

HIV Sentinel Surveillance 2006

Surveillance Unit

National Center for HIV/AIDS Dermatology and STD

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Outline

- Objectives
- Methodology
- Results
- Conclusion
- Recommendation



Objectives

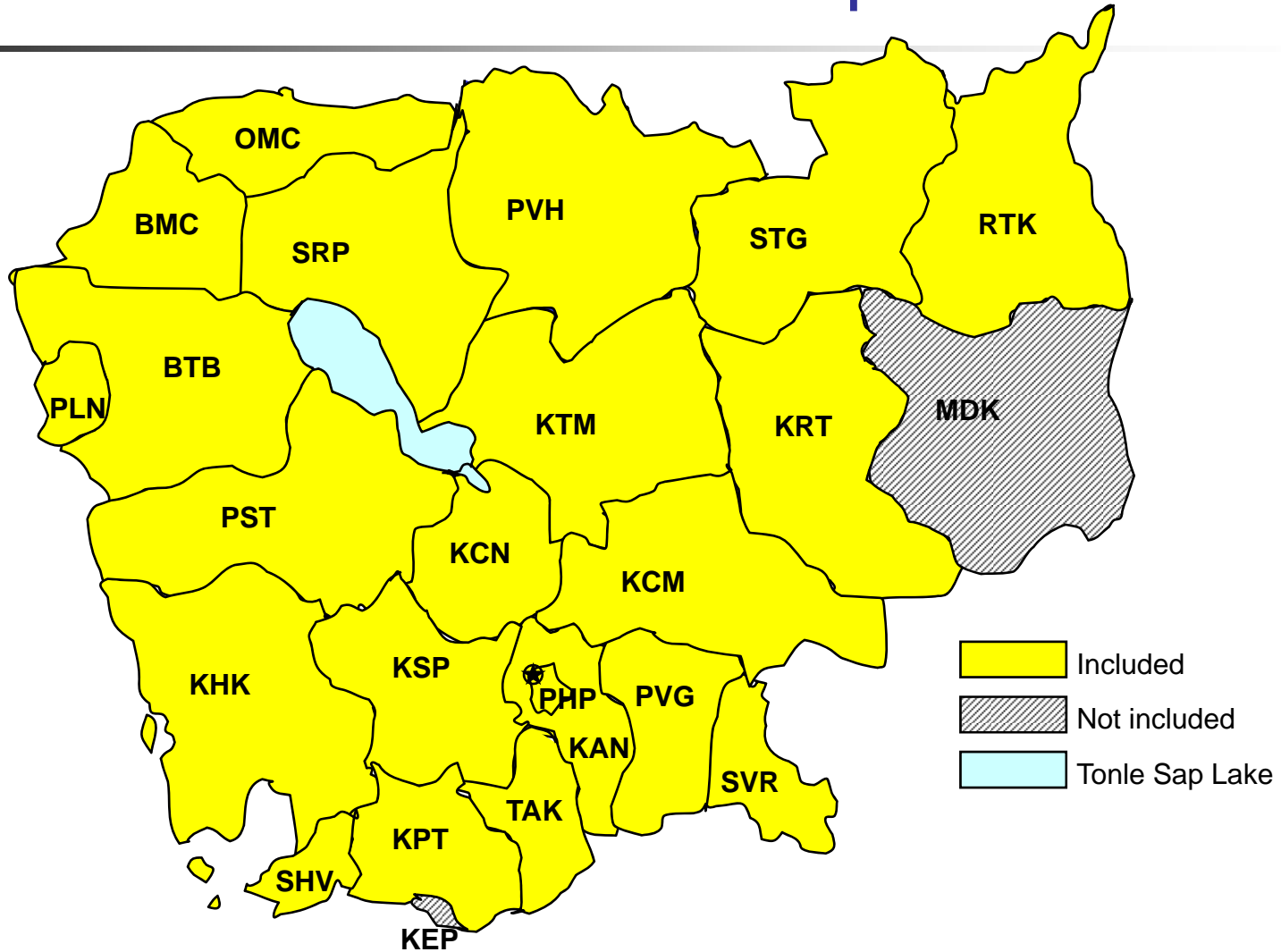
- To estimate the prevalence of HIV infection in two key female sentinel groups in 2006
- To estimate HIV incidence in these groups
- To estimate HIV prevalence in the general population
- To obtain data for monitoring trends in HIV prevalence
- To provide information on HIV prevalence for prevention planning and care efforts



Methods

- Study design: Cross sectional study (October 2006-February 2007)
- Sentinel groups:
 - Brothel based female sex workers (FSW)
 - Pregnant women attending antenatal clinics (ANC)
- Sentinel sites: 22 cities/provinces
- Sample size:
 - FSW: 150 per province
 - ANC: 600 per province (300 from provincial capital/urban area and 300 from remaining districts/rural area)
- Specimen collected: 5 ml of whole blood

Methods: 22 sentinel provinces





Methods: Sampling

- FSW
 - In provinces with less than the required sample size of 150, sampling was “take-all”
 - In provinces with at least 150 FSWs, sampling was “take-all” from randomly selected brothels
- ANC
 - Separate samples of 300 women were selected from provincial capitals (PC) and 300 from remaining districts (RD)
 - Pregnant women were selected consecutively from designated ANC clinics at health centers until the required sample size was reached
 - Duration of data collection was limited to three months



Methods: sample size by survey year

	<i>2000</i>	<i>2002</i>	<i>2003</i>	<i>2006</i>
<i>(Provinces)</i>	<i>(21)</i>	<i>(20)</i>	<i>(22)</i>	<i>(22)</i>
DFSW	2,180	2,110	2,411	2,266
IDFSW	1,799	1,232	1,633	--
Police	4,711	4,379	5,796	--
ANC	6,562	9,168	10,867	12,464
Total	17,991	19,247	20,707	14,730

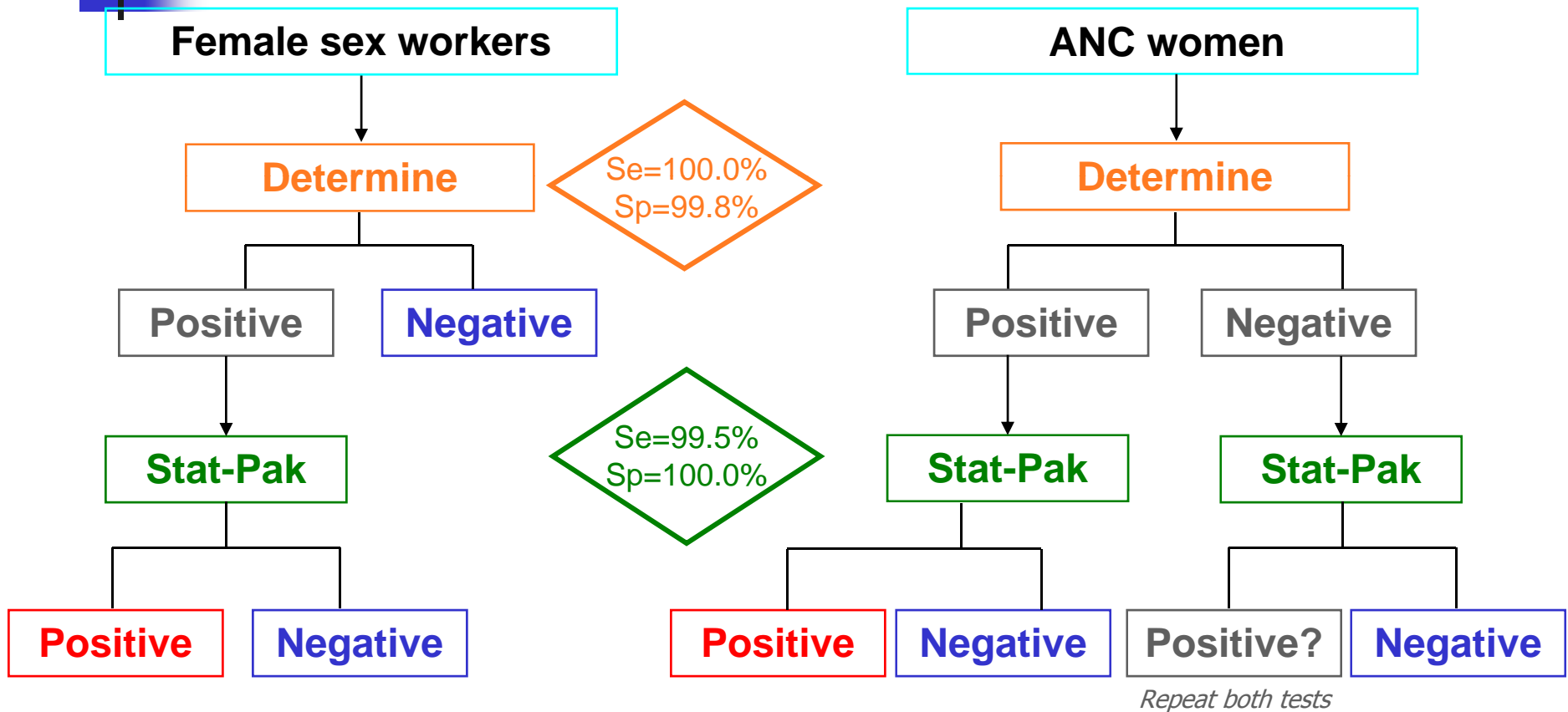


Methods: HIV testing

- Tests performed at the provincial level
 - Two rapid tests were used (Determine & Stat-Pak)
 - A serial two-test algorithm was used for FSW and a parallel two-test algorithm was used for ANC
 - Dried blood spot (DBS) specimens were prepared for quality control

