

Economic analysis of Avahan Interventions in India

**Expert consultation on Costing HIV
Responses in Asia
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Aims of the Presentation

- To share our economic analysis of Avahan and costing methods on a technical level
- To disseminate the results of this effort (STI BMJ Published article) and also preliminary aggregated analysis for 4 years
- To discuss how our work could be shared with to inform evaluation data needs

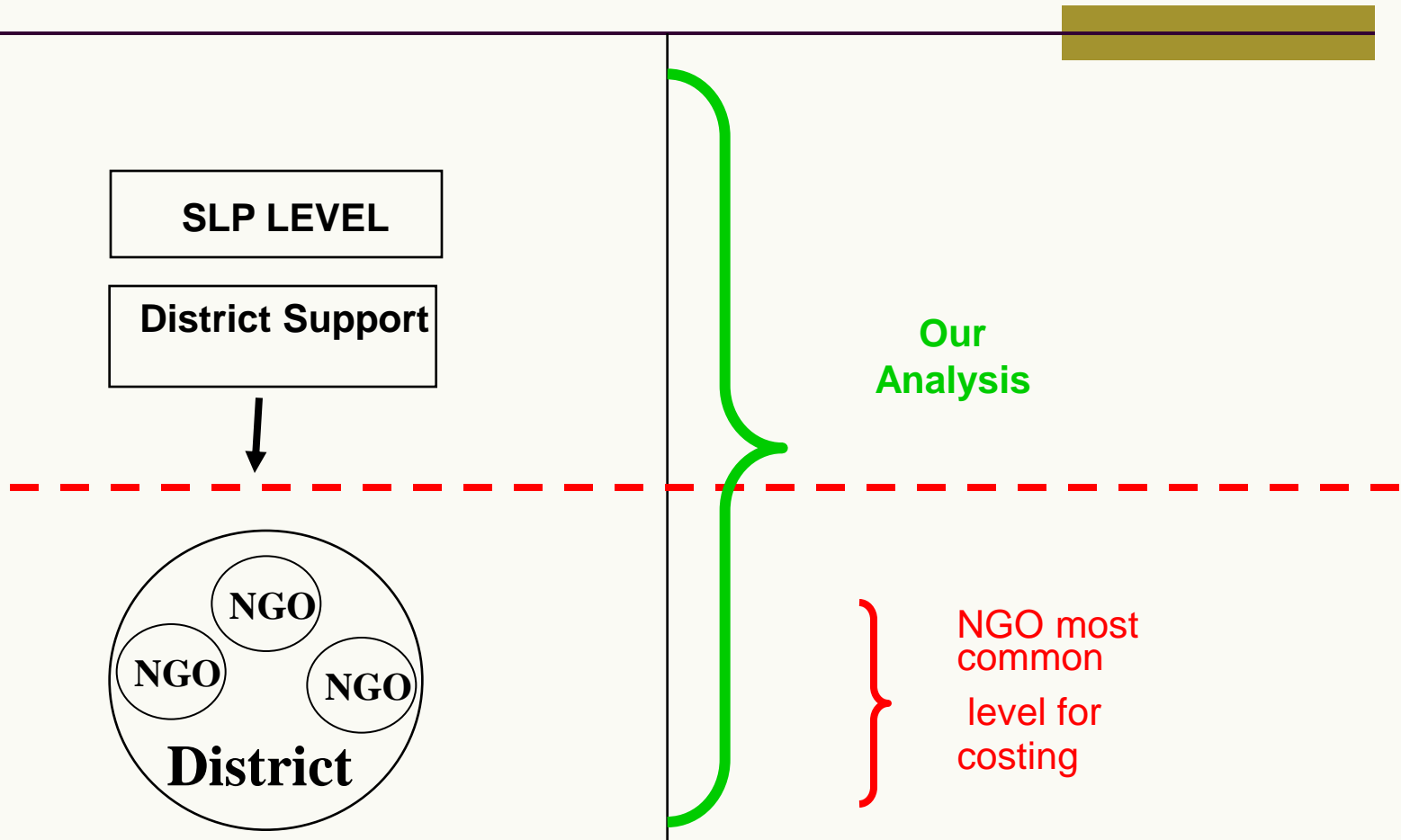
Main Areas of economic analysis for Avahan

- Cost Analysis – estimate volume of resources required to implement programme service activities
- Resource Requirements Analysis – estimate volume of resources required as projects scaled-up, increasing coverage and replicated
- Cost-effectiveness – estimate cost-effectiveness of the intervention, using modelled estimates of effectiveness

Methodological Framework of Cost Analysis

- Full economic costing based on standardised costing methods (UNAIDS guidelines)
- Prospective costing – data collected as intervention is running and built in along with monitoring and evaluation
- Multi-year Costing: over four years of the project
- Timeframe: start-up versus implementation. Start-up treated as a capital item.
- In some districts conducted repeated detailed cost. Detailed approach including staff time allocation surveys
- Reliance on routine data sources for output
- Regular feedback to implementers

Organizational levels for costing



SLP costs is an important component for rapid scale up representing Costs for expertise expansion, administration, programme monitoring and information, Special events, IEC materials and support.

