of women, STI HIV clinic populations, and VCTC populations. Relatedly, Avahan with IBBA districts also appear to have higher prevalence of genital ulcers, evidenced by 2004 STI GUD clinic populations. Comparing districts characterized by Avahan-only and Avahan with IBBA (Table 2c), HIV-1 prevalence is observably higher in those districts with both Avahan and IBBA initiatives compared to Avahan-only districts, as indicated by 2004 HIV-1 prevalence data taken from samples of STI HIV clinic populations and VCTC populations. Avahan with IBBA districts also appear to have higher prevalence of genital ulcers relative to Avahan-only districts, while measuring lower prevalence of venereal diseases in the same comparison.

The findings on disease outcomes, drawn from 2003 and 2004 NACO primary data, suggest the Avahan prevention program is generally targeting districts where the risk for HIV-1 is more advanced. This is evidenced by higher prevalence of HIV-1 distributed across samples of ANC urban populations of women, STI HIV clinic populations, and VCTC populations, and by higher prevalence of genital ulcers and venereal diseases, reflected in samples from STI GUD clinic population and STI VDRL. Among Avahan programs, joint Avahan/IBBA initiatives appear to be generally intervening in districts characterized by higher prevalence of HIV-1 and genital ulcers, and lower prevalence of venereal diseases compared with Avahan-only districts. Additional data collected from ANC rural populations of women also show Avahan-only and Avahan with IBBA to be targeting districts with high prevalence of HIV-1, however these numbers are not statistically significant due to small sample sizes, measurement error and/or misclassification.

1.3 Demographic and Spatial Risk Factors

Overall data depicting demographic and spatial risk factors among all four states, shows Avahan districts as having a more than three-fold higher proportion of female sex workers (FSWs) compared to non-Avahan districts (Table 2d). Overall, Avahan also appears to have been initiated in districts with higher proportions of other risk factors, including higher percentage of married females married under the age of 18 years old (26.1% in Avahan districts versus 19.6 % in non-Avahan districts); higher percentage of male circumcision (9.4% of the male population is circumcised (as indicated by percentage of Muslim peoples) in Avahan districts versus 8.7 % in non-Avahan districts); higher numbers of major haltpoints (20 in Avahan districts versus 4 in non-Avahan districts); and higher percentage of urban populations (40.9% in Avahan districts vs. 20.9% in non-Avahan districts). A notable oddity in the data concerns the total number of trucks halting for 24 hours, which is reported as being higher in non-Avahan districts (1882 trucks) compared to Avahan districts (1376 trucks). Comparing IBBA sites and non-IBBA sites (Table 2e), districts with Avahan and IBBA are reported as

having slightly more intervening NGOs and counselling services at haltpoints, while having less than half as many STI services compared to non-IBBA districts. Examining intervention coverage between Avahan with IBBA and Avahan-only districts, again we observe slightly more NGO interventions and counselling services at haltpoints in Avahan/IBBA districts, and more haltpoint locations with STI services in Avahan-only districts. Comparing risk factors in Avahan and Avahan with IBBA districts (Table 2f), we observe the proportion of FSWs to be two-times higher in districts with both Avahan and IBBA initiatives relative to Avahan-only districts. Avahan/IBBA districts also report higher proportions of other risk factors (i.e. percentage of females married under 18 years old; percentage of the male population circumcised; percentage of urban population, etc.) compared to Avahan-only districts. In relation to intervention coverage at high risk haltpoints, Avahan districts are found to have a much higher number of intervening NGOs, counselling services and STI services compared to non-Avahan districts.

Key findings on HIV-1 risk factors and intervention coverage suggest the Avahan prevention program is targeting districts where risk is intensified and where there is a higher concentration of haltpoint interventions compared to non-Avahan districts. Among Avahan districts, Avahan with IBBA districts are generally observed to be districts with more interventions at haltpoints and with higher percentages of FSWs and urban populations, compared to Avahan-only districts. A notable caveat however, was encountered in the considerable disparities in intervention coverage data and in the mapping of high risk groups, greatly entangled by NGOs' varying definitions of interventions and denominator inaccuracies concerning high risk populations.

1.4 District-level HIV-1 Time Trends

Examining state variation in HIV-1 trends over time (2002-2004), we are directed to results from samples of ANC urban populations of women, recognizing that ANC urban data is the most mature and stable HIV surveillance system in India and the most likely to capture HIV prevalence trends in the general population (Figure 1 a-d).(1) These data report 52 districts with increasing prevalence of HIV-1 among women (of which 9 are statistically significant) and 60 districts with decreasing prevalence of HIV-1 (of which 8 are statistically significant). The general lack of statistical significance among prevalence trends is largely due to small samples sizes.

Looking at interdistrict variation in HIV-1 in ANC tested women between 2002 and 2004, we observe a wide distribution of increasing and decreasing outcomes among districts. Overall comparisons of HIV-1 prevalence among states show Andhra Pradesh as having 60% of districts with increasing HIV-1 prevalence, followed by Tamil Nadu with 48% (note: Tamil Nadu data was obtained for 27 of 30 districts), Karnataka with 41%, and Maharashtra with 40%. Of the 52 districts with increasing HIV-1 prevalence among ANC urban populations, 26 districts (50%) are Avahan sites and 10 districts (19%) are Avahan with IBBA. On a

related note, non-Avahan sites comprise 50% of districts with increasing prevalence of HIV-1 and 40% of districts with decreasing prevalence. These overall results from ANC tested women suggest the possibility that district-level HIV-1 prevalence has declined between 2002 and 2004, with 60 of 115 districts showing decreases. Leading the decline are the states of Maharashtra and Karnataka, recording the highest proportion of districts with decreasing prevalence, with approximately 60% of the states' districts showing decreasing HIV prevalence.

1.5 District-level HIV and STI Outcomes

Looking at district-level outcomes (Table 3 a-f), we observe a number of key observations drawn from 2004 HIV-1 outcome data from ANC, ANC R, STI clinics, and VCTC; and 2003 STI VDRL venereal disease data. Overall calculations show the mean HIV-1 prevalence to be highest in Avahan with IBBA districts, followed by Avahan districts, and non-Avahan districts. An oddity is found in the case of Tamil Nadu, having 5 Avahan with IBBA districts, where we generally detect HIV-1 to be highest among Avahan-only districts compared to Avahan with IBBA. In terms of other disease outcomes, 2003 venereal disease prevalence data shows variation among the 4 states, with high prevalence rates observed across non-Avahan, Avahan-only and Avahan with IBBA districts, alike. Koppal district in Karnataka shows the highest 2003 venereal disease prevalence rate and reports no known intervention activity by Avahan partners or others. Looking at districts with intervention coverage by other partners, we generally observe lower HIV-1 prevalence in these districts compared with Avahan districts. An exception to this finding is detected in Tamil Nadu's HIV-1 prevalence data, which shows Avahan and non-Avahan districts to be equally present in the high prevalence range. In the case of Maharashtra, other partnering organizations are reported in all districts, and data shows HIV prevalence to be highest in districts with Avahan/IBBA/other initiatives. In other states, concurrent activity by Avahan and other partners appears to be located within districts characterized by higher HIV-1 and venereal disease prevalence.

1.6 District-level Public Sector Condom Distribution

As condom distribution numbers are a key indicator of intervention activity, we have interest in examining variation in the numbers of condoms received and distributed over time among Avahan, Avahan with IBBA, and non-Avahan districts (see Table 4a-b). A notable interpretive limitation in the condom data arises in the fact that numbers collected represent public sector condoms only, and fail to capture condoms distribution by private entities. As research shows condom use among couples to have changed little from 1992 to 1999, we attribute changes in condom distribution to the likelihood of increased or decreased condom use among non-regular partners.(2)

Looking at similarities and differences among the four states, we find a similar pattern in Andhra Pradesh and Maharashtra, observing Avahan with IBBA districts and Avahan-only districts to have larger increases in numbers of condom

received/distributed over the years 2004-2005 compared to non-Avahan districts. This differs in Tamil Nadu, where 11 of 30 districts are Avahan, and we observe non-Avahan districts to be equally or more active than Avahan districts in the distribution of condoms in 2004 and 2005. Though Karnataka's data gaps do not allow for comparison across Avahan and non-Avahan districts, we observe Avahan with IBBA districts to be found in districts with both relatively high and low numbers of condom distributed for 2005. There are also significant increases observed in non-Avahan districts, such as Mahbubnagar in Andhra Pradesh, where the number of condoms received increased more than twofold and the number of condoms distributed increased threefold, and Thiruvallur in Tamil Nadu, where condom distribution increased almost 57 times between 2004 and 2005.