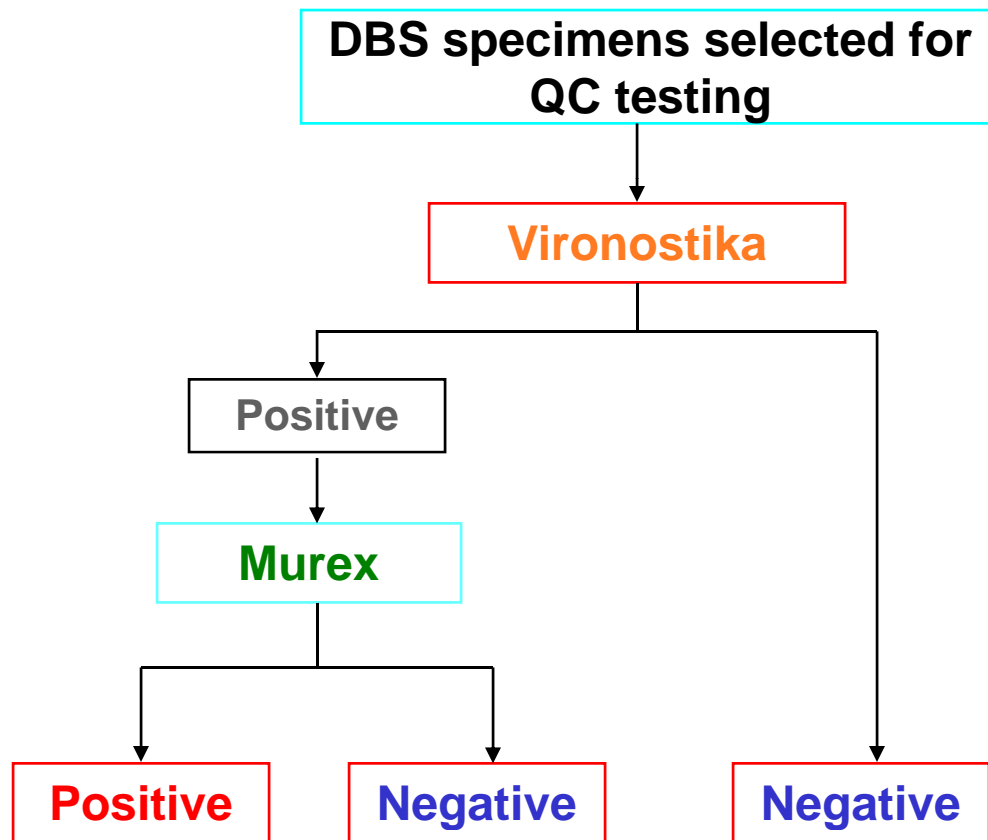
- Quality control testing performed by NIPH lab
 - FSW:
 - Phase 1: 10% of all specimens were tested
 - Phase 2: All reactive specimens not tested in phase 1 were tested
 - ANC:
 - All reactive specimen and 10% of all non-reactive specimens were tested
 - Two enzyme immunoassays were used for quality control testing (Vironostika & Murex)

Methods: HIV prevalence testing algorithm



Sensitivity (Se) and specificity (Sp) data from phase 1 validation of 5 rapid HIV tests conducted in Cambodia in 2004. The combined algorithm was found to be 99.5% sensitive and 100% specific.

Methods: Quality control testing algorithm





Methods: HIV incidence estimation

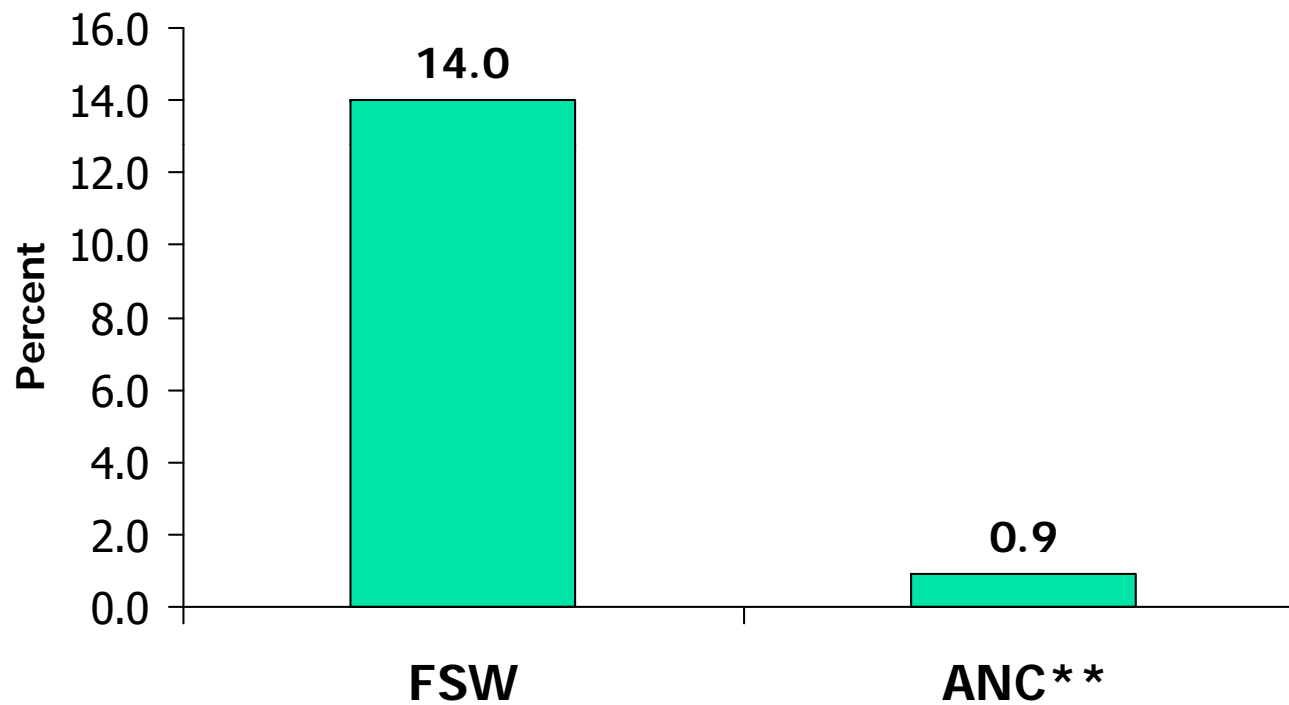
- Testing for recent infection
 - All DBS specimens identified as HIV positive were tested for recent infection
 - Calypte HIV-1 Incidence BED EIA was used
 - Specimens with normalized optic density (OD_n) values ≤0.8 on confirmatory testing were considered to be from persons with recent HIV infection
- Calculating HIV incidence
 - Overall window period used was 155 days
 - HIV incidence was annualized using the formula

$$I = \left(\frac{(365/155)N_{inc}}{N_{neg} + [(365/155)N_{inc}]/2} \right) * 100$$