Specific Data Collection Instruments for Detailed Costing

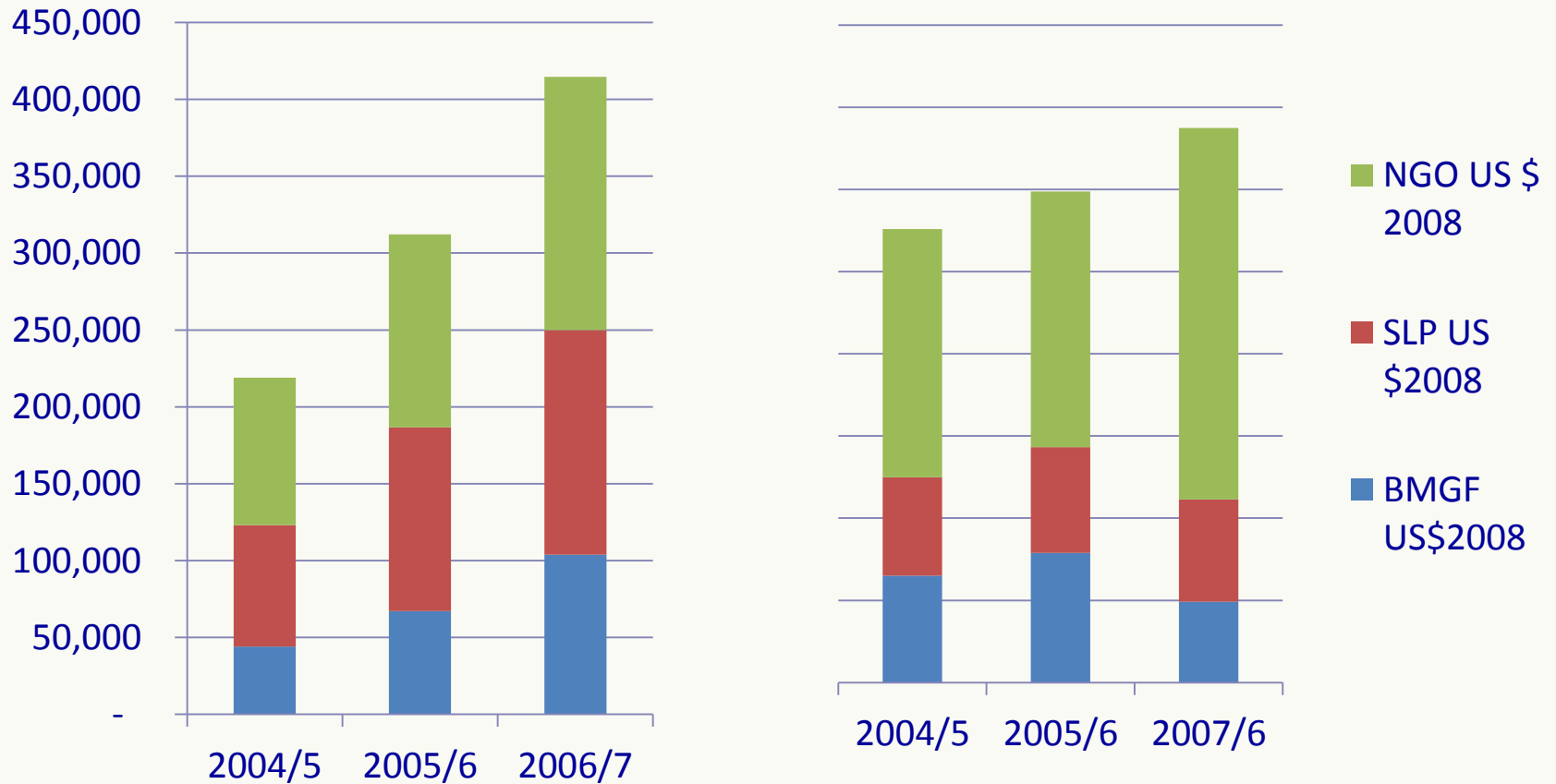
- **Records review**
 - designed to review all data that is being routinely reported (financial and programming).
- **Key informant interviews** with project staff
 - questionnaires for the field officers and project/district coordinators
- **Discussions with peer educators/community members**
- **Time-sheets**
 - to collect data regarding allocation between activities undertaken by field officers and STI doctors

Districts summary

Summary of districts included in the cost analysis of Avahan for first 2 years of activity

State Lead Partner	Number of districts (number of NGOs) costed in Year 1		Number of districts (number of NGOs) costed in Year 2	
	Non-Detailed districts	Detailed costing districts	Non-Detailed districts	Detailed costing districts
Tamil Nadu	12(24)	-	12(25)	2(7)
Karnataka	15(15)	15(15)	16(17)	3(4)
Maharashtra 1	-	-	11(12)	2(2)
Maharashtra 2	-	-	2(14)	1(5)
Andhra Pradesh 1	8(10)	-	8(10)	1(1)
Andhra Pradesh 2	9(21)	-	13(29)	2(4)
All Avahan	44(70)	15(15)	62(107)	11(23)