1.7 District-level FSW estimates

Estimates of FSW populations point to an important measure of risk at the district-level. Our interpretation of estimates is however limited due to high variability in mapping numbers, seen in the significantly larger estimates of high risk women reached compared to estimates of FSW populations. Mapping inconsistencies are observed in 2003 data for Andhra Pradesh, where we uncover 210 % of the FSW population being reached in Nalgonda at the low end of the range and 7100% in Mahbubnagar, at the high end of the range. Similarly, Tamil Nadu's 2004 data shows a range of coverage from 1.4% in Madurai to 333% in Kancheepuram, while Karnataka's 2004 data displays a range from 34% in Mandya to 446% coverage in Bagalkot. There are no reported FSW population estimates for Maharashtra.

Looking at overall district-level variation among Avahan and non-Avahan districts for Andhra Pradesh, Karnataka and Tamil Nadu, we find estimates of FSW populations to be highest in Avahan districts compared to non-Avahan districts. Avahan districts with IBBA testing are also generally found in the upper range of FSW estimates.

2.0 State-level Overviews

The following sub-sections include state-level findings from: 1) Andhra Pradesh; 2) Karnataka; 3) Maharashtra; and 4) Tamil Nadu.

2.1 Andhra Pradesh

Andhra Pradesh has 23 districts and is the fifth largest state in India, with an area of 276,754 square kilometres, bordering Orissa, Chhattisgarh, Maharashtra to the north, Bay of Bengal to the east, Tamil Nadu to the south and Karnataka to the west. According to 2001 Census data, Andhra Pradesh has a population of 76.2 million people, with 24.9 % of the population residing in urban areas. The overall literacy rate is calculated to be 60.5%, just over 8% higher than the national average, and the literacy rate among females is 51%, measured as 12% higher than the national average.

Recent NACO data shows that about 10% of the 5.1 million estimated cases of HIV/AIDS in India are found in Andhra Pradesh, with 19 of 23 districts reporting HIV prevalence among women who attended ANCs to be 1% or more in 2005. In response, HIV/AIDS interventions prior to 2000 were operated by Andhra Pradesh AIDS Control Society (APSACS) and Hindustan Latex Limited in 6 districts. In 2000, Alliance funded the Frontiers Prevention Project, which intervened in 9 districts between 2000 and 2005. In this period, the DDFID also funded Hindustan Latex Family Planning Promotion Trust (HLFPPT) to work in 6 districts. In 2003, the India AIDS Initiative - Avahan began in Andhra Pradesh, partnering with HLPFPT and Alliance, to expand coverage to all districts with the exception of Mahbubnagar. Currently, Avahan operates in 22 districts, with IBBA testing in 8 districts. Thirteen of the 22 districts covered by Avahan also operate with concurrent intervention activities; Mahbubnagar is currently the only state that does not have intervention activities.

2.1.1 District-level HIV-1 Time Trends

According to NACO data from 2002-2004, Andhra Pradesh reports HIV-1 prevalence among ANC tested women to be increasing in 14 of 23 districts (or 61%). Thirteen of the 14 increasing districts are Avahan sponsored, and 5 are noted as having IBBA testing (Figure 1a). Statistically significant increases in HIV-1 prevalence are noted for the Avahan/IBBA district of Karimnagar, and for the Avahan-only districts of Khammam and Nellore, while a significant decrease is evidenced in the Avahan with IBBA district of Warangal. In East Godavari district, where intervention activity is administered by Avahan/IBBA and other partners, we observe increasing HIV-1 prevalence. Similarly in Mahbubnagar district, where there is no reported intervention coverage, we also observe increasing HIV-1 prevalence.

2.1.2 District-level HIV and STI Outcomes

Looking at district-level disease outcomes, we observe a number of key observations drawn from 2004 HIV-1 data from ANC, ANC R, STI clinics, and VCTC; and 2003 venereal disease data. Examining 2004 ANC HIV-1 prevalence

data (Table 3a), we note a range from 0 to 4.00 and observe the highest prevalent districts to include Prakasam, Karimnagar, Guntur and East Godavari, all of which are characterized by Avahan and IBBA initiatives. VCTC HIV-1 data from 2004 (Table 3c) shows a broader distribution of prevalence, ranging from 5.46 in Mahbubnagar (non-Avahan) to 26.74 in East Godavari (Avahan with IBBA and others partners). Overall, 6 of 8 Avahan with IBBA districts are found in the upper range of the VCTC HIV-1 prevalence distribution. Comparing the distribution of districts across ANC HIV and VCTC HIV data sets, we locate East Godavari, West Godavari, Guntur, Karimnagar, Krishna and Prakasam in the upper range of high prevalent districts for each respective data set. Looking at 2004 STI HIV data for males and female in Andhra Pradesh (Table 3d-e), data is reported for 11 districts, and the prevalence is detected to be higher in women compared to men, noting prevalence distribution ranges from 2.73 to 47.17 in women and from 6.42 to 32.56 in men. We also observe similar high prevalence of HIV-1 in both men and women in the districts of Warangal, Hyderabad, Visakhapatnam, Krishna, and Chittoor. Examining 2003 ANC VDRL data (Table 3f), data is reported for 21 districts and there is an overall distribution ranging from 0.25 to 6.50, with the upper range characterized by 4 Avahan with IBBA districts, followed by a middle range with 1 Avahan/IBBA district, and a lower range with 3 Avahan/IBBA districts.

2.1.3 District-level Condom Distribution

To provide a district-level snapshot of intervention coverage, data was collected on the numbers of condoms distributed in 2004 and 2005. An interpretive caveat arises however in that condoms numbers represent public sector only, and fail to capture condoms distributed by private entities. Findings from Andhra Pradesh show an upper range (characterized by the largest quantities of condoms received and distributed in 2004-2005) as being mostly composed of Avahan districts, of which more than half are Avahan with IBBA sites (Table 4a-b). The middle and lower ranges are also predominantly Avahan, though they note significantly fewer Avahan/IBBA districts. More importantly turning to changes over time, we see increases in the number of condoms received across all districts from 2004 to 2005, with the largest absolute increases detected in districts with Avahan and IBBA initiatives. Similarly, increases in the number of condoms distributed were most significantly observed in Avahan with IBBA districts. Additionally, in the non-Avahan district of Mahbubnagar, the number of condoms received increased more than twofold and the number of condoms distributed increased threefold, underscoring key intervention activity by non-Avahan partners.

2.1.4 District-level Estimates of FSWs

Estimates of FSW populations point to an important measure of risk at the district-level. Our interpretation of estimates is limited however, due to high variability in mapping, seen in the significantly larger estimates of high risk women reached compared to estimates of FSW populations. In Andhra Pradesh, estimates were reported for all 23 districts in 2003 and 13 districts in 2005.

Looking at the more robust 2003 data, we observe a wide range of district-level FSW populations from 540 FSWs calculated in Mahbubnagar to 10,372 in Guntur. The upper range of the distribution is characterized by Avahan districts, including 5 IBBA testing districts, and East Godavari, which has both Avahan/IBBA and other partner intervention activity. The middle and lower ranges of FSW populations are also generally Avahan, but note fewer IBBA testing sites, with a total of 2 IBBA districts in the middle range and 1 in the lower range. Comparatively, the estimates of high risk women reached are significantly higher, with a range of 2,666 women reached in Nalgonda to 157,480 in Hyderabad. Overall, 22 districts reported both estimates of high risk women reached and FSW populations, with calculated ratios ranging from 206% of the FSW population reached in Nalgonda to 7155% in Mahbubnagar. These numbers point to inaccuracies in the mapping of FSW populations, which is discussed at length in the overview report.

2.1.5 Summary of Findings for Andhra Pradesh

- Avahan is targeting all but one district with increasing HIV-1 prevalence in ANC tested women.
- The mean prevalence of HIV-1 and venereal disease are observed to be higher in Avahan with IBBA districts compared to Avahan-only and non-Avahan districts.
- The largest increases in condoms distribution were observed in Avahan with IBBA districts, followed by Avahan-only and non-Avahan districts.
- Mahbubnagar district, where there is no reported intervention coverage, reveals increasing HIV-1 prevalence between 2002 and 2004, and notes the lowest VCTC HIV-1 prevalence rate in the state.
- Joint Avahan/IBBA activities are targeting more districts with increased estimates of FSW populations than Avahan-only and non-Avahan initiatives.