where: N_{inc} : number of recent infections

N_{neg} : number of HIV seronegatives

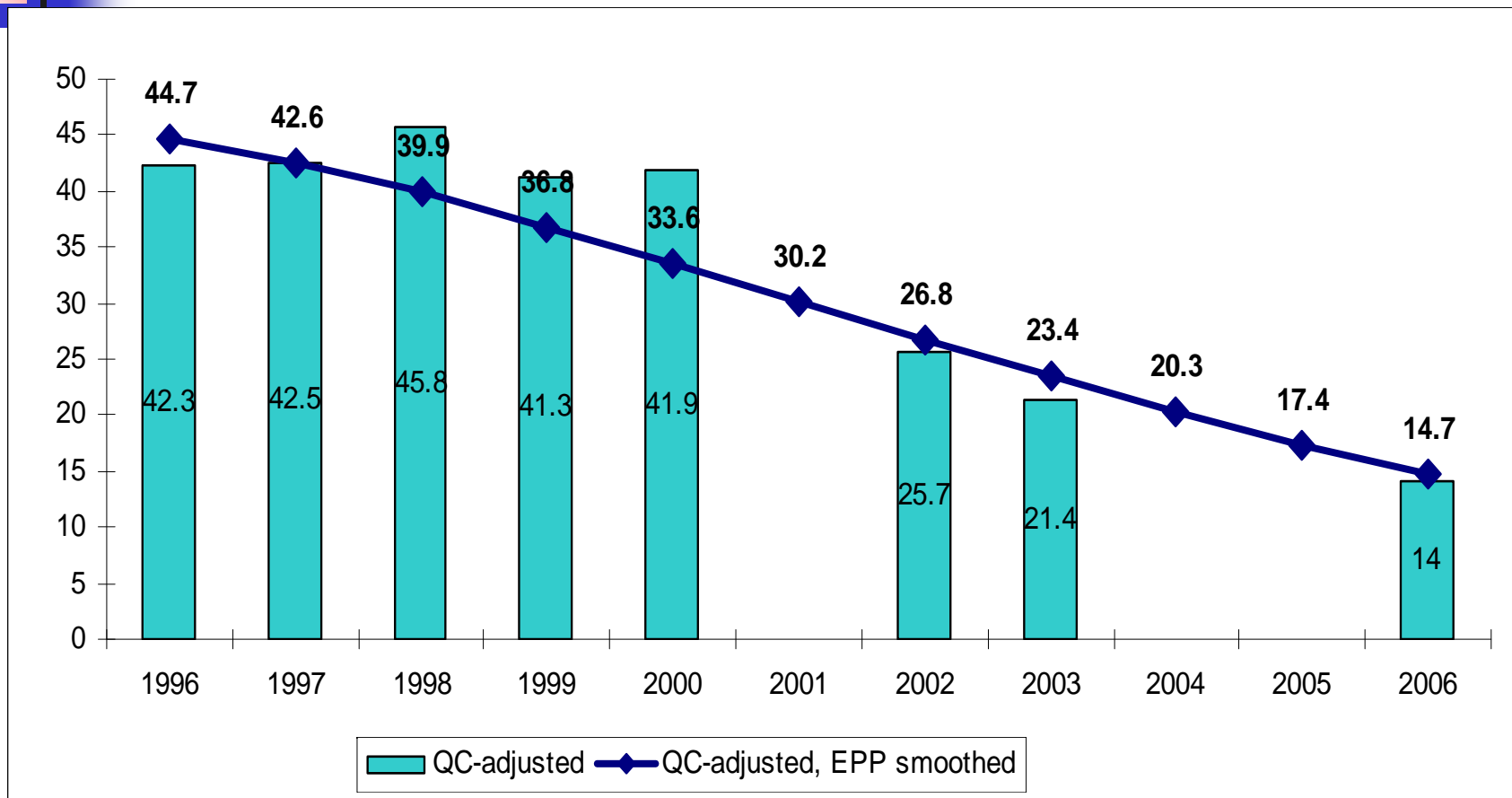
Results: HIV prevalence* in 2006, by sentinel group



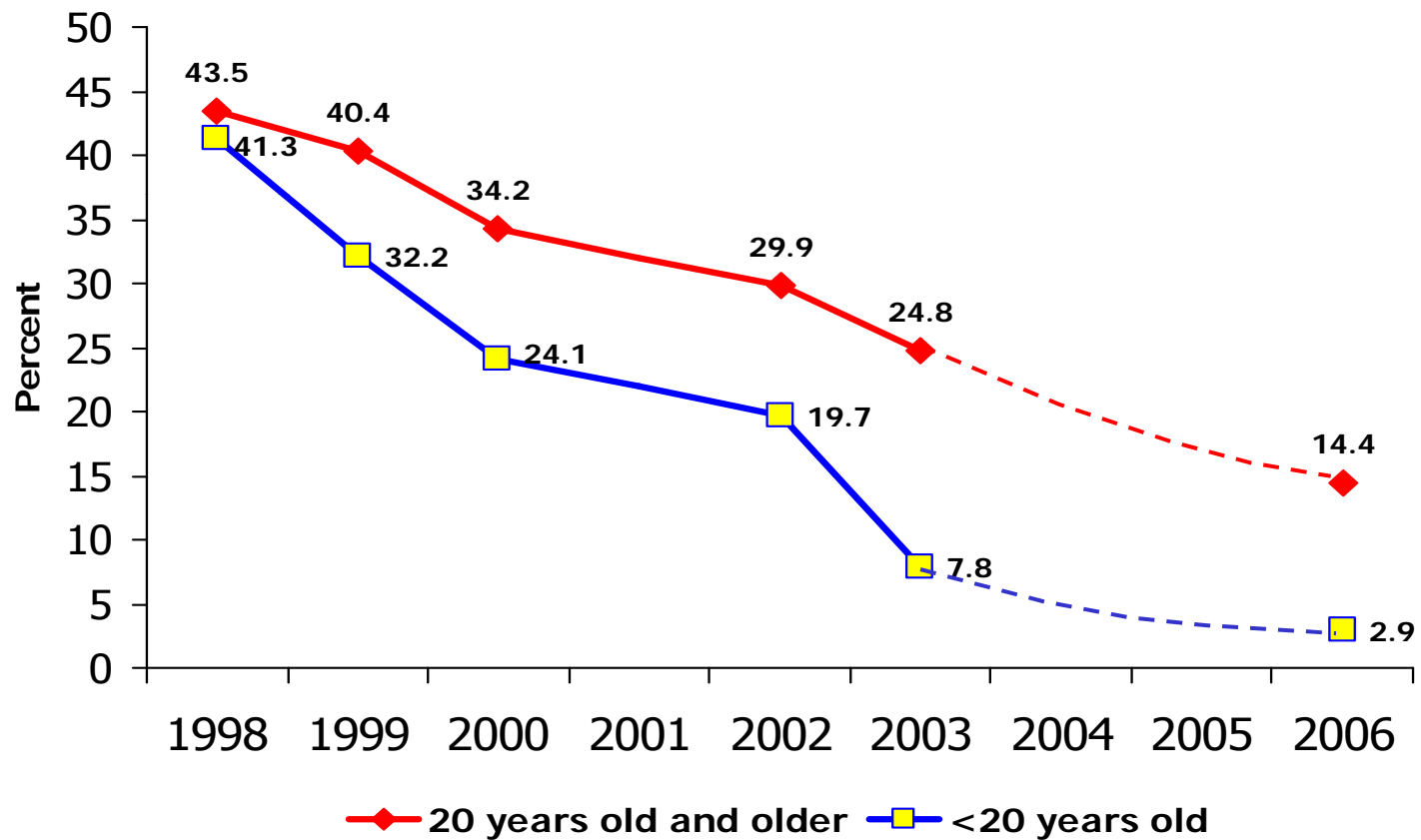
*Adjusted for results of quality control

