Increasing HIV Prevalence among Injection Drug Users in St. Petersburg, RF

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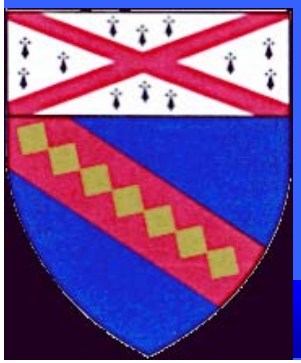
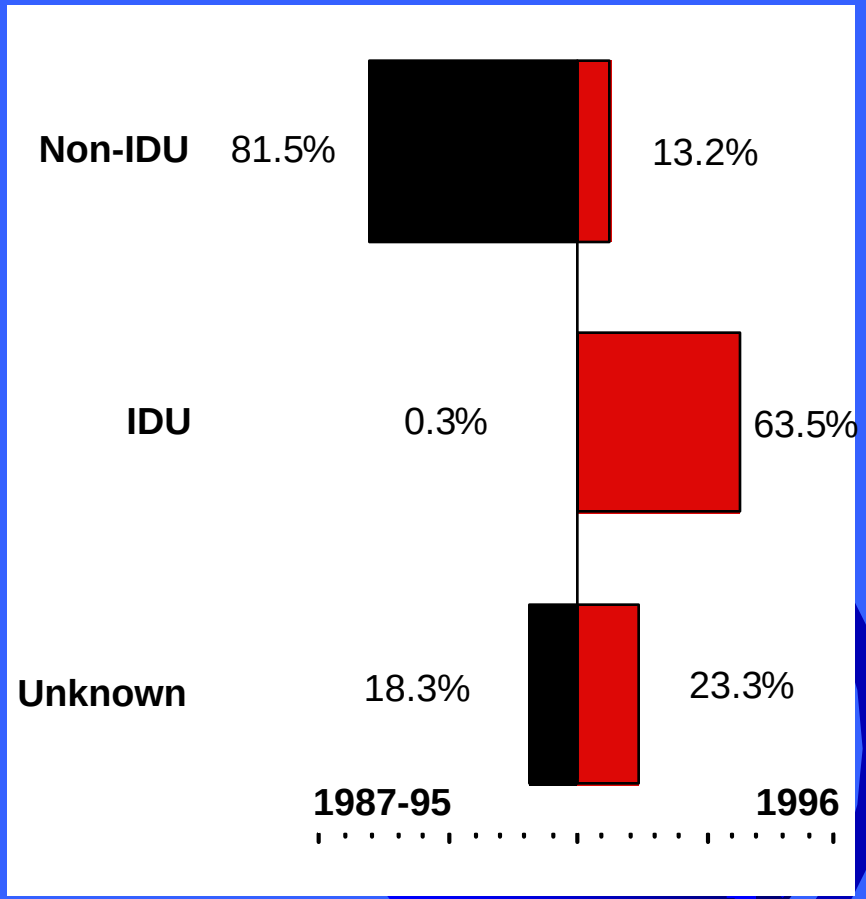
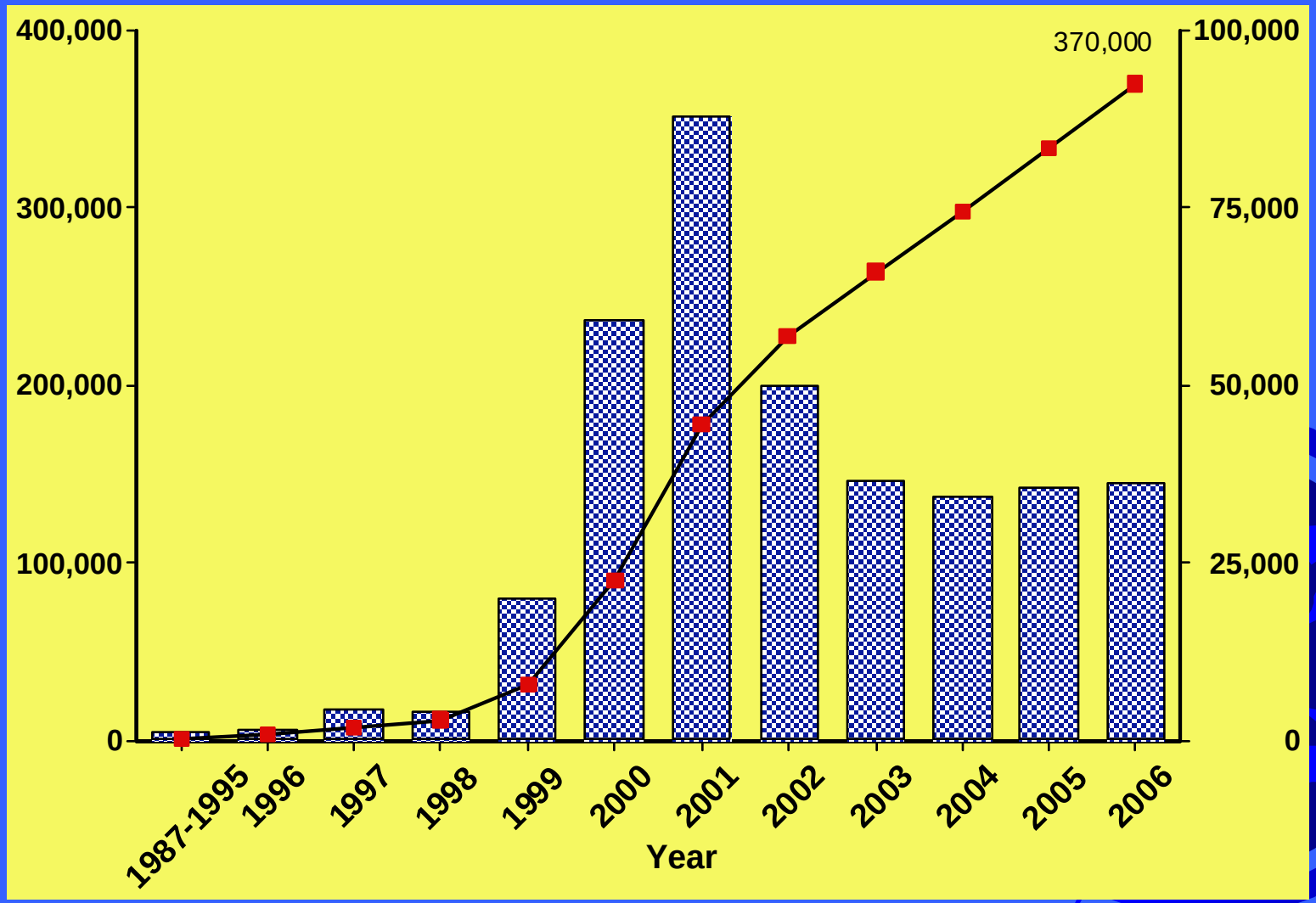