2.2 Karnataka

Karnataka has 27 districts spread across an area of 91,791 square kilometres, bordering Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu and Kerala to the south, and Goa to the west. According to 2001 Census data, Karnataka has a population of 52.85 million people, with 7.8% of the population residing in urban areas. The overall literacy rate is 67%, almost 15% above the national average, and the literacy rate among females is 57%, 18% above the national average.

HIV-1 prevalence varies across the districts of Karnataka. NACO surveillance data collected in 2004 calculates 19 of 27 districts as having at least 1% of ANC

attendees testing positive for HIV-1. Intervention activities responding to the epidemic began in 1999. Following up, the National AIDS Control Programmes II increased the number of targeted intervention programmes implemented by NGOs from 12 in 2000 to 30 in 2004 in 11 districts. In 2005, Karnataka State AIDS Prevention Society (KSAPS) implemented interventions in 9 districts. From 2001 to 2004, the Canadian International Development Agency funded the India-Canada Collaborative HIV/AIDS Project in the districts of Bagalkot and Dharwad. Avahan prevention programming began in 2003, with the Karnataka Health Promotion Trust implementing projects in 16 districts with funding India AIDS Initiative - Avahan. Currently, Avahan operates in 17 districts, with IBBA testing in 5 districts. Bangalore is the single district where Avahan/IBBA and other partners are concurrently involved in intervention activities.

2.2.1 District-level HIV-1 Time Trends

According to NACO data from 2002 to 2004, Karnataka reports HIV-1 prevalence among ANC tested women to be decreasing in 16 of 27 districts, where 10 of the 16 decreasing districts are Avahan (Figure 1b). Of the 11 districts with increasing HIV-1 prevalence, 6 are Avahan sites, and within this grouping, 5 districts are Avahan with IBBA testing. Alternatively, non-Avahan partner districts note increasing prevalence in 5 districts and decreasing prevalence in 6 districts. Significant increases in HIV-1 prevalence are reported for the Avahan-only district of Bangalore Rural and for the Avahan with IBBA district of Mysore, while significant decreases in prevalence are indicated for the Avahan districts of Bijapur and Davanagere and the Avahan/IBBA district of Bellary.

2.2.2 District-level HIV and STI Outcomes

Looking at district-level outcomes, we observe a number of key observations drawn from NACO's 2004 HIV-1 outcome data from ANC, ANC R, STI clinics, and VCTC; and 2003 venereal disease outcome data. Examining 2004 ANC HIV-1 prevalence data (Table 3a), we observe a range from 0.25 to 3.75. The upper and middle strata are largely characterized by Avahan districts, while the lower stratum has slightly more non-Avahan districts. Avahan with IBBA sites are fairly evenly distributed, with 2 districts reported in each of the upper and middle ranges and 1 reported district in the lower range.

Looking at 2004 ANC R HIV-1 (Table 3b) prevalence, data is available for 24 districts, showing a range of values from 0.25 to 4.75. The upper range is characterized by a majority of Avahan districts, as well as some non-Avahan districts, including Koppal district, noted as having no interventions and the second highest ANC R HIV-1 prevalence. The middle range is largely comprised of non-Avahan partner districts, while the lower range is reported to have mainly Avahan districts. The five Avahan with IBBA districts are again distributed throughout, with 1 Avahan/IBBA district found in each of the upper and middle ranges, and 2 districts observed in the lower range.

VCTC HIV-1 data from 2004 (Table 3c) shows a broad distribution of prevalence, ranging from 5.72 in Bidar to 40.81 Bagalkot. The upper range is largely composed of Avahan districts, along with two non-Avahan partner districts and Koppal district, where there are no reported interventions. The middle range is also characterized by a majority of Avahan districts, while the lower range is categorized by mainly non-Avahan partner districts. Avahan with IBBA districts are found in the upper and middle ranges of the distribution.

Looking at 2004 STI HIV data for males and females (Table 3d-e), the prevalence is reported to be higher in men compared to women, but as only 7 districts have reported prevalence rates, little can be inferred from the tables.

Exploring 2003 ANC VDRL data (Table 3f), we observe a range of 0.25 to 7.75 among the 20 districts reporting. The upper stratum is characterized by a majority of Avahan districts, in addition to 1 non-Avahan partner district, and Koppal district, which is noted as having the highest venereal disease prevalence rate and no known intervention activity. The middle and lower ranges are also largely composed of Avahan districts.

2.2.3 District-level Condom Distribution

In Karnataka, where Avahan was implemented in 2003, there are serious data gaps pertaining to the numbers of condoms received and distributed, and so we are limited to reporting on condom distribution for 2005 in Avahan districts (Table 4b). Data interpretation is further limited in that condom numbers represent the public sector only, and fail to capture condoms distributed by private entities. Examining findings, we observe the 5 districts with Avahan/IBBA initiatives, 2 districts are in the top half of the range, noting the highest number of condoms distributed (Belgaum and Bellary), and 3 districts are in the bottom half of the range. The range varies from 7318 condoms distributed in Davanagere to 526,016 in Belgaum, with an average distribution of 220,000 condoms per Avahan district.

2.2.4 District-level Estimates of FSWs

Estimates of FSW populations point to an important measure of risk at the district-level. Our interpretation of estimates is limited however, due to high variability in mapping, seen in the significantly larger estimates of high risk women reached compared to estimates of FSW populations. Mapping estimates were reported for all 23 districts of Karnataka in 2004. Looking at estimates of FSW populations, we observe the upper range of the distribution to encompass 8 Avahan districts, including 5 with IBBA testing, as well as 1 non-Avahan district (Tumkur) and 1 district (Shimoga) with interventions by Avahan/IBBA and other partners. The middle range of the FSW population distribution has an almost equal numbers of Avahan and non-Avahan partner districts, and the lower range is composed of a majority of non-Avahan partner districts. Comparing reported estimates of high risk women reached and FSW populations, we observe ratios that vary from 32% coverage of FSWs in the Avahan district of Mandya to 446%

coverage in the Avahan/IBBA district of Bagalkot. The wide variation in coverage raises the issue of mapping accuracy of FSW populations and high risk women reached, which is discussed at greater length in the overview covering of this report.

2.2.5 Summary of Findings for Karnataka

- Eleven districts show increasing ANC HIV-1 prevalence, of which 5 districts are Avahan/IBBA and 1 district is Avahan-only.
- Mean HIV-1 prevalence rates drawn for ANC (urban and rural) and VCTC surveillance are highest among Avahan with IBBA districts, followed by Avahan-only districts.
- Venereal disease prevalence among ANC women is highest among Avahan-only and non-Avahan partner districts compared to Avahan/IBBA districts.
- Avahan with IBBA districts report relatively wide variation in the number of public sector condoms distributed in 2005.
- Avahan with IBBA districts generally report the highest estimates of FSW populations.

2.3 Maharashtra

Maharashtra has 35 districts and is bordered by the states of Madhya Pradesh to the north, Chhattisgarh to the east, Andhra Pradesh to the southeast, Karnataka to the south and Goa to the southwest. According to 2001 Census data, Maharashtra is populated by 96,878,627 people, of which 58% reside in rural settings. The literacy rate stands at 77.3%, 12.5% higher than the national average, with a male literacy rate of 86.3% and female literacy rate of 67.5%.

Sentinel surveillance data from 2003 shows the median HIV prevalence to be 1.25% in antenatal clinic women and 10% in STD patients. Three societies have historically led the way in HIV prevention, care and support programs in Maharashtra. These include MSACS, operating throughout the state with the exception of Mumbai district, MDSACS, serving Mumbai district, and the Avert Society, working in the districts of Thane, Satara, Sangli, Solapur, Aurangabad, and Nagpur. In 2004, the India AIDS Initiative - Avahan was initiated in Maharashtra and currently operates alongside other partners in 17 districts, 6 of which also have IBBA surveillance. Other intervention partners are active in the remaining 18 districts.

2.3.1 District-level HIV-1 Time Trends

Time-trend data from Maharashtra (Figure 1c) suggest a decreasing prevalence of HIV-1 in 21 of 35 districts, with Avahan located in 10 of the 21 decreasing

districts. Conversely, HIV-1 prevalence is increasing in 14 districts, of which all are Avahan districts, and 6 are Avahan with IBBA districts. Significant increases in prevalence are observed in the non-Avahan districts of Wardha and Hingoli and the Avahan districts of Chandrapur and Latur, while significant decreases are evidenced in the non-Avahan districts of Aurangabad and Sangli and in the Avahan district of Nandurbar.