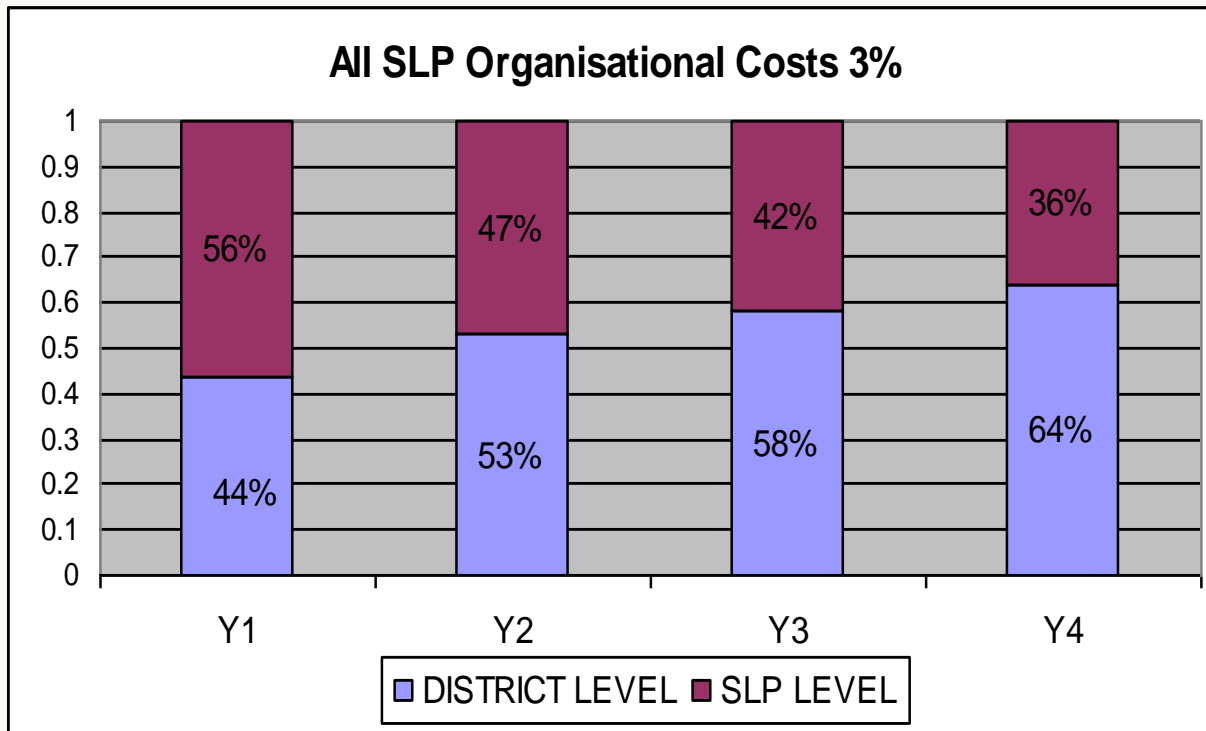
Total cost - different institutions - Example 2 districts