Origins of the HIV Epidemic in Russia

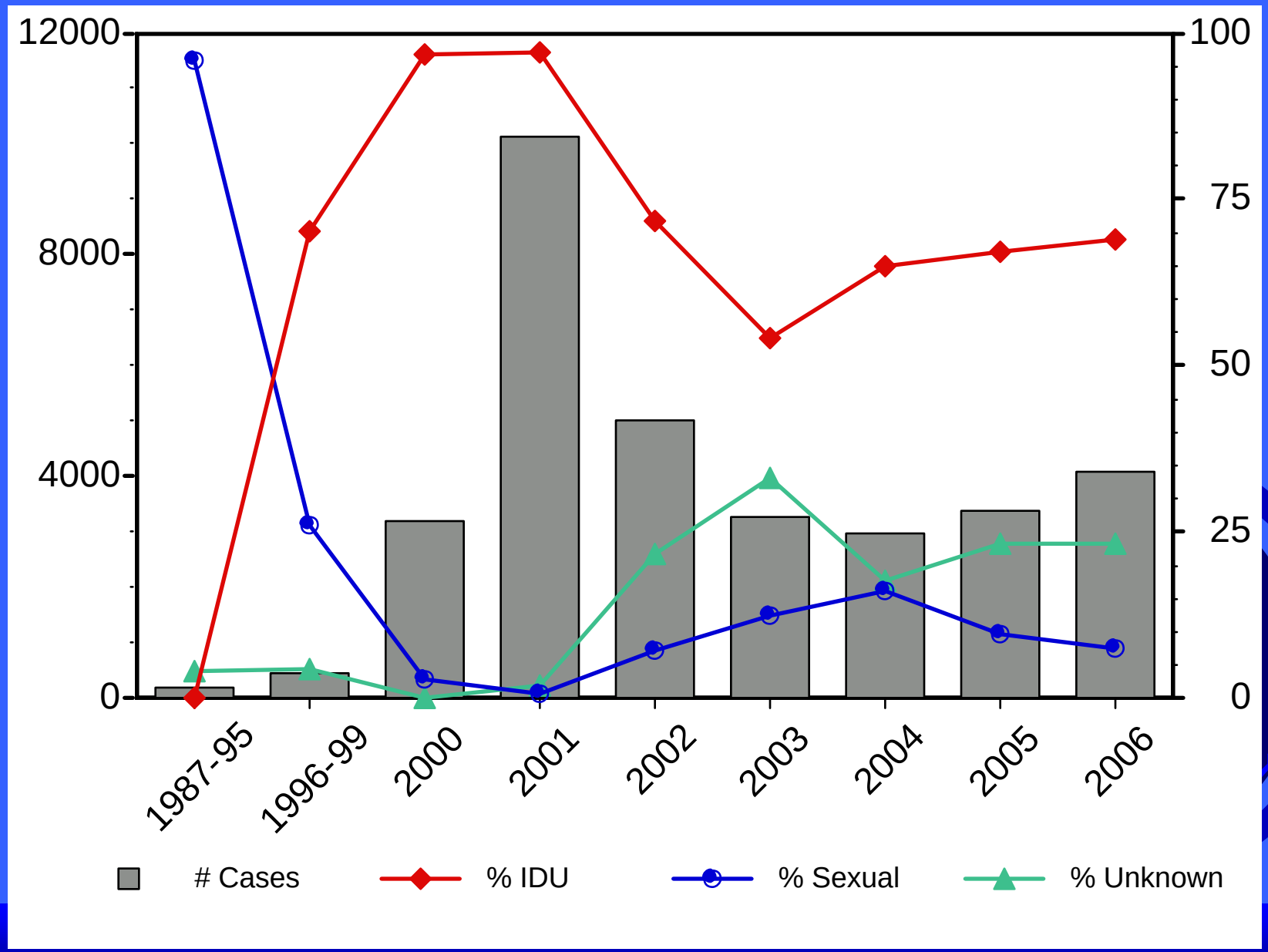
- First case of HIV identified in 1987.
- Millions of tests conducted annually after 1990.
- First thousand cases between 1987 and 1995.
- A thousand new cases identified in 1996.



HIV Cases in the Russian Federation



HIV Cases in St. Petersburg



HIV Prevalence in IDUs

- Estimates from biased convenience samples obtained in 1998, 2000, 2001 at syringe exchange program saw increases from 2% to 11% to 19%.
- Syringe exchange program hampered by lack of funding, municipal support, and police opposition.