**Weighted for provincial population size

Results: HIV prevalence among female sex workers, by survey year

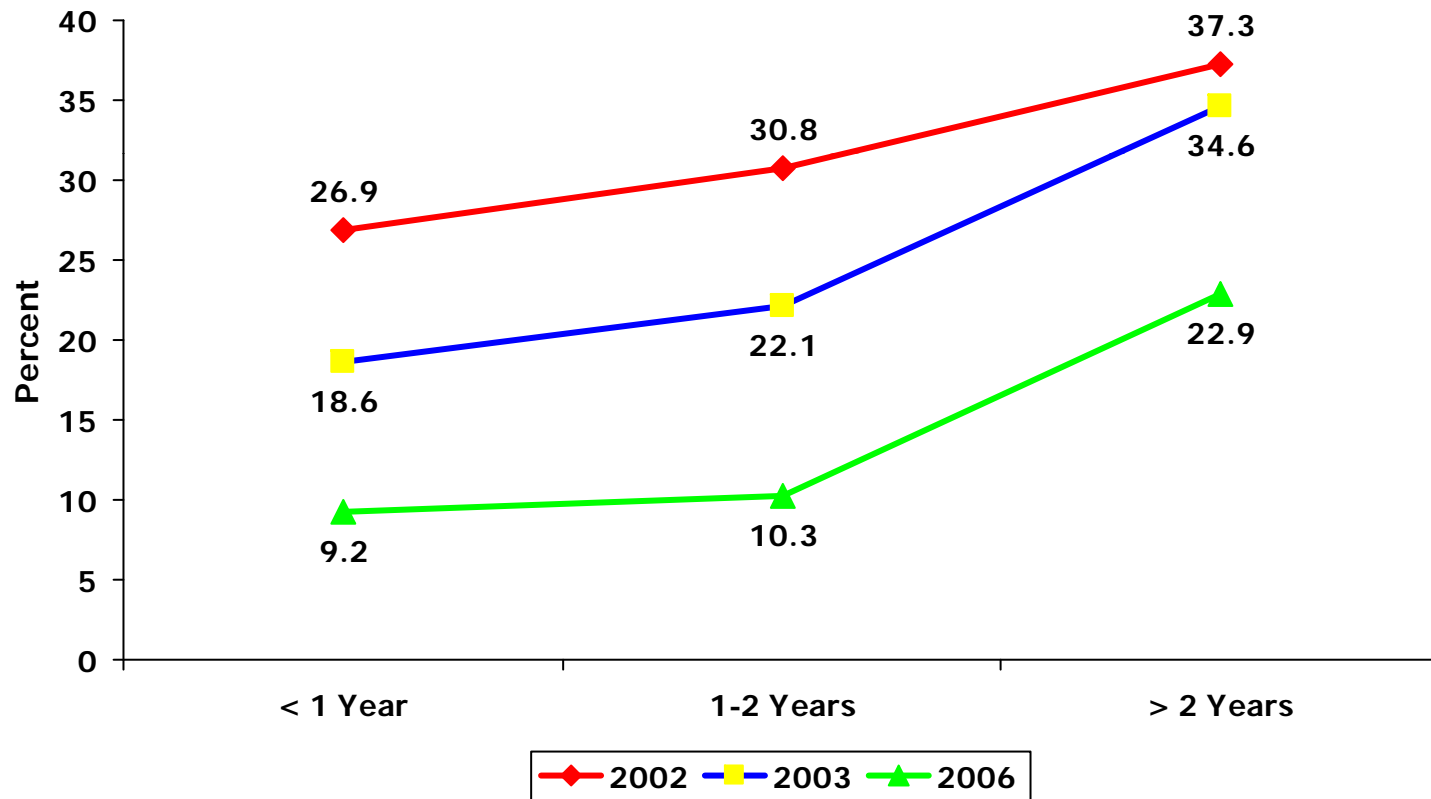


Results: HIV prevalence* among female sex workers, by age group



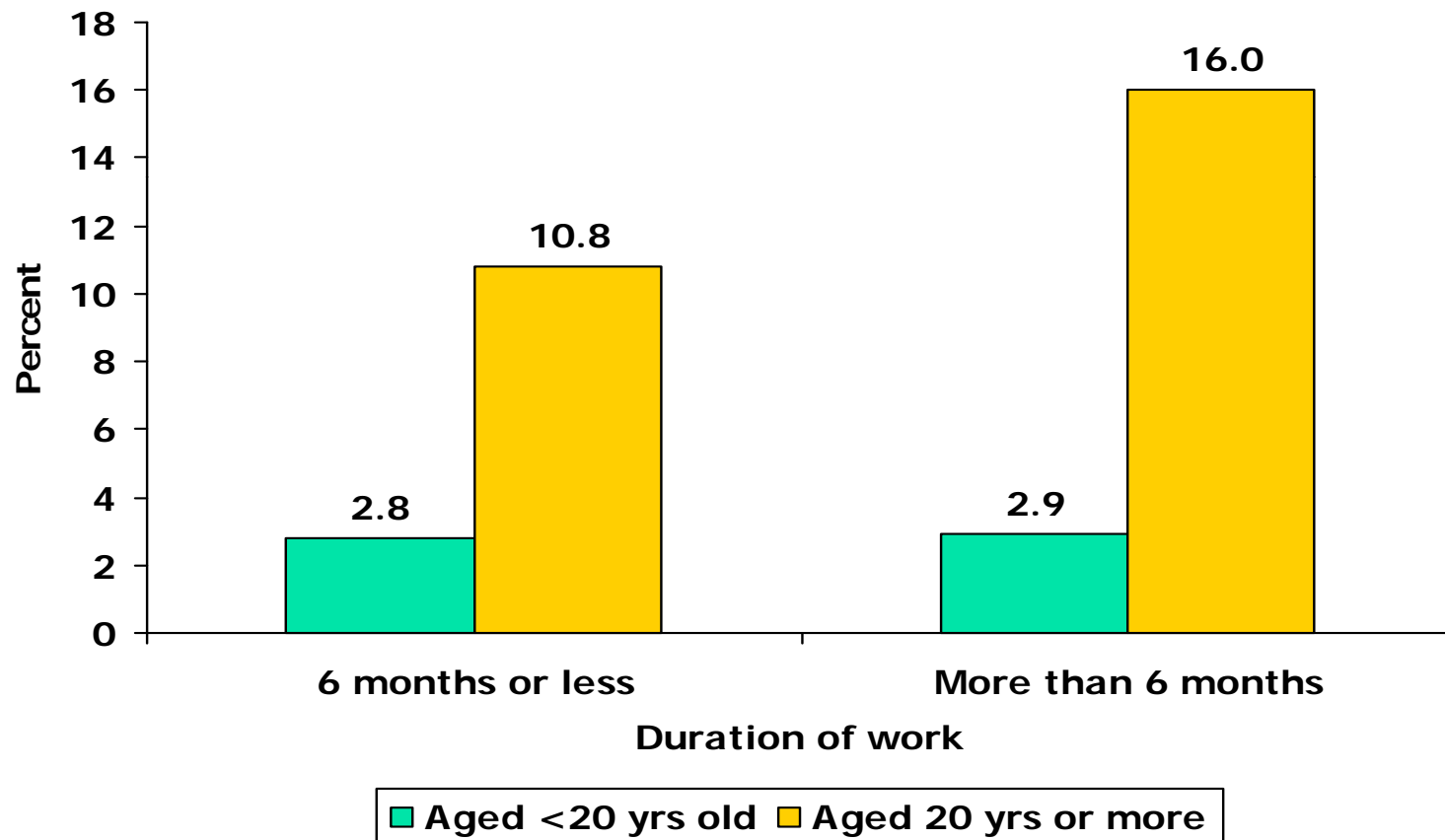
*Adjusted for results of quality control

Results: HIV prevalence* among female sex workers, by survey year and duration of sex work



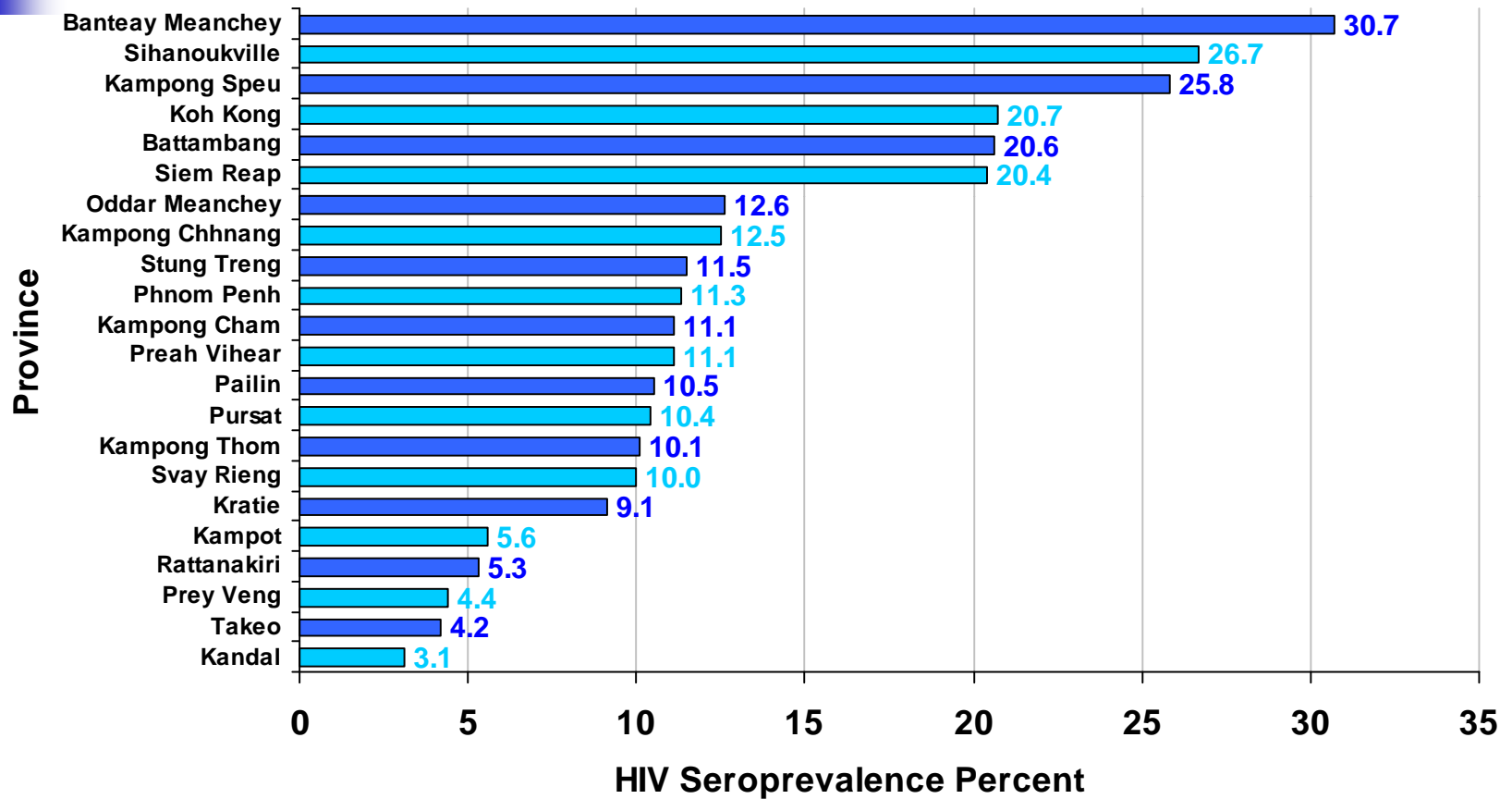
*Adjusted for results of quality control

Results: HIV prevalence* among female sex workers, by age and duration of sex work