District A

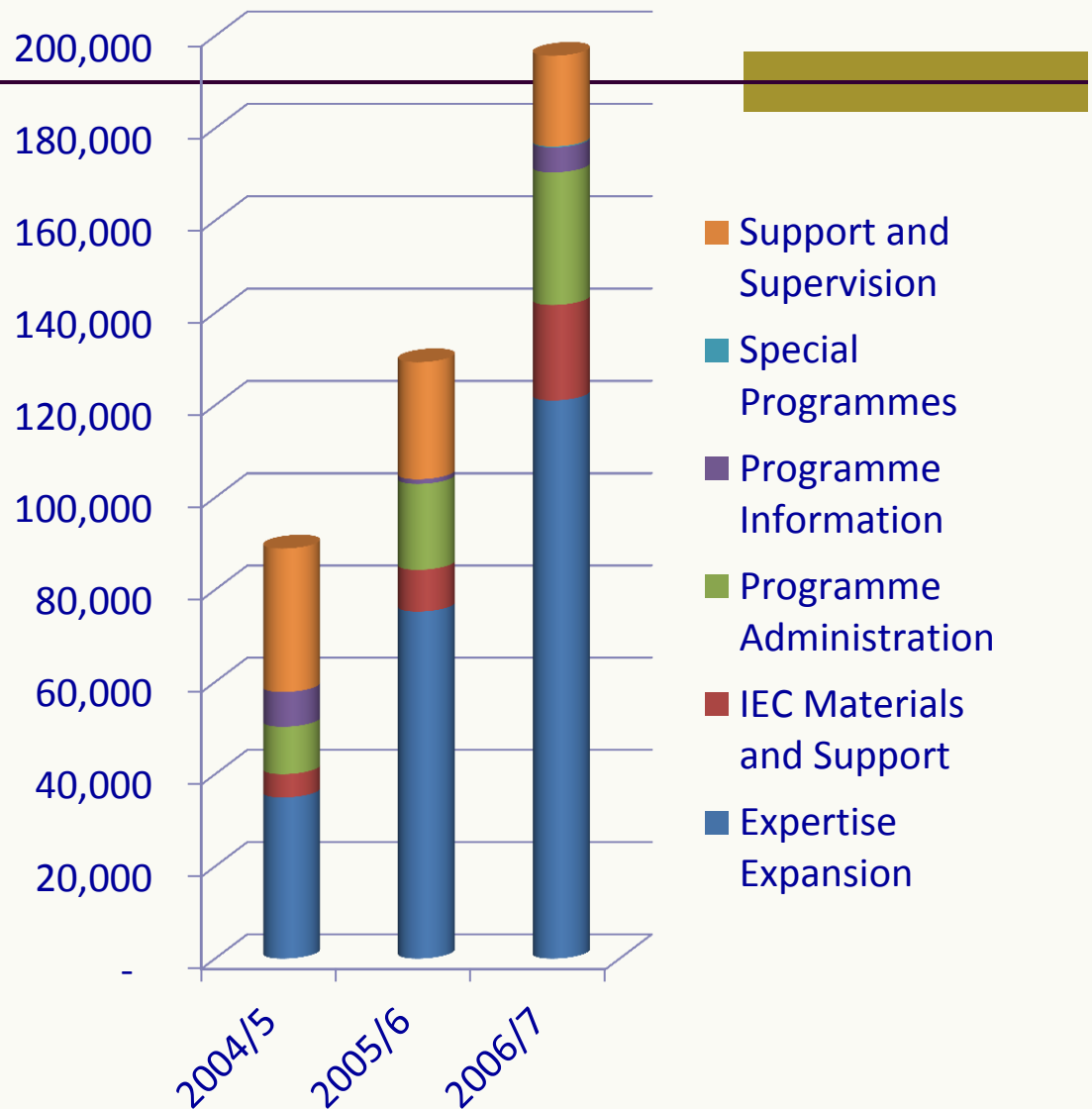
District B

Costs by organisational level

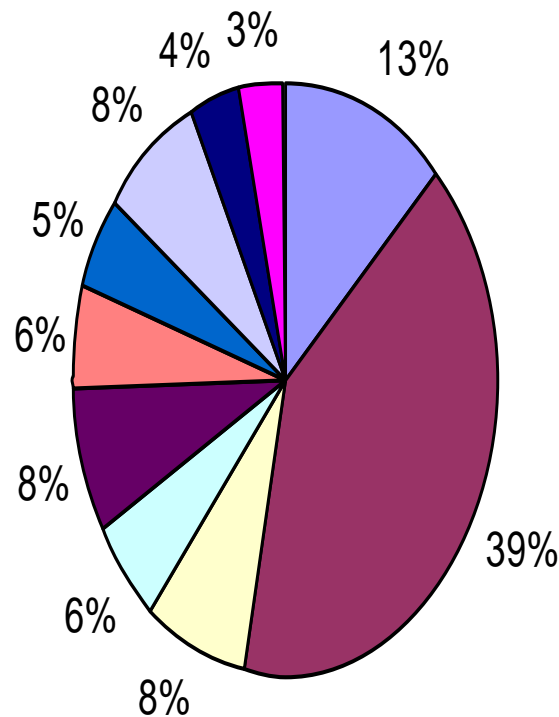


SLP cost (example 1 state)

- Expertise expansion costs substantial component of support
- Increase in later years reflecting support for expansion to of services throughout project
- Administration costs around 13%

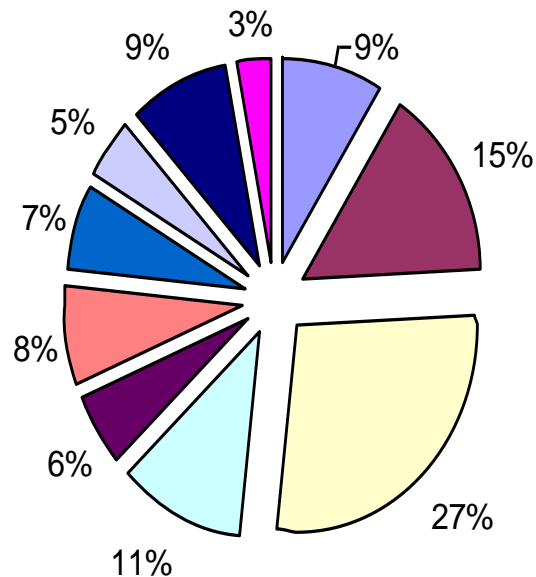


Total costs by input, for the first two years (US\$ 2006 Prices) Financial years 2004/2005 and 2005/2006



- Capital costs
- Personnel
- Travel
- Building operating & maintenance
- STI Supplies
- Monitoring
- Information Education Communication
- Training recurrent
- Condom Supplies
- Indirect Expenses

Total cost by activity at the state level (US \$ 2006)



- Capacity Building
- Behaviour change communication
- STI Services
- Condom promotion
- Community Mobilization
- Monitoring
- Planning and co-ordination
- Start-Up Activities
- Enabling Environment
- Others