2.3.2 District-level HIV and STI Outcomes

In Maharashtra we observe 2004 ANC HIV-1 (Table 3a) prevalence to range from 0.25 to 3.25. The upper range of the distribution is characterized by 7 Avahan/other partner districts and 5 non-Avahan districts. The middle range is largely non-Avahan, with 2 Avahan/other partner districts, of which one is an IBBA testing site. The lower range is almost equally characterized by Avahan/other partner districts and non-Avahan districts. Avahan/other partner districts with IBBA are found mostly in the upper range of the distribution, with 4 of 6 IBBA sites located in the upper range districts.

Examining 2004 ANC R HIV-1 (Table 3b) prevalence, data was available for 26 districts and we observe a range of values from 0.13 to 3.75. The upper and middle ranges are composed of an almost equal number of Avahan/other partner districts and non-Avahan districts, while the lower range is largely non-Avahan. Avahan/other partner districts with IBBA are again mainly located in the upper range of the distribution.

VCTC HIV-1 (Table 3c) data from 2004 shows a broad distribution of prevalence, ranging from 9.76 in Gondiya to 34.72 in Ahmadnagar. The upper range is composed of an almost equal number of Avahan/other partner districts and non-Avahan districts, with the middle and lower ranges characterized by a majority of non-Avahan districts. Avahan/other partner districts with active IBBA surveillance are evenly distributed throughout the range, with 2 IBBA sites found in each of the upper, middle and lower range areas. Looking at 2004 STI HIV data for males and females (Table 3d-e), the prevalence is reported to be higher in men compared to women, but as only 9 districts of 35 have reported prevalence rates, little can be inferred from these tables.

Examining 2003 ANC VDRL data (Table 3f), we observe a range of 0.13 to 3.75 of venereal disease prevalence among the 26 districts reporting values. The upper and middle ranges are characterized by an almost equal number of Avahan/other partner districts and non-Avahan districts, and the lower range is largely composed of non-Avahan districts. IBBA sites are located primarily among districts with high prevalence of venereal disease, with 4 of 6 sites located in the upper range of the distribution.

2.3.3 District-level Condom Distribution

In Maharashtra, where Avahan programming was implemented in 2004, we observe that data was only retrievable for 15 of 35 districts in 2005; the exception being Mumbai, an Avahan with IBBA district, where expanded data over the years 2004 and 2005 (Table 4a-b) show an increase of 573,731 condoms received and a decrease of 31,544 condoms distributed. In terms of condoms received in 2005 in Maharashtra (Table 4b), the upper range of the distribution is characterized by a majority of Avahan/IBBA districts and an equal number of non-Avahan and Avahan districts; the middle range includes 2 non-Avahan districts, 1 Avahan with IBBA district, and 2 Avahan-only districts; and the lower range is noted as largely non-Avahan. Similarly, looking at the number of condoms distributed, we observe the upper range to be characterized by the same majority of Avahan/IBBA districts, followed by middle and lower ranges that are mostly non-Avahan districts.

2.3.4 District-level Estimates of FSWs

Estimates of FSW populations point to an important measure of risk at the district-level. Our interpretation of estimates is limited due to high variability in mapping precision. Looking at the data, Maharashtra reports FSW estimates for 21 districts in 2005, with a range of 20 FSWs in Sindhudurg district to 5003 FSWs in Pune district. The upper range of FSW estimates is characterized by a majority of districts with concurrent Avahan/other partner intervention activities, of which two have additional IBBA surveillance. The middle range also shows a majority of Avahan/other partner districts, including one district with IBBA. Conversely, the lower range counts a majority of non-Avahan districts, and two Avahan/other partner districts. Of the 14 districts with unreported FSW estimates, 4 are Avahan/other partner districts and the remaining districts are characterized by non-Avahan partner intervention activity.

2.3.5 Summary of Findings for Maharashtra

- ANC HIV prevalence (urban and rural) and VCTC HIV prevalence are highest among Avahan with IBBA districts, followed by Avahan/other partner districts.
- ANC VDRL is higher among Avahan-only and non-Avahan partner districts.
- In Mumbai, an Avahan with IBBA district, there is expanded data over the years 2004 and 2005 showing a decrease of 31,544 condoms distributed.
- Concurrent activities by Avahan and other partners are targeting districts with higher estimates of FSWs compared to non-Avahan districts.

2.4 Tamil Nadu

Tamil Nadu has 30 districts and measures 130,058 square kilometres. It is the southern most state of India, bordering the Bay of Bengal to the east, Andhra Pradesh and Karnataka to the north, Kerala to the west, and the Gulf of Mannar to the south. According to 2001 Census data, Tamil Nadu's population numbers 62,405,679 people, of which 44% reside in urban areas, and just under 6% of the population is Muslim. The state literacy rate stands at 73.4%, just over 20% higher than the national average. Major urban centres include Chennai and Madurai.

Tamil Nadu began HIV/AIDS control programmes earlier than other states in India, establishing the Tamil Nadu State AIDS Control Society (TNSACS) in 1994, to raise awareness, implement HIV testing, ensure blood safety, and develop targeted interventions. In 1995, USAID provided funding to the AIDS Prevention and Control (APAC) programme to administer resources to the Voluntary Health Service (VHS) in Chennai to work with NGOs in the state through targeted interventions with high risk populations. APAC-VHS operated in 20 districts in 2003. In 2004, with funding from the India AIDS Initiative - Avahan, VHS began administering the Tamil Nadu AIDS Initiative (TAI) 11 districts, among which 5 have IBBA surveillance. Currently TNSACS operates in 20 districts, and works concurrently with Avahan/APAC in the districts of Chennai, Madurai and Tiruchirappalli.

2.4.1 District-level HIV-1 Time Trends

According to NACO data from 2002 to 2004, Tamil Nadu reports HIV-1 prevalence among ANC tested women to be increasing in 13 (or 48%) of districts (note: NACO data was obtained for 27 of 30 districts) (Figure 1d). Of the 13 districts with increasing HIV-1 prevalence, 3 are Avahan sites and 10 are non-Avahan districts. Of the 14 districts with decreasing HIV-1 prevalence, half are non-Avahan districts, with the other half consisting of active Avahan districts, among which four are Avahan with IBBA districts. Significant increases in prevalence of HIV-1 are detected in the Avahan district of Kapur and the non-Avahan district of Kanniyakumari, while a significant decrease is observable in the non-Avahan district of Thanjavur. In the districts of Chennai and Madurai, where Avahan/IBBA operates concurrently with other partners, decreases in HIV-1 prevalence are reported for each.

2.4.2 District-level HIV and STI Outcomes

Looking at district-level outcomes, we observe a number of key observations drawn from NACO's 2004 HIV-1 outcome data from ANC, ANC R, STI clinics, and VCTC; and 2003 venereal disease outcome data. According to 2004 ANC HIV-1 prevalence data (Table 3a), the upper range of the distribution is characterized by an almost equal number of Avahan and non-Avahan districts, with the middle and lower ranges categorized by a majority of non-Avahan districts, including the Thanjavur district, where HIV-1 prevalence is measured to be 0.75 and there are no reported intervention activities. The 5 Avahan with IBBA

testing are evenly distributed over the range, with 2 IBBA sites located in the upper range, 1 in the middle range and 2 in the lower range.

Examining 2004 ANC R HIV-1 (Table 3b) prevalence, data was available for 23 districts and we observe a range of values from 0.25 to 3.70. The upper range has an equal number of Avahan and non-Avahan districts, including one Avahan district that operated concurrently with other partners. The middle range is characterized largely by Avahan districts, and the lower range is entirely covered by non-Avahan partners, with the exception of Thanjavur, reporting no intervention activities. Avahan districts with IBBA are found in the upper and middle ranges of ANC R HIV-1 prevalence, with 2 Avahan with IBBA districts in each.

VCTC HIV-1 (Table 3c) data from 2004 shows a broad distribution of prevalence, ranging from 3.18 in Nagapattinam to 25.68 in Chennai. The upper range is composed of an equal number of Avahan and non-Avahan districts, while the middle range has a majority of Avahan districts and the lower range is entirely composed of non-Avahan districts. Avahan districts with active IBBA sites are mostly located in the middle range, the oddity being Chennai, which has IBBA testing and notes the highest VCTC HIV-1 prevalence.