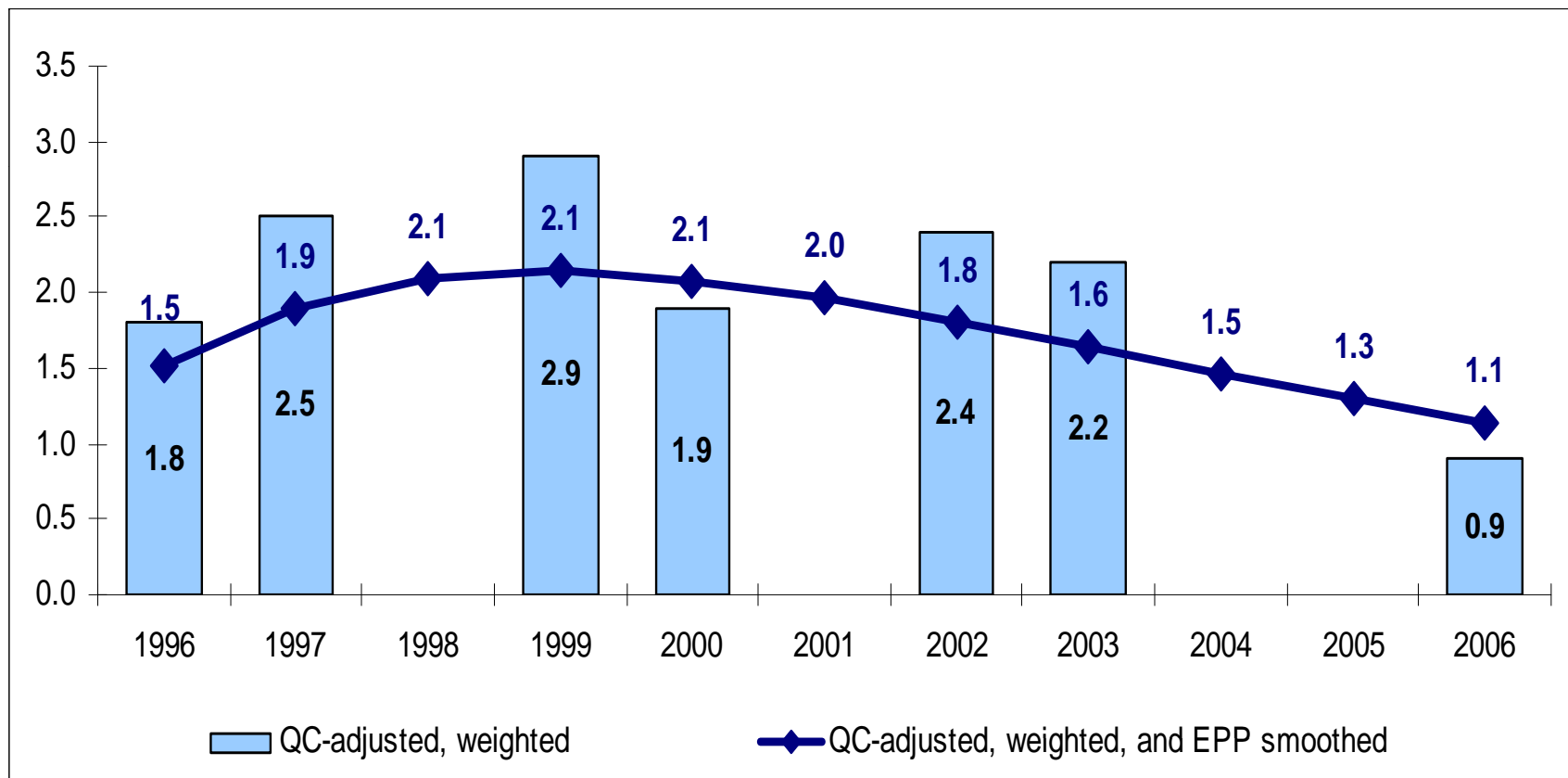
*Adjusted for results of quality control