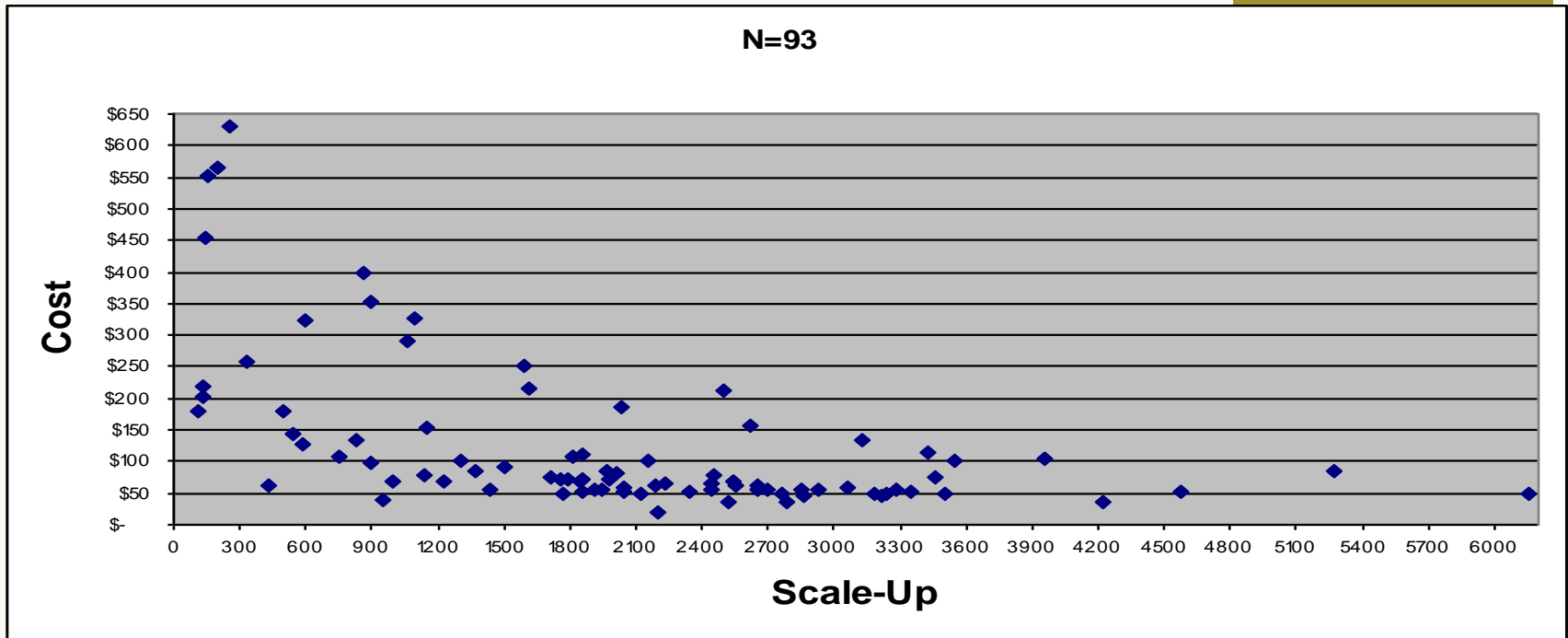
Percentage of total cost by input (4 years aggregated analysis of LP-Tamil Nadu)

Inputs	Y1	Y2	Y3	Y4	Total
Rent	7.1	4.0	3.4	3.8	4.0
Equipment	4.0	2.1	2.0	2.1	2.3
Trainings	0.2	0.1	0.1	0.1	0.1
Vehicle	0.7	0.3	0.3	0.3	0.3
Insurance And Repairs	0.1	0.1	0.1	0.2	0.1
start up	4.9	1.9	1.5	1.6	2.0
Capital total	16.9	8.5	7.3	8.1	8.8
Personnel	32.3	35.8	32.0	37.4	34.7
Travel	5.6	5.8	5.1	6.1	5.6
Building operating & maintenance	3.6	3.7	2.5	3.0	3.1
STI Services	18.3	14.6	16.2	15.6	15.8
Monitoring & Evaluation	10.0	3.7	5.2	3.1	4.6
Information Education Communication	5.7	11.5	10.6	7.1	9.3
Trainings	6.0	10.9	12.3	10.7	10.9
Condom Promotion	1.6	5.5	8.7	9.0	7.3
Recurrent Total	83.1	91.5	92.7	91.9	91.2
Grand Total	100.0	100.0	100.0	100.0	100.0