Better Sampling of IDUs: 2002 and 2006

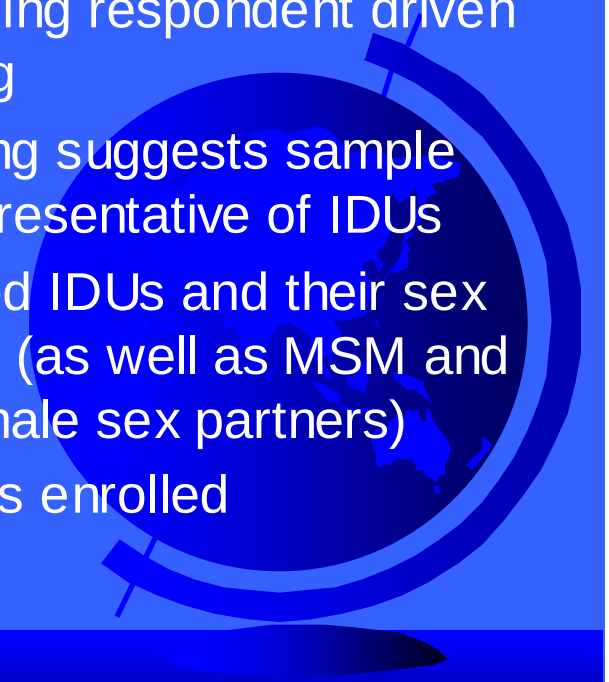
- Samples of IDUs obtained in studies funded by the HIV Prevention Trials Network (HPTN033) and the National Institute on Drug Abuse (SATHCAP)

HTPN033

- Designed to recruit a cohort for seroincidence studies
- Mixed recruitment using venue-based, street outreach, and chain referral
- 900 IDUs screened; 520 enrolled
- Geographically, IDUs were randomly scattered

SATHCAP

- Designed a a cross-sectional study using respondent driven sampling
- Weighting suggests sample was representative of IDUs
- Recruited IDUs and their sex partners (as well as MSM and their female sex partners)
- 387 IDUs enrolled



HPTN033 Prevalence and Incidence

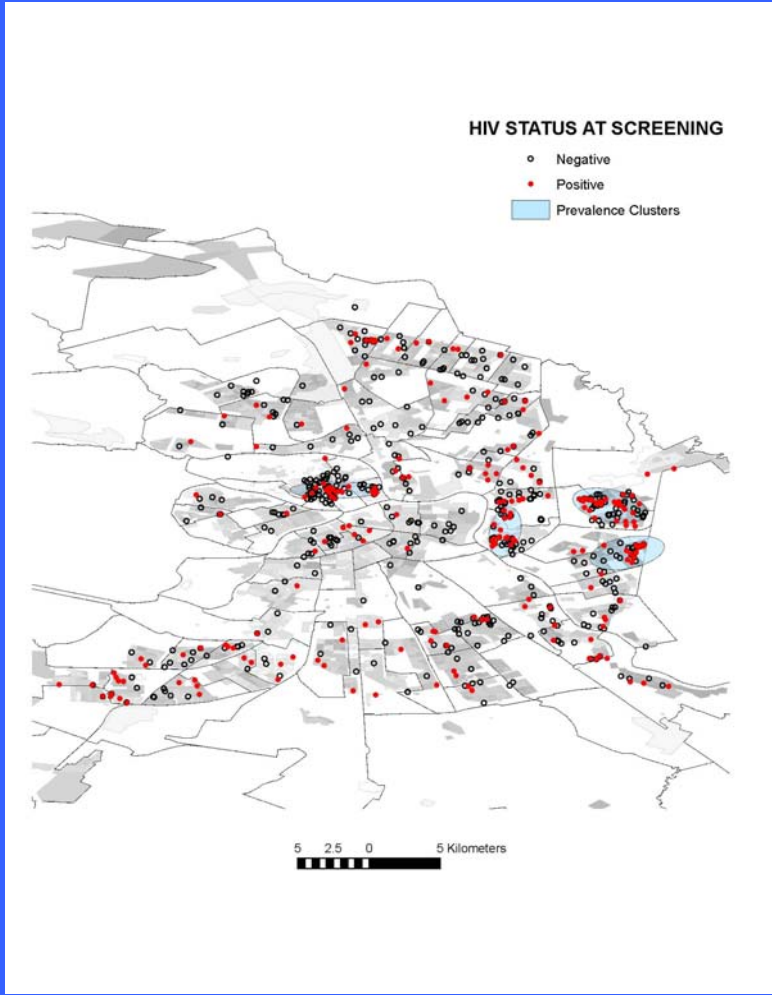
	Screened (900)	**Enrolled** (520)
HIV prevalence	30%	0%
Male	71%	70 %
Median Age (range)	24.0 (17 – 42)	24.5 (17 – 42)
Single	68%	67%
Education: With university/vocational school	49%	50%
Employment: Unemployed	43%	43%
Housing: Stays with parents/relatives	70%	68%
Used needle/works after someone else	35%	34%
Used needle after someone HIV+	< 1%	1%
Shared rinse water, cooker, or cotton	75%, 78%, 74%	75%, 78%, 74%
Used front/back-loaded drugs	60%	59%