Results: HIV prevalence* among FSWs, by province

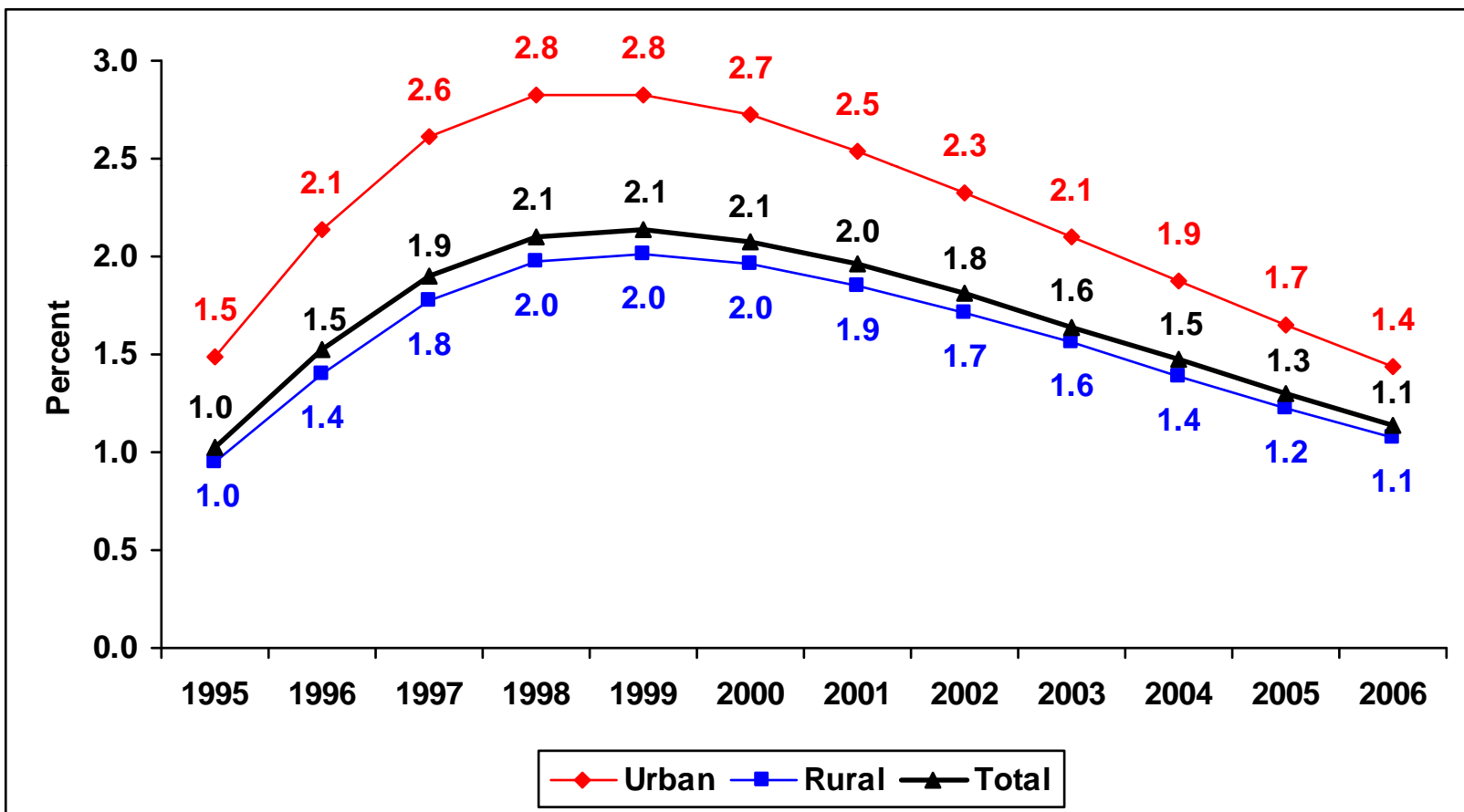


*Adjusted for results of quality control

Results: HIV prevalence among ANC, by survey year

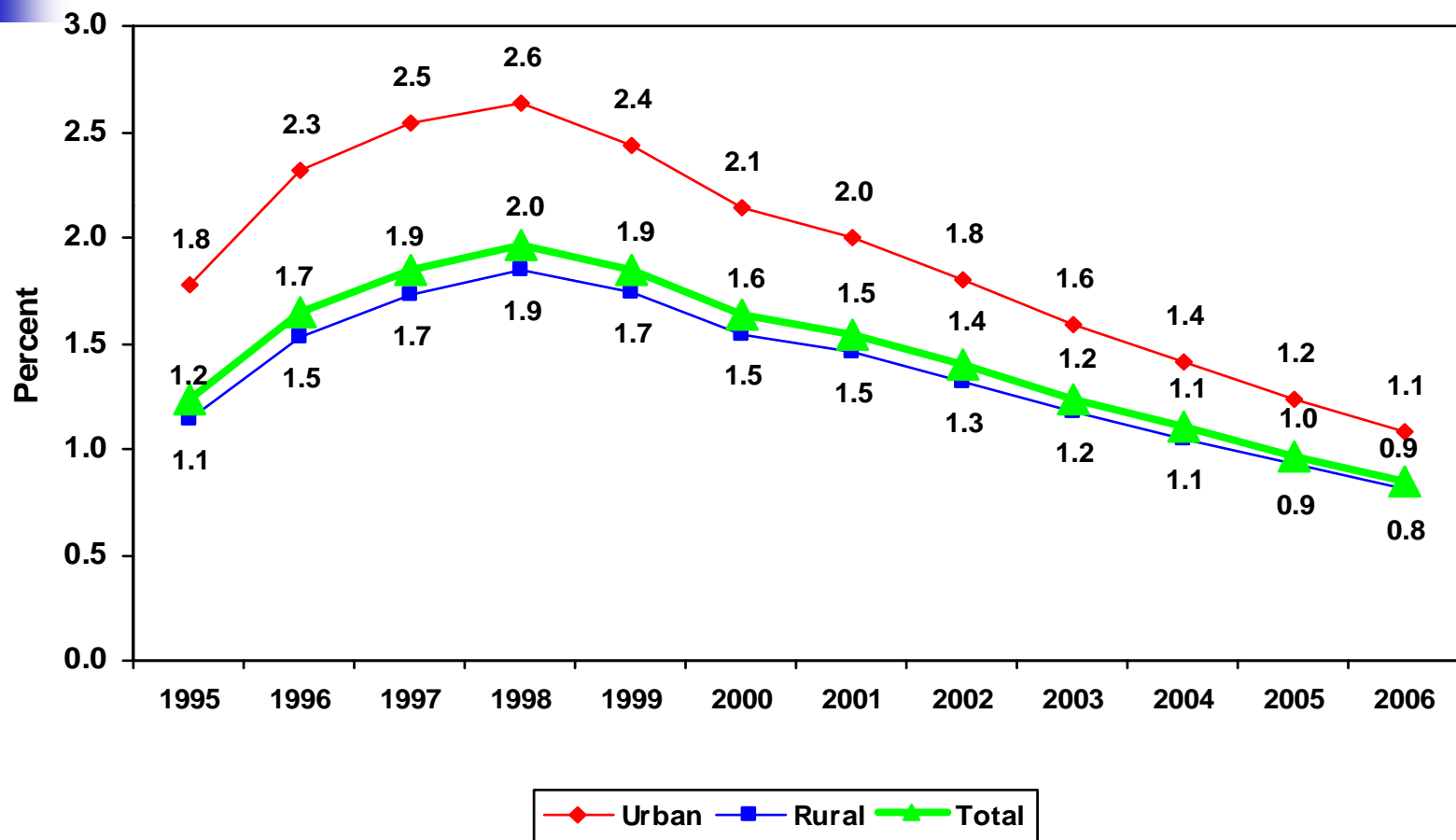


Results: Trends in estimated HIV prevalence* among ANC women, by ANC location



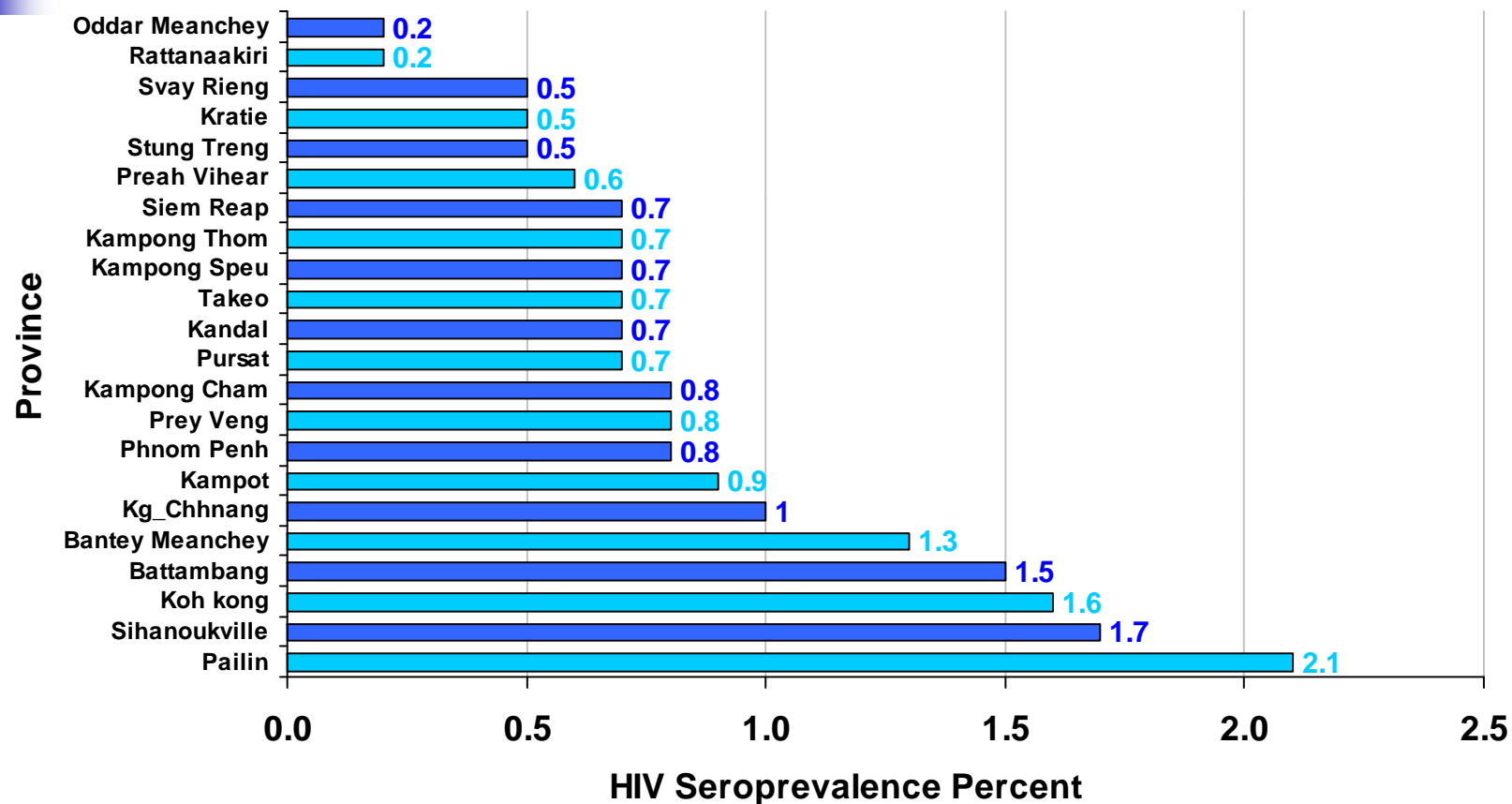
* QC-adjusted, weighted, and smoothed with EPP

Result: Estimated HIV prevalence* among general population aged 15-49 years old