Aggregated Analysis Average Costs Economic 3% Lead Partner-Tamil Nadu

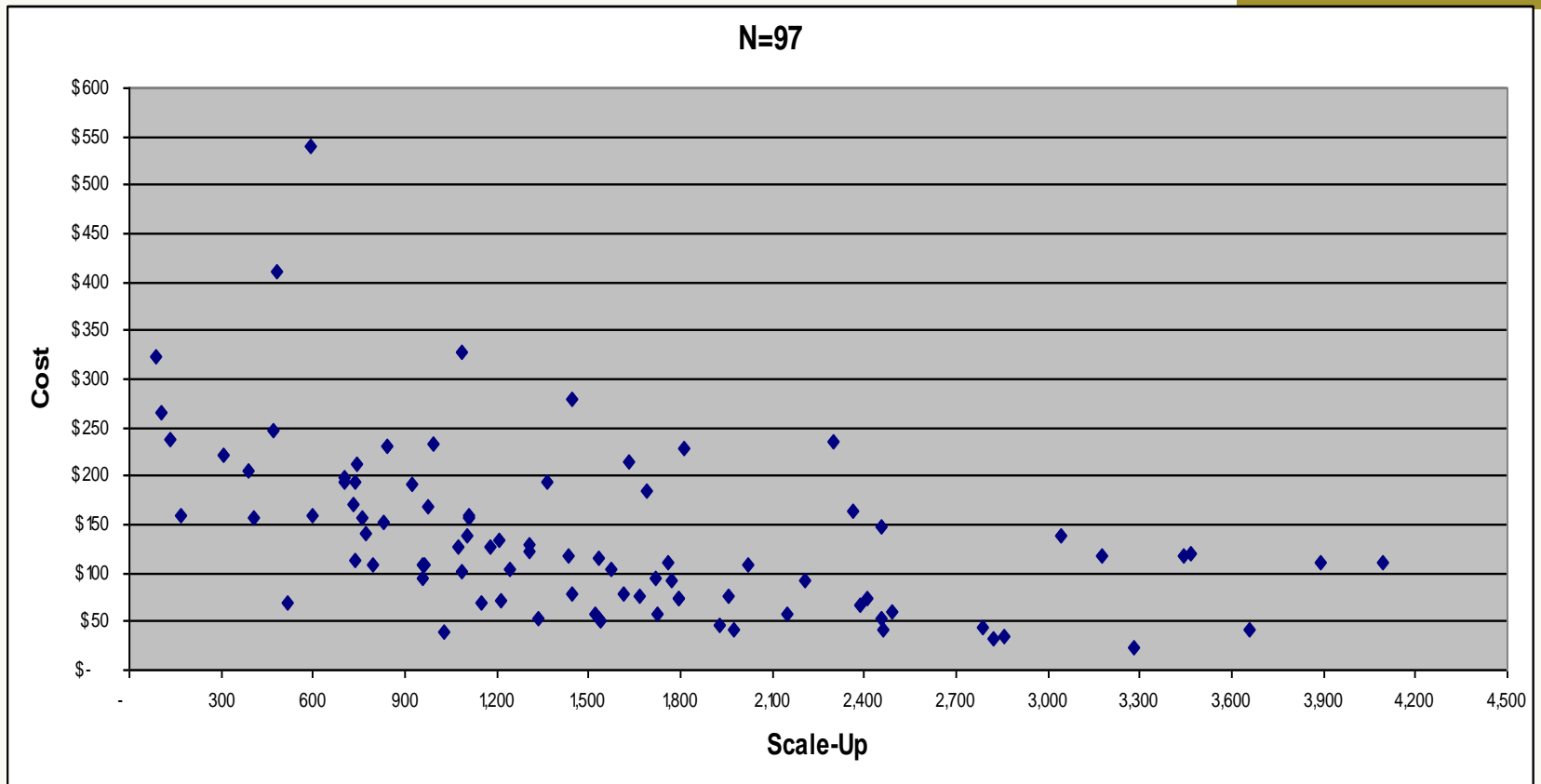
		Year 1	Year 2	Year 3	Year 4
1 Estimated Number of KP's	Rs	1148	3144	3834	2697
	\$	\$ 29	\$ 80	\$ 97	\$ 68
Ever Contacted	Rs	2245	2981	3038	2509
	\$	\$ 57	\$ 76	\$ 77	\$ 64
Ever Clinic Visit	Rs	7056	4280	3693	2933
	\$	\$ 179	\$ 109	\$ 94	\$ 74
Registration	Rs	1332	3021	3405	2961
	\$	\$ 34	\$ 77	\$ 86	\$ 75

Average Costs By Scale – Year 1+ Year 2 (Contact per Person registered)



Scale was significantly associated with decreasing average costs (Adjusted R2 =0 .248, $p < 0.0001$). Sixty-one per cent of the cost variation could be explained by scale (positive association), number of NGOs per district (negative), number of LPs in the state (negative) and project maturity (positive) ($p < 0.0001$).

Average Costs By Scale – Year 1 +Year 2 by clinic visits



Unit costs year wise

Unit costs - all programme(US \$ 2008)	Y1	Y2	Y3
	2005-06	2006-07	2007-08
Estimated number of sex workers	6226	6226	6226
NGO cost per MSM (for NACO comp)	12	53	68
Total cost per estimated	27	67	76
Ever Contacted	3591	9483	11496
NGO cost per Ever Contacted	21	35	35
Total cost per Ever Contacted	46	44	41
Number of MSM registered: CUMULATIVE	1368	4532	6984
NGO cost per MSM registered: CUMULATIVE	55	73	58
Total cost per MSM registered: CUMULATIVE	121	92	68
Number of MSM reached every month(yearly mean)	2200	3225	5146
NGO cost per MSM reached every month (yearly mean)	34	102	85
Total cost per MSM reached every month (yearly mean)	75	130	100
Number of Clinic visits (Ever clinic visit)	1248	3088	5381
NGO cost per Clinic visit (Ever clinic visit)	60	107	75
Total cost per Clinic visit(Ever clinic visit)	133	135	88

Key messages

- Unique costing of a large-scale HIV prevention programme for vulnerable groups with multiple national and international implementing partners in South Asia.
- Costs incurred at central level during early years to provide high level technical and management inputs to ensure quality and consistency of services and supplies and to develop management systems while scaling up were quantified which are rarely reported in many studies.
- The average cost variation was largely explained by scale, number of NGOs per district, number of LPs in the state and project age.

Special analyses conducted by our team

- Learning effects on the costs of phased scale-up implementation of targeted HIV prevention among high risk populations in Karnataka, India (AIDS conference 2006)
- The economics of STI provision in scaling-up HIV prevention among high risk populations in Karnataka, India (AIDS conference 2006)
- Is it worth it? Opportunity costs of working as peer educators among sex workers (KACH 2007)
- Roll out of focused HIV/AIDS prevention intervention with HKDHBM (Hijras, Kothis, Double Decker and other Homosexual/Bisexual men) by a Community Based organization. What are the costs? Experience from Karnataka, Southern India (ICAAP 2007)
- Comparison of payment mechanisms for peer educators: A study from Kolar and Chitradurga, India (ICAAP 2007) -article submitted to Health Policy and Planning under review.