Looking at STI HIV data for males and females (Table 3d-e), only 3 districts of 30 have reported prevalence rates, and so little can be inferred from the tables. Examining 2003 ANC VDRL data (Table 3f), we observe a range of 0.25 to 3.75 venereal disease prevalence among the 22 districts reporting values. The upper range consists mostly of Avahan districts, including Chennai and Madurai, where Avahan operates concurrently with other partnering organizations. Also notable in the upper range is Thanjavur, which has no reported intervention coverage and the 2nd highest prevalence of venereal disease. The middle and lower ranges of the venereal disease distribution show intervention activity to be mainly administered by non-Avahan partners. As only 3 of 5 IBBA sites reported ANC VDRL data, we observe 2 of these to be in the upper range and 1 in the lower range.

2.4.3 District-level Condom Distribution

A notable interpretive limitation in the condom data arises in the fact that numbers collected represent public sector condoms only, and fail to capture condoms distribution by private entities. To provide a district-level snapshot of intervention coverage, we examine public sector numbers of condoms distributed for 2004 and 2005. Condom distribution numbers were reported for 29 of 30 districts in Tamil Nadu (Table 4a), and the overall increases in condom distribution appear to be highest in Tamil Nadu's non-Avahan districts, notably in the district of Thiruvallur, where condom distribution increased from 23,500 condoms in 2004 to 1,332,176 in 2005. An exception is detected in the Avahan/IBBA district of Madurai, where intervention activity is operated by

Avahan/IBBA and other partners, and we observe a twenty-four fold increase in condom distribution from 39,500 condoms in 2004 to 944,166 condoms in 2005.

2.4.4 District-level Estimates of FSWs

Estimates of FSW populations point to an important measure of risk at the district-level. Our interpretation of estimates is however limited due to high variability in mapping numbers, seen in the significantly larger estimates of high risk women reached compared to estimates of FSW populations. In Tamil Nadu, FSW population estimates were reported for 27 of 30 districts. Overall, 11 districts reported estimates for both high risk women reached and FSW populations, ranging from 1.4% of the FSW population reached in Madurai to 333% coverage in Kancheepuram. This raises the challenge of finding and assessing the accuracy of FSW populations and the number reached, which is discussed at length in the overview covering of this report. Looking at estimates of FSW populations, we observe the upper range of the distribution as encompassing all 5 Avahan with IBBA districts (Chennai, Madurai, Salem, Dharmapuri and Coimbatore), as well as 1 Avahan-only district and 3 non-Avahan partner districts. The middle range of the FSW population distribution has an about equal numbers of Avahan and non-Avahan partner districts, and the lower range is largely composed of non-Avahan partner districts.

2.4.5 Summary of Findings for Tamil Nadu

- Avahan and non-Avahan districts are equally present in the upper ranges of HIV-1 prevalence distribution data.
- HIV-1 and venereal disease have higher prevalence among Avahan-only districts compared to Avahan with IBBA districts.
- Avahan with IBBA initiatives are targeting districts with increased estimates of FSW populations compared to Avahan-only and Avahan partner districts.
- Non-Avahan partner districts are reported to have been equally or more active than Avahan districts in increased condom distribution between 2004 and 2005.

Reference List

- (1) Kumar R, Jha P, Arora P, Mony P, Bhatia P, Millson P et al. Trends in HIV-1 in young adults in south India from 2000 to 2004: a prevalence study. *The Lancet* 2006; 367:1164-72.
- (2) International Institute for Population Sciences. National family health survey (NFHS-2), India, 1998-1999. <http://nfhsindia.org/india2.html>.

Table 1:
Avahan/IBBA Districts
(IBBA districts denoted by *)

Andhra Pradesh	
Avahan District	Non Avahan District
Adilabad	Mahbubnagar
Anantapur	
Chittoor*	
Cuddapah	
East Godavari*	
Guntur*	
Hyderabad*	
Karimnagar*	
Khammam	
Krishna	
Kurnool	
Medak	
Nalgonda	
Nellore	
Nizamabad	
Prakasam*	
Rangareddi	
Srikakulam	
Visakhapatnam*	
Vizianagaram	
Warangal*	
West Godavari	

Maharashtra	
Avahan District	Non Avahan District
Ahmadnagar	Akola
Bid	Amravati
Jalgaon	Aurangabad
Kolhapur*	Bhandara
Latur	Buldana
Mumbai*	Gadchiroli
Mumbai (Suburban)	Gondiya
Nandurbar	Hingoli
Nashik	Chandrapur
Parbhani*	Dhule
Pune*	Jalna
Raigarh	Nagpur
Sangli	Nanded
Satara	Osmanabad
Solapur	Ratnagiri
Thane*	Sindhudurg
Yavatmal*	Wardha

Karnataka	
Avahan District	Non Avahan District
Bagalkot	Bidar
Bangalore*	Chamarajanagar
Bangalore Rural	Chikmagalur
Belgaum*	Dakshina Kannada
Bellary*	Dharwad
Bijapur	Hassan
Chitradurga	Kodagu
Davanagere	Koppal
Gadag	Tumkur
Gulbarga	Udupi
Haveri	
Kolar	
Mandya	
Mysore*	
Raichur	
Shimoga*	
Uttara Kannada	

Tamil Nadu	
Avahan District	Non Avahan District
Chennai*	Ariyalur
Coimbatore*	Cuddalore
Dharmapuri*	Kancheepuram
Dindigul	Kanniyakumari
Erode	Nagapattinam
Kapur	Perambalur
Madurai*	Pudukkottai
Namakkal	Ramanathapuram
Salem*	Sivaganga
Thanjavur	The Nilgiris
Theni	Thiruvallur
Vellore	Thiruvarur
	Tiruchirappalli
	Tirunelveli
	Tiruvanamalai
	Toothukudi
	Viluppuram
	Virudhunagar

Table 2

a.

	ANC									STI									VCTC					
	HIV						VDRL			HIV						GUD			VDRL			HIV		
	2004						2003			2004						2004			2004			2004		
	Urban			Rural																				
Districts (115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
Avahan Districts (63)	63	1.51		20	1.29		56	1.34		24	15.76		28	55.71		22	7.27		62	17.49				
Non-Avahan Districts (52)	49	1.00		1	0.75		36	1.06		12	13.00		12	51.42		5	4.18		51	15.96				
			p<0.000			p=0.231			p=0.012			p<0.000			p=0.005			p<0.000			p<0.000			

b.

	ANC									STI									VCTC					
	HIV						VDRL			HIV						GUD			VDRL			HIV		
	2004						2003			2004						2004			2004			2004		
	Urban			Rural																				
Districts(115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
IBBA Districts(23)	23	1.69		7	1.50		17	1.46		17	17.29		18	57.77		14	6.40		23	18.83				
Non-IBBA Districts(92)	89	1.19		14	1.14		75	1.19		19	12.59		22	51.72		13	7.00		90	15.36				
			p<0.000			P=0.186			P=0.082			p<0.000			p<0.000			P=0.469			p<0.000			

c.

	ANC									STI									VCTC					
	HIV						VDRL			HIV						GUD			VDRL			HIV		
	2004						2003			2004						2004			2004			2004		
	Urban			Rural																				
Districts (115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
IBBA Avahan Districts (23)	23	1.69		7	1.50		17	1.46		17	17.29		18	57.77		14	6.40		23	18.83				
Non-IBBA Avahan Districts	40	1.42		13	1.17		39	1.30		7	11.89		10	52.09		8	8.55		39	15.02				
			p=0.092			p=0.232			p=0.327			p<0.000			p=0.001			p=0.03			p<0.000			

*Note: Calculations are based on October 2005 distribution of Avahan and non-Avahan districts.

Table 2

a.

	ANC									STI									VCTC		
	HIV						VDRL			HIV			GUD			VDRL			HIV		
	2004						2003			2004			2004			2004			2004		
	Urban			Rural																	
Districts (115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
Avahan Districts (63)	63	1.51		20	1.29		56	1.34		24	15.76		28	55.71		22	7.27		62	17.49	
Non-Avahan Districts (52)	49	1.00		1	0.75		36	1.06		12	13.00		12	51.42		5	4.18		51	15.96	
			p<0.000			p=0.231			p=0.012			p<0.000			p=0.005			p<0.000			p<0.000

b.