*Qc adjusted, weighted and EPP smoothed

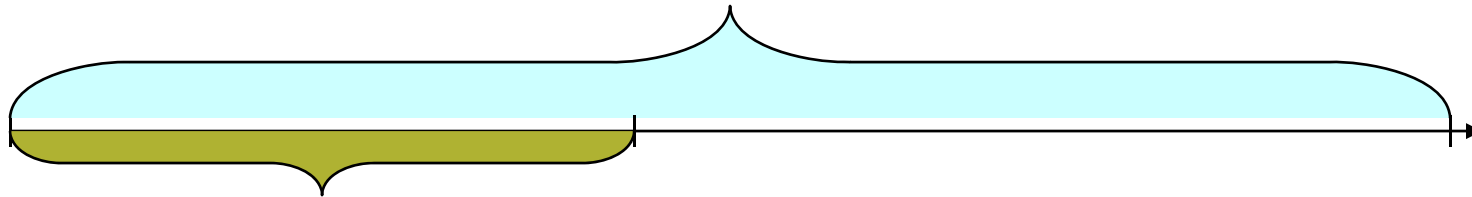
Results: HIV prevalence* among ANC, by province



*Adjusted for results of quality control

Estimating HIV incidence

Annualized period (365 days)



Assumed window period (155 days)

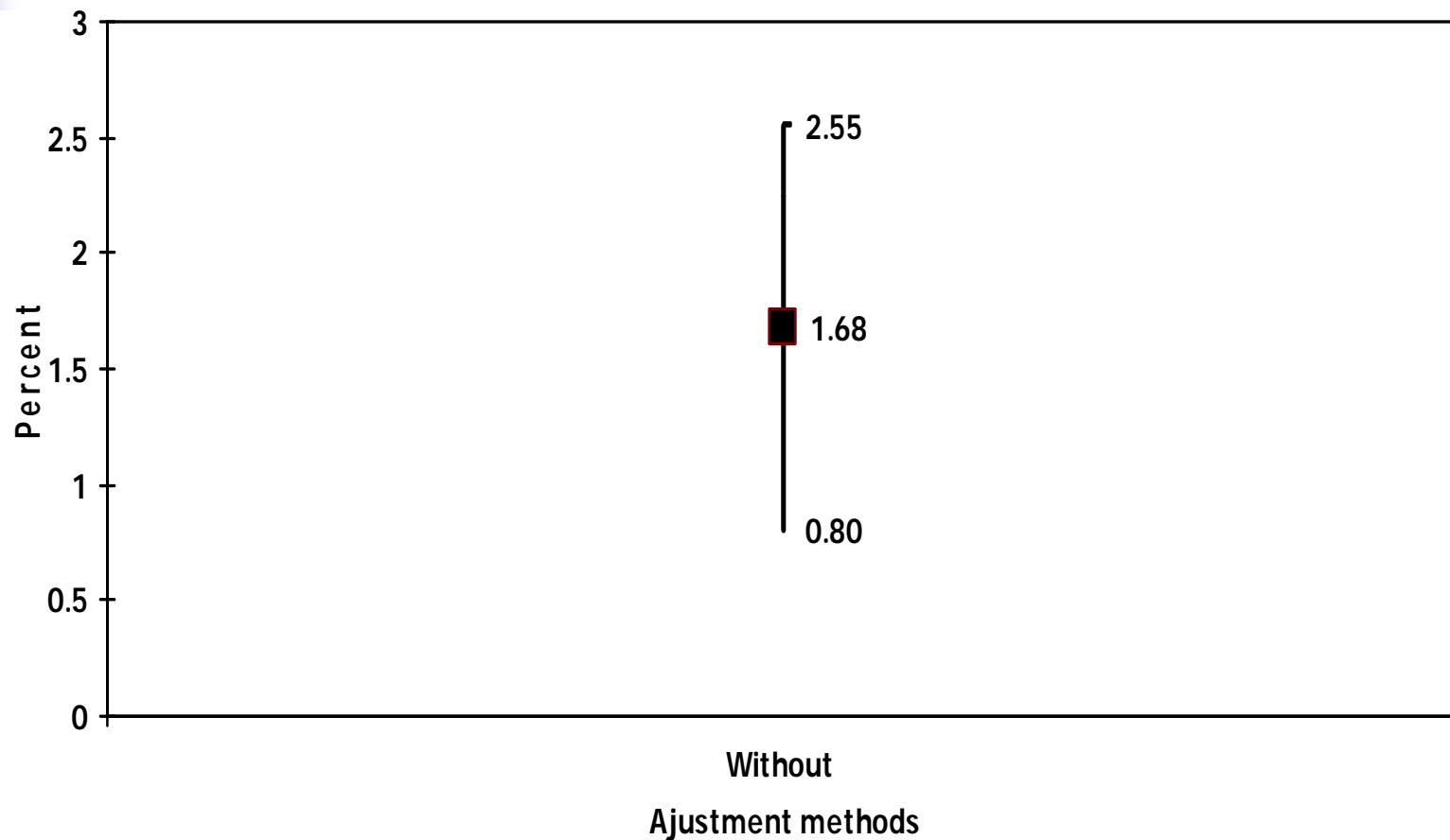
In HSS 2006:
All new infection was
assumed to occur within
155 day of the cohort if
all participants were
followed up