continued

- Econometric Analysis of Cost Drivers of Targeted HIV Prevention Interventions in India (AIDS conference 2008)
- The Effects of Scale on Costs of Targeted HIV Prevention Interventions Among Female and Male Sex Workers, MSM, and Transgenders in India(AIDS conference 2008)
- Typology Matters: Costs of large scale HIV prevention intervention among sex workers in two districts of Maharashtra state, India.(ICAAP 2009)
- Costs of scaling-up programme for Men who have sex with Men (MSM) in Bangalore over three years, Karnataka, India (AIDS 2010)
- Costing analysis of delivery structures treating Sexually Transmitted Infections to high-risk groups in Karnataka, India over three years(AIDS 2010)
- The cost-effectiveness of large scale HIV prevention activities. The case of Avahan (IAEN 2010)

Future analysis

- CEA for other IBBA sites
- Overall CEA
- Also
 - Explore costs from different settings
 - Explore contributions of different activities/ institutional structures/ population groups
 - Examine changes over time as well as scale, what happens to costs as the programme evolves
 - Look at longer term cost implications (ie. removing start-up, expertise enhancement etc).
 - Future cost savings



Thank you

Process Output Measures

	Year 1	Year 2	Year 3	Year 4
1 Estimated Number of KP's	4338	18078	35444	37041
16.1 Contact once New during the period	2918	18349	27288	8397
16.1 + 16.2 Total Contact (New + Repeat)	7173	97316	276837	402380
20.11 + 20.12 Clinic visits	519	13396	21685	36653

Process Output Measures

	Year 1	Year 2	Year 3	Year 4
Estimated Number of KP's	34400	34400	36300	50050
Ever Contacted	17600	36277	45814	53800
Ever Clinic Visit	5599	25266	37688	46020
Registration	29651	35798	40874	45590

- The median start up time for the programme was 3 months (range 0-6 months). The programme had 134 391 people registered, and utilisation at the NGO level varied from 37 to 6315 people registered (n=93). The total cost of the programme was US\$16 759 189
- The economic costs were 6% higher than the financial costs.
- Costs were incurred beyond the NGOs and LP organisational levels at the foundation office 70% of which was spent through pan-Avahan capacity development partners. Approximately 14% of total financial costs are foundation staff costs.
- With a 3% discount rate, the median costs per person registered and STI costs/person were US\$75 and US\$112

Specific Aims of Cost Analysis

1. Document the specific activities of the intervention, including the nature, range and method of delivery of activities.
2. In each of these sites, undertake a cost analysis of intervention activities.
 - How do costs change by coverage, scale and intensity of activity?
 - How do costs vary by context and design of intervention?
3. Estimate the average cost of different activities at each study site, using process and outcome indicators.

Methods – Cost analysis

- **Costs from all levels, BMGF (India office), Lead Partner(LP) and NGO**
- **NGO costs:** totals; averages; and activity breakdown based on staff time spent
- **SLP costs:** totals; activity breakdowns based on staff time; district allocations based on equal division of fixed costs, and activity/estimated population for variable costs.
- **BGMF costs:** totals; state allocations based on grants; district allocation based on population in need

Measurement of outputs and outcome

■ Outputs

- Average cost per estimated population
- Average cost per person reached per year
- Average cost per person reached per month
- Average cost per STI visit

■ Outcomes

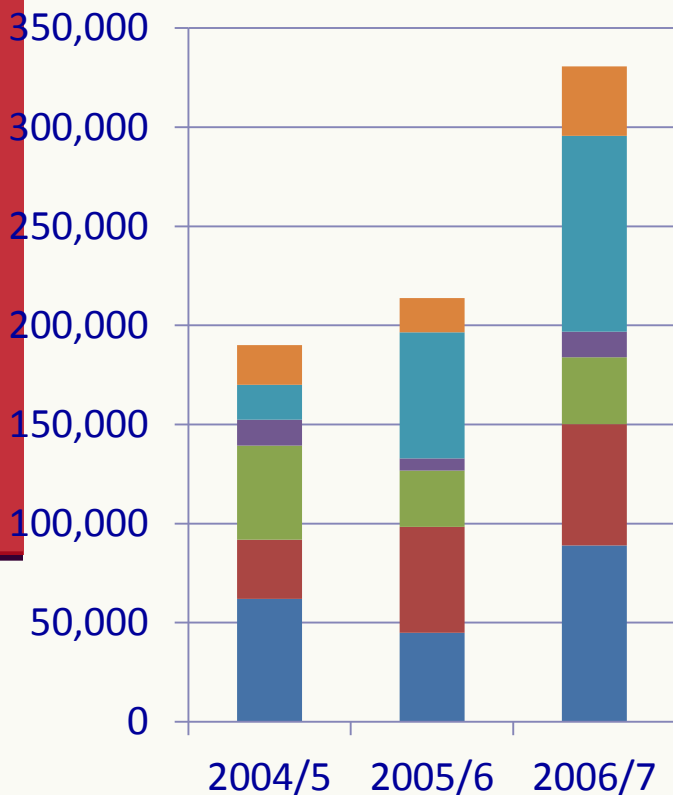
- HIV infections averted calculated through mathematical model fitted to survey data
- DALYs (HIV averted) calculated using standard methods