	ANC									STI									VCTC		
	HIV						VDRL			HIV			GUD			VDRL			HIV		
	2004						2003			2004			2004			2004			2004		
	Urban			Rural																	
Districts(115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
IBBA Districts(23)	23	1.69		7	1.50		17	1.46		17	17.29		18	57.77		14	6.40		23	18.83	
Non-IBBA Districts(92)	89	1.19		14	1.14		75	1.19		19	12.59		22	51.72		13	7.00		90	15.36	
			p<0.000			P=0.186			P=0.082			p<0.000			p<0.000			P=0.469			p<0.000

c.

	ANC									STI									VCTC		
	HIV						VDRL			HIV			GUD			VDRL			HIV		
	2004						2003			2004			2004			2004			2004		
	Urban			Rural																	
Districts (115)	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value	No. of Districts	Prevalence (%)	p-Value
IBBA Avahan Districts (23)	23	1.69		7	1.50		17	1.46		17	17.29		18	57.77		14	6.40		23	18.83	
Non-IBBA Avahan Districts	40	1.42		13	1.17		39	1.30		7	11.89		10	52.09		8	8.55		39	15.02	
			p=0.092			p=0.232			p=0.327			p<0.000			p=0.001			p=0.03			p<0.000

*Note: Calculations are based on October 2005 distribution of Avahan and non-Avahan districts.

TABLE 3A: HIV prevalence from ANCs 2004

Andhra Pradesh	
District	Prevalence
Prakasam*	4.00
Guntur*	3.50
Karimnagar*	3.50
East Godavari*	3.00
West Godavari	2.75
Nellore	2.75
Cuddapah	2.75
Krishna	2.25
Nizamabad	2.25
Nalgonda	2.25
Khammam	2.00
Vizianagaram	1.75
Anantapur	1.75
Visakhapatnam*	1.50
Chittoor*	1.25
Medak	1.00
Hyderabad*	0.75
Adilabad	0.75
Mahbubnagar	0.75
Rangareddi	0.50
Kurnool	0.25
Warangal*	0.00
Srikakulam	0.00

Mean Avahan 1.31 (0.92,1.71)
Mean Avahan + IBBA 3.50 (1.70,5.30)
Mean Other -
Mean Avahan + Other 2.04 (1.65, 2.42)

Intervention Partners 2006

Avahan
Other
Avahan + Other

*IBBA District

Karnataka	
District	Prevalence
Bangalore*	1.25
Mysore*	3.75
Belgaum*	3.75
Bangalore Rural	2.75
Bagalkot	2.75
Dakshina Kannada	2.50
Gulbarga	2.00
Bijapur	2.00
Koppal	1.75
Dharwad	1.75
Udupi	1.50
Gadag	1.50
Tumkur	1.25
Raichur	1.25
Mandya	1.25
Kolar	1.25
Uttara Kannada	1.25
Bellary*	1.00
Davanagere	1.00
Hassan	0.75
Chamarajanagar	0.75
Bidar	0.75
Haveri	0.75
Chitradurga	0.75
Chikmagalur	0.50
Shimoga*	0.50
Kodagu	0.25

Mean Avahan 1.54 (1.19,1.89)
Mean Avahan + IBBA 2.25 (1.52, 2.98)
Mean Other 1.18 (0.84, 1.51)
Mean Avahan + Other 1.25 (0.16, 2.34)

Maharashtra	
District	Prevalence
Pune*	3.25
Chandrapur	3.00
Sangli	2.50
Nashik	2.25
Latur	2.25
Satara	2.00
Kolhapur*	2.00
Jalgaon	1.75
Osmanabad	1.75
Yavatmal*	1.50
Thane*	1.50
Mumbai*	1.50
Ahmadnagar	1.50
Solapur	1.50
Hingoli	1.50
Wardha	1.25
Nagpur	1.25
Nanded	1.25
Mumbai (Sub)	1.05
Raigarh	1.00
Gadchiroli	1.00
Jalna	1.00
Amravati	0.75
Ratnagiri	0.75
Parbhani*	0.50
Dhule	0.50
Bhandara	0.50
Sindhudurg	0.50
Nandurbar	0.25
Bid	0.25
Buldana	0.25
Akola	0.25
Washim	0.25
Gondiya	0.25
Aurangabad	0.25

Mean Avahan -
Mean Avahan + IBBA -
Mean Other 0.90 (0.68, 1.12)
Mean Avahan + Other 1.46 (1.21, 1.72)

Tamil Nadu	
District	Prevalence
Karur	2.75
Namakkal	2.50
Salem*	2.00
Tiruvanmalai	1.50
Tiruchirappalli	1.38
Perambalur	1.25
Kanniyakumari	1.00
Dharmapuri*	1.00
Sivaganga	0.75
Pudukkottai	0.75
Ramanathapuram	0.75
Vellore	0.75
Dindigul	0.75
Thanjavur	0.75
Erode	0.50
Viluppuram	0.50
Nigrilis	0.50
Coimbatore*	0.50
Cuddalore	0.50
Nagapattinam	0.50
Toothukudi	0.50
Thiruvarur	0.25
Virudhunagar	0.25
Tirunelveli	0.25
Madurai*	0.25
Chennai*	0.13
Kancheepuram	0.00
Thiruvallur	-
Ariyalur	-
Theni	-

Mean Avahan 1.5 (0.97, 2.03)
Mean Avahan + IBBA 1.08 (0.50, 1.67)
Mean Other 0.69 (0.49, 0.89)
Mean Avahan + Other 0.38 (0.08, 0.67)

Source: NACO

TABLE 3B: HIV prevalence from Rural ANCs 2004

Andhra Pradesh	
District	Prevalence
West Godavari	2.00
Khammam	1.38
Srikakulam	1.00
Visakhapatnam*	0.75
Medak	0.50
Kurnool	0.25
Adilabad	-
Nizamabad	-
Karimnagar*	-
Hyderabad*	-
Rangareddi	-
Mahbubnagar	-
Nalgonda	-
Warangal*	-
Vizianagaram	-
East Godavari*	-
Krishna	-
Guntur*	-
Prakasam*	-
Nellore	-
Cuddapah	-
Anantapur	-
Chittoor*	-

Mean Avahan 1.31 (1.04, 1.57)
 Mean Avahan + IBBA -
 Mean Other -
 Mean Avahan + Other 1.00 (0.44, 1.56)

Intervention Partners 2006

Avahan
Other
Avahan + Other

*IBBA District

Karnataka	
District	Prevalence
Belgaum*	4.75
Koppal	4.25
Dharwad	4.00
Bagalkot	2.50
Gulbarga	2.50
Davanagere	2.00
Bangalore Rural	2.00
Uttara Kannada	1.50
Chikmagalur	1.50
Hassan	1.25
Kodagu	1.25
Chamarajanagar	1.25
Bellary*	1.25
Bidar	1.00
Mysore*	1.00
Raichur	1.00
Mandya	1.00
Bijapur	0.75
Gadag	0.75
Udupi	0.50
Shimoga*	0.50
Haveri	0.50
Dakshina Kannada	0.25
Kolar	0.25
Chitradurga	-
Tumkur	-
Bangalore*	-

Mean Avahan 1.44 (1.12, 1.77)
 Mean Avahan + IBBA 1.88 (1.21, 2.54)
 Mean Other 1.70 (1.27, 2.12)
 Mean Avahan + Other -

Maharashtra	
District	Prevalence
Sangli	3.75
Pune*	1.50
Jalgaon	1.25
Yavatmal*	1.25
Satara	1.25
Kolhapur*	1.25
Nagpur	1.25
Parbhani*	1.00
Hingoli	1.00
Osmanabad	1.00
Dhule	1.00
Thane*	0.75
Bid	0.75
Bhandara	0.75
Chandrapur	0.75
Ratnagiri	0.75
Nashik	0.50
Wardha	0.50
Jalna	0.50
Ahmadnagar	0.25
Solapur	0.25
Buldana	0.25
Amravati	0.25
Gondiya	0.25
Raigarh	0.13
Akola	0.13
Nandurbar	-
Washim	-
Gadchiroli	-
Nanded	-
Aurangabad	-
Mumbai (Sub)	-
Mumbai*	-
Latur	-
Sindhudurg	-

Mean Avahan -
 Mean Avahan + IBBA -
 Mean Other 0.58 (0.39, 0.78)
 Mean Avahan + Other 1.00 (0.74, 1.26)