$$I = \left(\frac{\{(365/155)N_{inc}\}}{\{N_{neg} + [(365/155)N_{inc}]/2\}} \right) * 100$$

Annualized HIV incidence
(HIV incidence among 100 person per year)

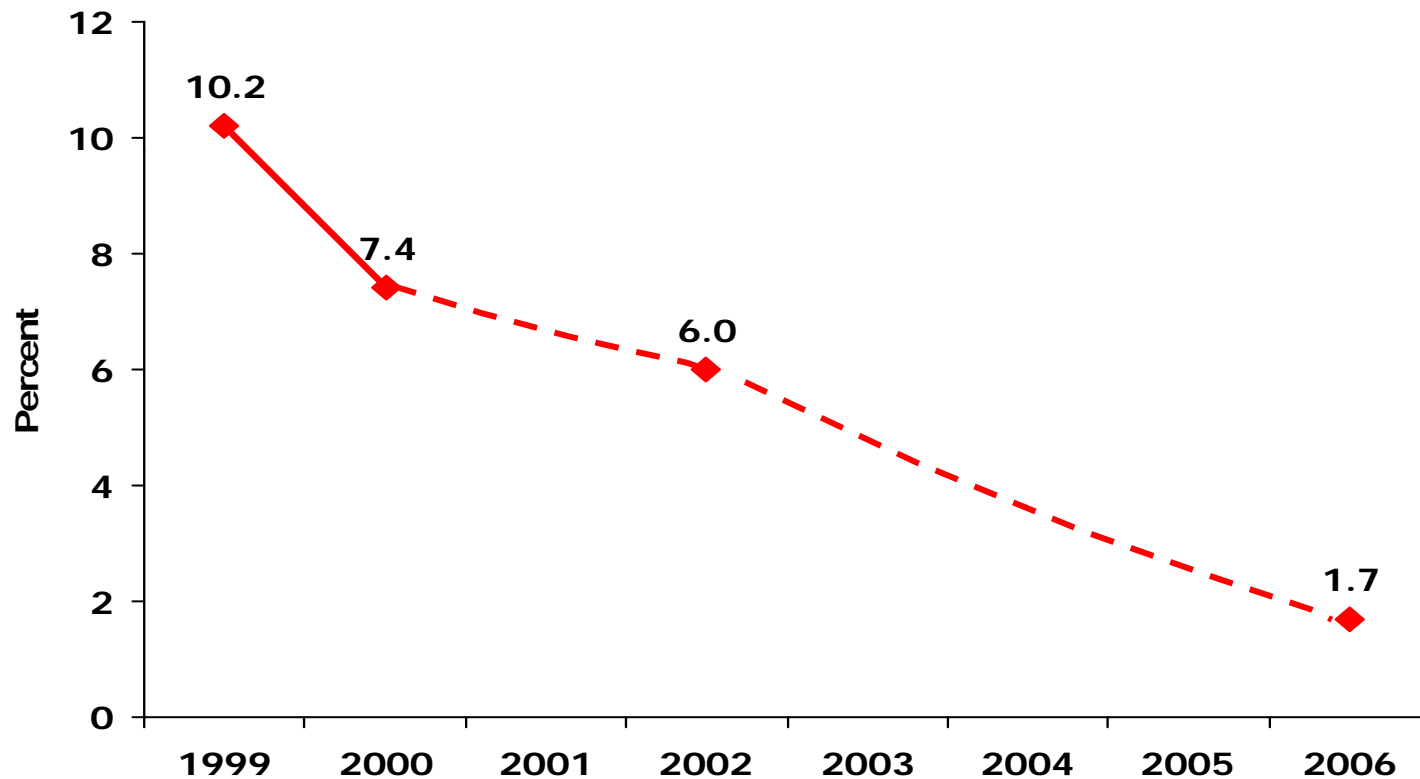
Adjusted annualized incidence

Results: HIV incidence* among FSWs in 2006



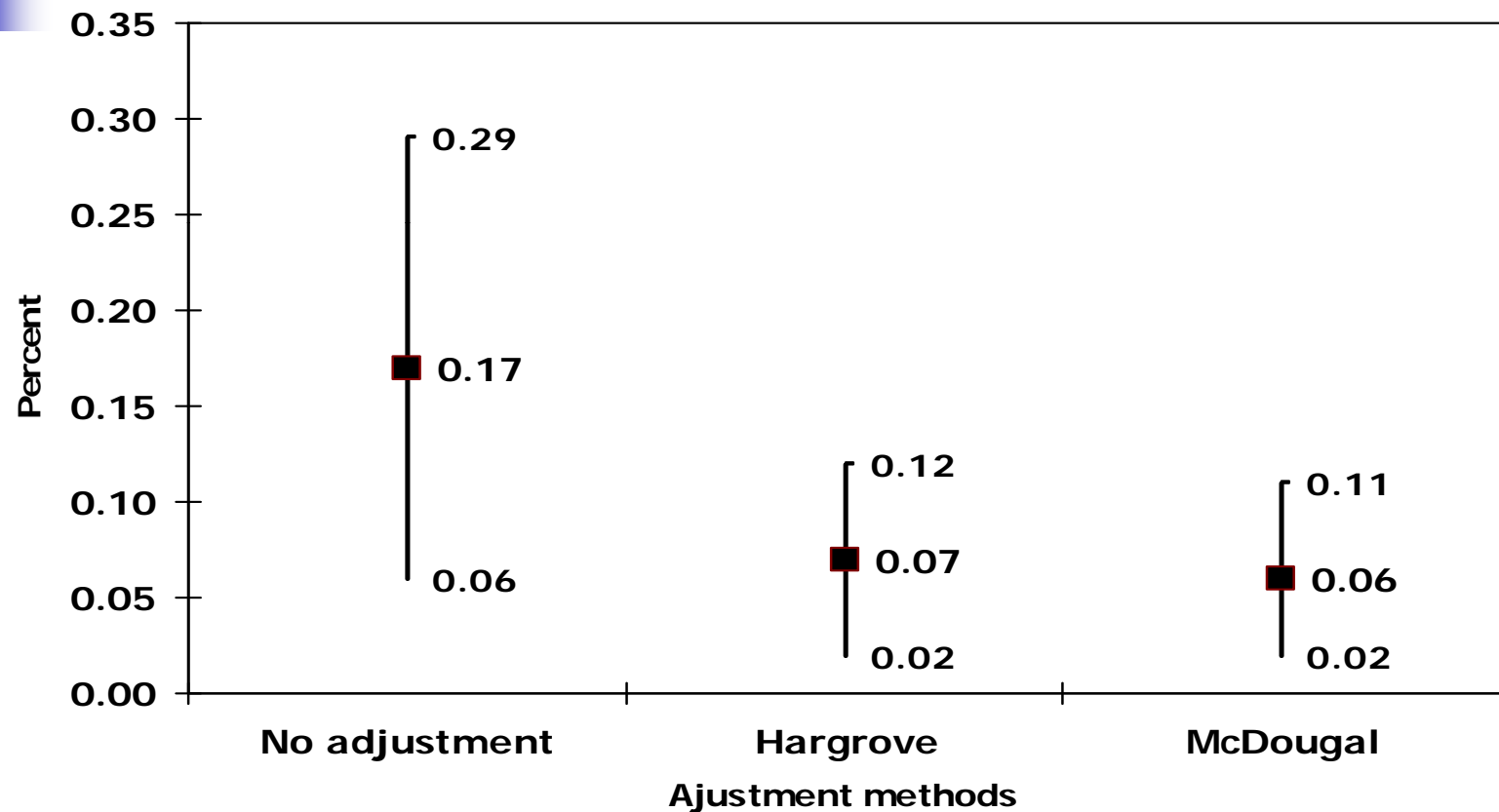
* With 95% confidence interval

Results: HIV incidence* among FSWs, by survey year



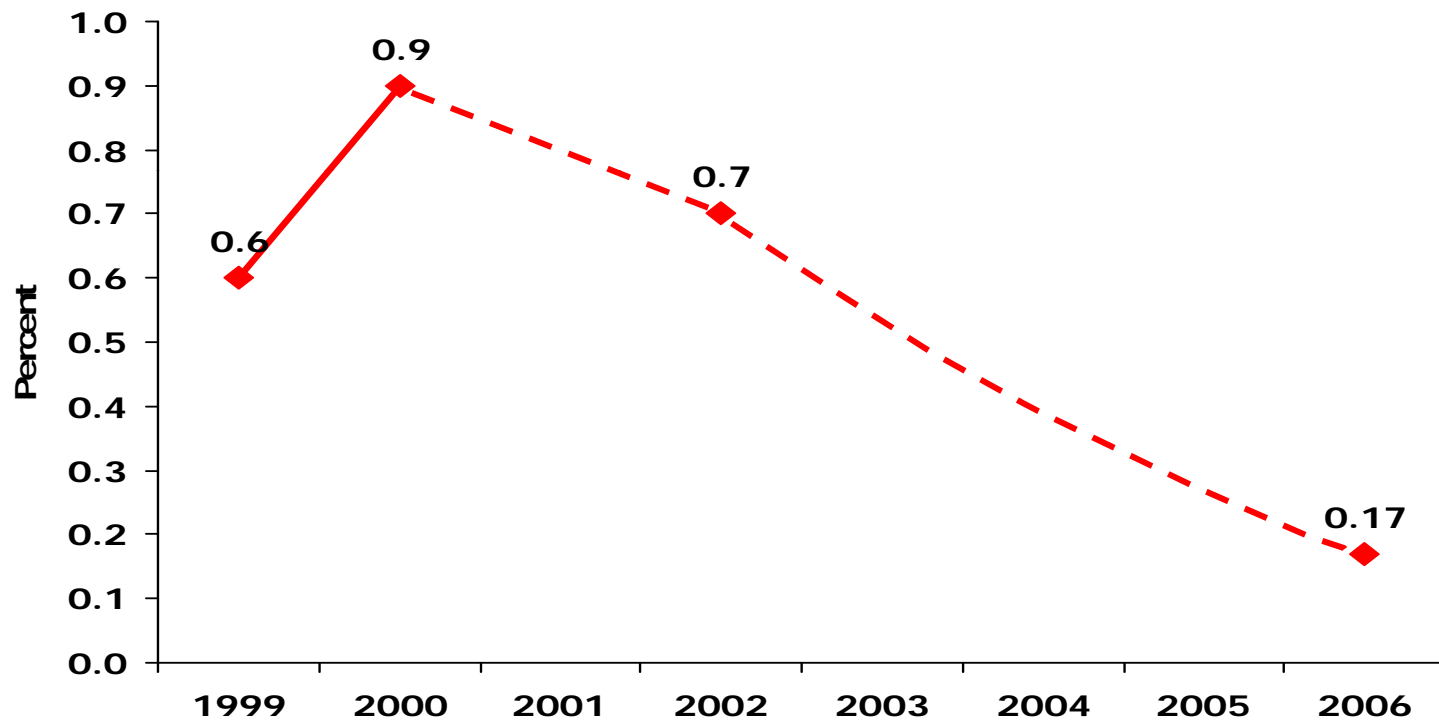
*Uncorrected incidence

Results: HIV incidence* among ANC women in 2006, by adjustment method



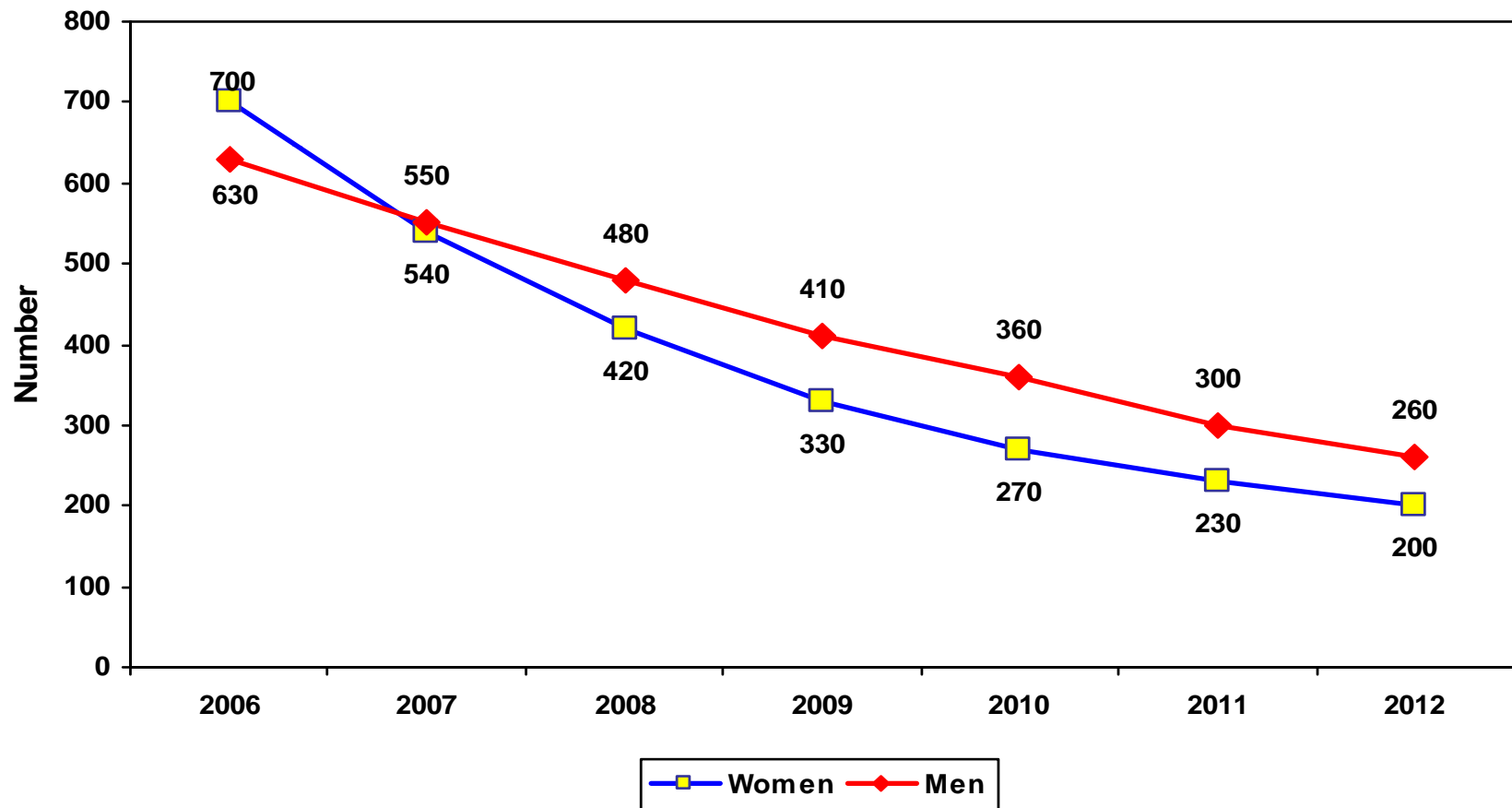
* With 95% confidence interval

Results: HIV incidence* among ANC women, by survey year



* Unadjusted incidence

Results: Projected new HIV infection among adult population aged 15+





Conclusions

- HIV prevalence has declined among both sentinel groups of female sex workers and pregnant women attending antenatal clinics
- Data* suggest that some female sex workers may already be infected with HIV when they start sex work or become infected almost immediately after starting
- HIV prevalence among pregnant women who attend provincial capital/urban ANCs has been consistently higher than among those who attend remaining district/rural ANCs
- HIV incidence has declined among both sentinel groups and it is estimated that among 100,000 pregnant women, 70 were newly infected in 2006.
- Although unadjusted HIV incidence among FSWs and ANCs is probably an over-estimate of true incidence, the declining trend and magnitude of the decline is consistent with prevalence data

*9% HIV prevalence among FSWs who had reported working for less than one year



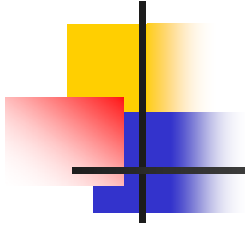
Recommendations

- Integrate testing for recent infection into all future rounds of HSS
- Maintain or improve adherence to quality assurance and capacity building for surveillance at provincial level
- Continue to use dried blood spot specimens in future HSS rounds because of simplicity in preparing, processing and storing
- Maintain current interventions among most at risk populations—despite declining prevalence and incidence among both sentinel groups, this step will be crucial in preventing further spread of HIV and another wave of the epidemic



Acknowledgements

- National Center for HIV/AIDS, Dermatology and STDs (NCHADS)
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 - World Health Organization



Thank You