Data Sources

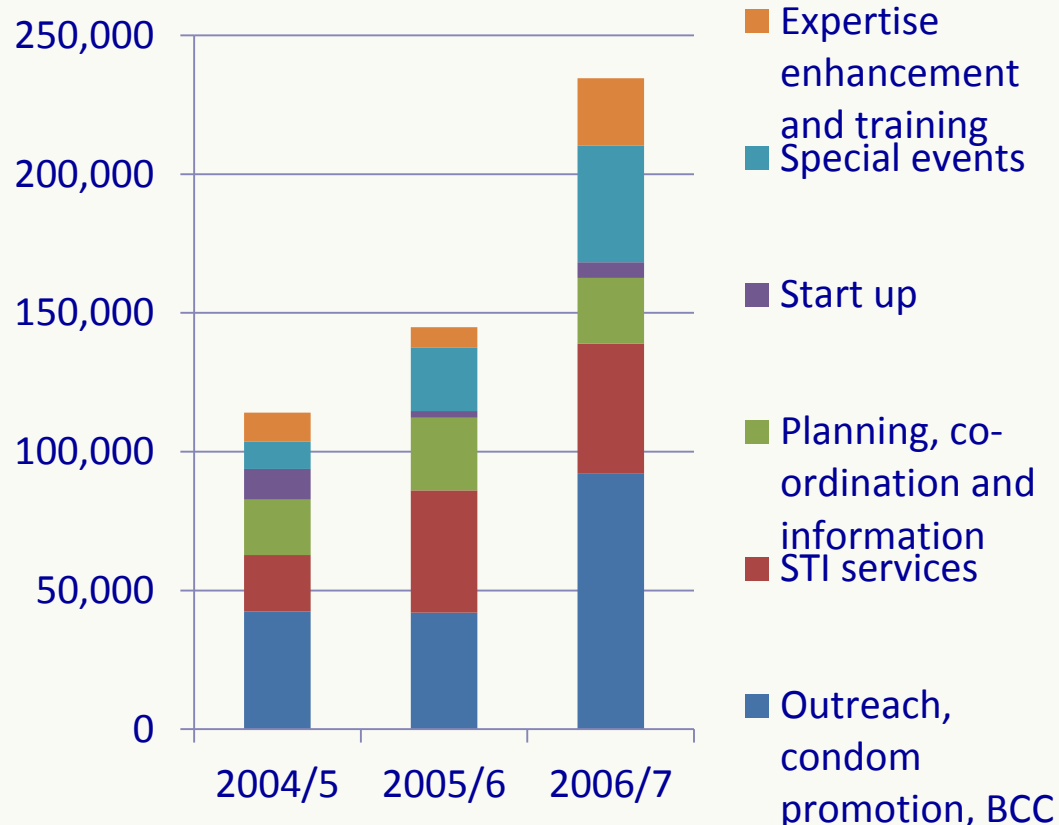
- Retrospective and prospective
- Financial records from NGOs and SLPs
 - Using routine financial and management reporting
- Process and outcome data from routine reporting
- Interviews with SLP staff related to district programming

NGO Cost by Activity (including MSM and rural)

District A



District B



Comparison of unit costs (cost per sex worker reached) in India

Cost study	Unit cost	Min	Max	Sites	Scale
	(US\$2008)				(FSWs)
Mysore (2005/06)	121	-	-	1	1036-1280
Belgaum (2005/06)	45	-	-	1	867-1090
Chandrashekar 2010	59.5	11.2	139.2	107	37-6315
Guinness 2005	25.7	13.38	68.24	17	250-2008
Dandona 2005a	14.3	6.13	37.85	14	803-6379
Fung 2007	69.3	-	-	1	2342
Dandona 2008	37.3	25.31	67.35	14	1109-5721
Dandona 2009	37.8	-	-	16	

Percentage of total cost by input

(3% Economic costs Lead Partner-Andhra Pradesh)

Inputs	Y1	Y2	Y3	Y4	Total
Rent	2.7	3.4	4.2	3.6	3.6
Equipment	0.6	1.2	0.7	0.4	0.7
Trainings	0.8	0.4	0.2	0.1	0.2
start up	13.8	7.0	4.5	2.0	4.3
Capital total	18.0	12.0	9.7	6.2	8.9
Personnel	28.0	35.2	33.8	33.6	33.5
Travel	3.2	8.2	7.7	8.4	7.8
Building operating & maintenance	7.2	5.5	4.8	4.4	4.9
STI Services	13.5	16.4	18.1	13.8	15.4
Monitoring & Evaluation	18.8	0.5	0.2	1.0	1.9
Information Education Communication	0.9	3.6	1.7	3.0	2.6
Trainings	9.4	6.3	11.3	6.0	7.8
Condom Promotion	0.6	2.3	6.0	8.7	6.4
Indirect Expenses	0.5	10.1	6.7	14.9	11.0
Recurrent Total	82.0	88.0	90.3	93.8	91.1
Grand Total	100.0	100.0	100.0	100.0	100.0

Average Costs Economic 3%

(Lead Partner Andhra Pradesh)

		Year 1	Year 2	Year 3	Year 4
1 Estimated Number of KP's	Rs	5395	2732	2627	4997
	\$	\$137	\$69	\$67	\$127
16.1 + 16.2 Total Contact (New + Repeat)	Rs	3263	508	119	236
	\$	\$83	\$13	\$9	\$12

NACO(2009) \$ 34.2 to 50.88, Scale 400 to 1000 (Annual financial cost)
 UNAIDS(2000) \$31.02, Scale 1000 (Annual financial cost)
 UNAIDS-ADB (2004), Scale 1000 \$40