Tamil Nadu	
District	Prevalence
Madurai*	3.70
Karur	3.25
Salem*	1.25
Theni	1.25
Toothukudi	1.00
Thiruvallur	1.00
Perambalur	1.00
Cuddalore	1.00
Dindigul	0.75
Kancheepuram	0.75
Coimbatore*	0.75
Namakkal	0.75
The Nilgiris	0.75
Erode	0.50
Tiruchirapalli	0.50
Thanjavur	0.50
Pudukkottai	0.50
Ramanathapuram	0.50
Dharmapuri*	0.50
Vellore	0.50
Cuddalore	0.25
Virudhunagar	0.25
Viluppuram	0.25
Chennai*	-
Tiruvanmalai	-
Ariyalur	-
Nagapattinam	-
Thiruvarur	-
Sivaganga	-
Kanniyakumari	-

Mean Avahan 1.13 (0.70, 1.59)
 Mean Avahan + IBBA 0.83 (0.32, 0.89)
 Mean Other 0.73 (0.48, 1.06)
 Mean Avahan + Other 1.21 (0.53, 1.39)

Source: NACO

TABLE 3C: HIV prevalence from VCTC 2004

Andhra Pradesh	
District	Prevalence
East Godavari*	26.74
Guntur*	25.47
West Godavari	22.56
Krishna	20.08
Visakhapatnam*	17.69
Karimnagar*	16.24
Chittoor*	16.14
Prakasam*	15.85
Nellore	15.55
Warangal*	15.24
Kurnool	14.77
Khammam	14.44
Hyderabad*	13.13
Srikakulam	12.30
Anantapur	11.33
Nalgonda	10.65
Vizianagaram	10.12
Medak	8.60
Cuddapah	8.56
Nizamabad	7.02
Adilabad	6.32
Rangareddi	5.78
Mahbubnagar	5.46

Karnataka	
District	Prevalence
Bagalkot	40.81
Gadag	36.79
Koppal	30.77
Dharwad	28.67
Raichur	26.40
Bellary*	26.20
Belgaum*	25.66
Davanagere	24.70
Bijapur	24.39
Mysore*	22.15
Gulbarga	21.73
Haveri	20.95
Shimoga*	20.11
Bangalore*	20.03
Tumkur	18.82
Mandya	18.03
Chamarajanagar	17.75
Chikmagalur	16.37
Dakshina Kannada	15.27
Hassan	14.77
Kolar	10.55
Uttara Kannada	10.15
Kodagu	10.02
Udupi	8.65
Chitradurga	8.23
Bidar	5.72
Bangalore Rural	-

Maharashtra	
District	Prevalence
Ahmadnagar	34.72
Kolhapur*	31.19
Bid	31.12
Osmanabad	29.32
Raigarh	28.59
Sindhudurg	28.44
Parbhani*	27.31
Solapur	26.74
Nashik	26.73
Sangli	24.78
Nandurbar	23.76
Jalna	23.14
Nagpur	23.08
Dhule	23.01
Yavatmal*	22.25
Jalgaon	22.18
Ratnagiri	21.12
Satara	20.51
Aurangabad	20.14
Buldana	20.07
Bhandara	18.70
Thane*	18.50
Akola	17.48
Pune*	16.81
Wardha	16.76
Hingoli	16.18
Washim	15.95
Mumbai*	15.45
Amravati	13.60
Chandrapur	13.45
Latur	12.84
Nanded	10.45
Gadchiroli	10.31
Gondiya	9.76
Mumbai (Sub)	-

Tamil Nadu	
District	Prevalence
Chennai*	25.68
Perambalur	20.29
Tiruchirappalli	19.04
Dindigul	17.82
Sivaganga	17.55
Pudukkottai	17.32
Tirunelveli	17.24
Namakkal	17.15
Erode	16.56
Theni	16.11
Coimbatore*	14.23
Salem*	14.13
Karur	13.01
Vellore	12.68
Virudhunagar	12.00
Madurai*	11.17
Viluppuram	10.90
Ariyalur	10.63
The Nilgiris	10.52
Dharmapuri*	9.24
Cuddalore	8.63
Tiruvanamalai	8.40
Thanjavur	8.16
Thiruvarur	8.08
Kanniyakumari	8.03
Ramanathapuram	6.59
Kancheepuram	5.26
Toothukudi	4.69
Thiruvallur	3.36
Nagapattinam	3.18

Mean Avahan 9.65 (9.38, 9.91)
 Mean Avahan + IBBA 16.24 (15.33, 17.15)
 Mean Other -
 Mean Avahan + Other 17.47 (17.27, 17.66)

Mean Avahan 23.26 (22.70, 23.82)
 Mean Avahan + IBBA 24.08(23.29,24.86)
 Mean Other 16.75(16.27,17.23)
 Mean Avahan + Other 20.03(18.78,21.27)

Mean Avahan 15.17(14.66,15.67)
 Mean Avahan + IBBA 13.07(12.45,13.68)
 Mean Other 10.77(10.37,11.17)
 Mean Avahan + Other 24.66(24.31,25.02)

Intervention Partners 2006

Avahan
Other
Avahan + Other

*IBBA District

Mean Avahan -
 Mean Avahan + IBBA -
 Mean Other 18.53(17.80,19.08)
 Mean Avahan + Other 17.38(17.14,17.62)

Source: NACO

TABLE 3D: HIV prevalence from STI clinics 2004 FEMALE

Andhra Pradesh	
District	Prevalence
Warangal*	47.17
Hyderabad*	46.15
Krishna	42.19
Chittoor*	40.28
Visakhapatnam*	39.05
Prakasam*	14.29
Khammam	13.71
East Godavari*	11.61
Kurnool	10.42
Karimnagar*	3.08
Medak	2.73
Adilabad	-
Nizamabad	-
Rangareddi	-
Mahbubnagar	-
Nalgonda	-
Srikakulam	-
Vizianagaram	-
West Godavari	-
Guntur*	-
Nellore	-
Cuddapah	-
Anantapur	-

Mean Avahan 8.55(4.96,12.13)
 Mean Avahan + IBBA 3.08(0.11,6.05)
 Mean Other
 Mean Avahan + Other 29.31(25.78,32.84)

Karnataka	
District	Prevalence
Belgaum*	26.90
Gulbarga	20.00
Dharwad	12.24
Mysore*	6.72
Bangalore*	6.06
Bellary*	5.56
Dakshina Kannada	3.40
Bagalkot	-
Bijapur	-
Bidar	-
Raichur	-
Koppal	-
Gadag	-
Uttara Kannada	-
Haveri	-
Chitradurga	-
Davanagere	-
Shimoga*	-
Udupi	-
Chikmagalur	-
Tumkur	-
Kolar	-
Bangalore Rural	-
Mandya	-
Hassan	-
Kodagu	-
Chamarajanagar	-

Mean Avahan 20.0(12.84,27.16)
 Mean Avahan + IBBA 13.94(9.95,17.92)
 Mean Other 6.94(3.76,10.12)
 Mean Avahan + Other 6.06(1.99,10.13)

Maharashtra	
District	Prevalence
Sangli	27.27
Chandrapur	12.24
Jalgaon	9.24
Pune*	8.62
Latur	8.16
Mumbai*	8.00
Nagpur	7.09
Akola	5.00
Thane*	2.61
Nandurbar	-
Dhule	-
Buldana	-
Washim	-
Amravati	-
Wardha	-
Bhandara	-
Gondiya	-
Gadchiroli	-
Yavatmal*	-
Nanded	-
Hingoli	-
Parbhani*	-
Jalna	-
Aurangabad	-
Nashik	-
Mumbai (Sub)	-
Raigarh	-
Ahmadnagar	-
Bid	-
Osmanabad	-
Solapur	-
Satara	-
Ratnagiri	-
Sindhudurg	-
Kolhapur*	-

Mean Avahan -
 Mean Avahan + IBBA -
 Mean Other 7.96(5.08,10.85)
 Mean Avahan + Other 9.95(7.85,12.04)

Tamil Nadu	
District	Prevalence
Madurai*	36.04
Kancheepuram	7.00
Chennai*	6.93
Thiruvallur	-
Vellore	-
Dharmapuri*	-
Tiruvanamalai	-
Viluppuram	-
Salem*	-
Namakkal	-
Erode	-
The Nilgiris	-
Coimbatore*	-
Dindigul	-
Karur	-
Tiruchirappalli	-
Viluppuram	-
Ariyalur	-
Cuddalore	-
Nagapattinam	-
Cuddalore	-
Thanjavur	-
Pudukkottai	-
Sivaganga	-
Theni	-
Virudhunagar	-
Ramanathapuram	-
Toothukudi	-
Tirunelveli	-
Kanniyakumari	-

Mean Avahan 7.0(2.0,12.0)
 Mean Avahan + IBBA
 Mean Other 6.93(1.98,11.88)
 Mean Avahan + Other 36.04(27.10,44.97)

Intervention Partners 2006

Avahan
Other
Avahan + Other

*IBBA District

Source: NACO

TABLE 3E: HIV prevalence from STI clinics 2004 MALES

Andhra Pradesh	
District	Prevalence
Visakhapatnam*	32.56
Hyderabad*	32.43
Warangal*	28.09
Chittoor*	27.89
Krishna	26.51
East Godavari*	19.67
Khammam	17.89
Prakasam*	14.04
Medak	8.70
Karimnagar*	8.49
Kurnool	6.42
Adilabad	-
Nizamabad	-
Rangareddi	-
Mahbubnagar	-
Nalgonda	-
Srikakulam	-
Vizianagaram	-
West Godavari	-
Guntur*	-
Nellore	-
Cuddapah	-
Anantapur	-

Mean Avahan 13.03(8.94,17.11)
 Mean Avahan + IBBA 8.49(3.18,13.80)
 Mean Other -
 Mean Avahan + Other 23.53(21.16,25.91)

Karnataka	
District	Prevalence
Belgaum*	33.77
Gulbarga	27.64
Bellary*	23.46
Bangalore*	19.27
Mysore*	17.65
Dharwad	16.79
Dakshina Kannada	5.26
Bagalkot	-
Bijapur	-
Bidar	-
Raichur	-
Koppal	-
Gadag	-
Uttara Kannada	-
Haveri	-
Chitradurga	-
Davanagere	-
Shimoga*	-
Udupi	-
Chikmagalur	-
Tumkur	-
Kolar	-
Bangalore Rural	-
Mandya	-
Hassan	-
Kodagu	-
Chamarajanagar	-

Mean Avahan 27.64(19.74,35.55)
 Mean Avahan + IBBA 23.83(18.81,28.84)
 Mean Other 11.95(7.72,16.18)
 Mean Avahan + Other 19.27(11.86,26.67)

Maharashtra	
District	Prevalence
Sangli	36.42
Nagpur	35.35
Pune*	25.22
Mumbai*	22.60
Jalgaon	11.45
Akola	11.33
Chandrapur	10.88
Aurangabad	9.35
Latur	8.76
Thane*	5.08
Nandurbar	-
Dhule	-
Buldana	-
Washim	-
Amravati	-
Wardha	-
Bhandara	-
Gondiya	-
Gadchiroli	-
Yavatmal*	-
Nanded	-
Hingoli	-
Parbhani*	-
Jalna	-
Nashik	-
Mumbai (Sub)	-
Raigarh	-
Ahmadnagar	-
Bid	-
Osmanabad	-
Solapur	-
Satara	-
Ratnagiri	-
Sindhudurg	-
Kolhapur*	-

Mean Avahan -
 Mean Avahan + IBBA -
 Mean Other 15.14 (12.10,18.18)
 Mean Avahan + Other 19.01(16.37,21.65)

Tamil Nadu	
District	Prevalence
Madurai*	27.34
Chennai*	9.70
Kancheepuram	5.19
Thiruvallur	-
Vellore	-
Dharmapuri*	-
Tiruvanamalai	-
Viluppuram	-
Salem*	-
Namakkal	-
Erode	-
The Nilgiris	-
Coimbatore*	-
Dindigul	-
Karur	-
Tiruchirappalli	-
Viluppuram	-
Ariyalur	-
Cuddalore	-
Nagapattinam	-
Cuddalore	-
Thanjavur	-
Pudukkottai	-
Sivaganga	-
Theni	-
Virudhunagar	-
Ramanathapuram	-
Toothukudi	-
Tirunelveli	-
Kanniyakumari	-

Mean Avahan -
 Mean Avahan + IBBA 9.70(4.69,14.71)
 Mean Other 5.19(1.44,8.93)
 Mean Avahan + Other 27.34(19.62,35.07)

Intervention Partners 2006
 Color Scheme: Avahan
 Other
 Avahan + Other
 *IBBA District

Source: NACO

TABLE 3F: Syphilis serology from ANCs 2003

Andhra Pradesh	
District	Prevalence
West Godavari	6.50
Warangal*	5.00
Prakasam*	3.75
East Godavari*	2.50
Krishna	2.25
Chittoor*	2.25
Adilabad	1.75
Nalgonda	1.50
Srikakulam	1.50
Mahbubnagar	1.50
Visakhapatnam*	1.00
Medak	0.75
Rangareddi	0.75
Guntur*	0.75
Nizamabad	0.75
Khammam	0.50
Anantapur	0.50
Nellore	0.25
Cuddapah	0.25
Kurnool	0.25
Karimnagar*	0.25
Hyderabad*	-
Vizianagaram	-

Mean Avahan 1.00(0.66,1.35)
 Mean Avahan + IBBA 0.25(-0.24,0.74)
 Mean Other -
 Mean Avahan + Other 2.25(1.83,2.67)

Intervention Partners 2006

Avahan
Other
Avahan + Other

*IBBA District

Karnataka	
District	Prevalence
Koppal	7.75
Davanagere	3.75
Bidar	2.75
Uttara Kannada	2.75
Mandya	2.75
Gulbarga	2.25
Dharwad	1.25
Belgaum*	1.25
Bagalkot	1.25
Bijapur	1.00
Kolar	1.00
Haveri	0.51
Bangalore*	0.50
Dakshina Kannada	0.50
Chikmagalur	0.25
Hassan	0.25
Mysore*	0.25
Raichur	0.25
Gadag	0.25
Chitradurga	0.25
Bellary*	-
Shimoga*	-
Udupi	-
Tumkur	-
Bangalore Rural	-
Kodagu	-
Chamarajanagar	-

Mean Avahan 1.46(1.10,1.81)
 Mean Avahan + IBBA 0.75(0.15,1.35)
 Mean Other 2.13(1.55,2.70)
 Mean Avahan + Other 0.50(0.01,0.99)

Maharashtra	
District	Prevalence
Mumbai (Sub)	6.00
Solapur	3.25
Aurangabad	2.50
Thane*	2.25
Nandurbar	1.50
Chandrapur	1.50
Latur	1.25
Nagpur	1.25
Yavatmal*	1.00
Pune*	1.00
Gadchiroli	0.75
Hingoli	0.75
Nashik	0.50
Satara	0.50
Akola	0.50
Bhandara	0.50
Amravati	0.25
Mumbai*	0.25
Parbhani*	0.25
Bid	0.25
Sangli	0.25
Dhule	0.25
Buldana	0.25
Wardha	0.25
Gondiya	0.25
Nanded	0.25
Jalna	0.25
Osmanabad	0.25
Ratnagiri	0.25
Jalgaon	-
Washim	-
Raigarh	-
Ahmadnagar	-
Sindhudurg	-
Kolhapur*	-

Mean Avahan -
 Mean Avahan + IBBA -
 Mean Other 06.25(0.43,0.82)
 Mean Avahan + Other 1.07(0.83,1.32)

Tamil Nadu	
District	Prevalence
Dindigul	3.75
Thanjavur	3.00
Namakkal	2.26
Chennai*	2.25
Madurai*	2.00
Ariyalur	1.75
Theni	1.50
Thiruvallur	1.25
Vellore	1.00
Sivaganga	1.00
Ramanathapuram	1.00
Tiruchirappalli	0.75
Erode	0.75
Perambalur	0.50
Thiruvarur	0.50
Pudukkottai	0.50
Kancheepuram	0.25
Tiruvanmalai	0.25
Cuddalore	0.25
Nagapattinam	0.25
Coimbatore*	0.25
Karur	0.25
Dharmapuri*	-
Viluppuram	-
Salem*	-
The Nilgiris	-
Virudhunagar	-
Toothukudi	-
Tirunelveli	-
Kanniyakumari	-

Mean Avahan 1.79(1.30,2.28)
 Mean Avahan + IBBA 0.25(-0.24,0.74)
 Mean Other 0.68(0.44,0.92)
 Mean Avahan + Other 1.67(0.94,2.39)

Source: NACO