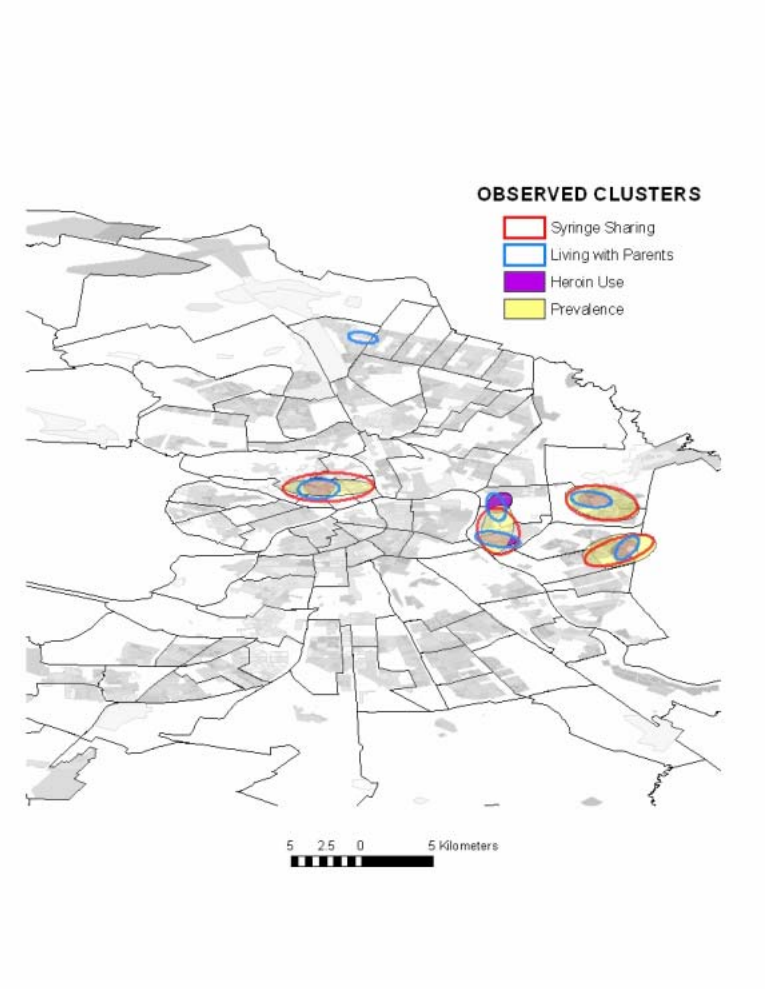
# HIV seroconversions:	20/520 (8 at 6 month visit)
Estimate of HIV incidence:	**4.5** per 100 person years (95% CI:2.4-6.7)
Factors significantly associated with incidence:	**Injection of amphetamines (OR ~ 8.0)**

Limitations of Traditional Epidemiology

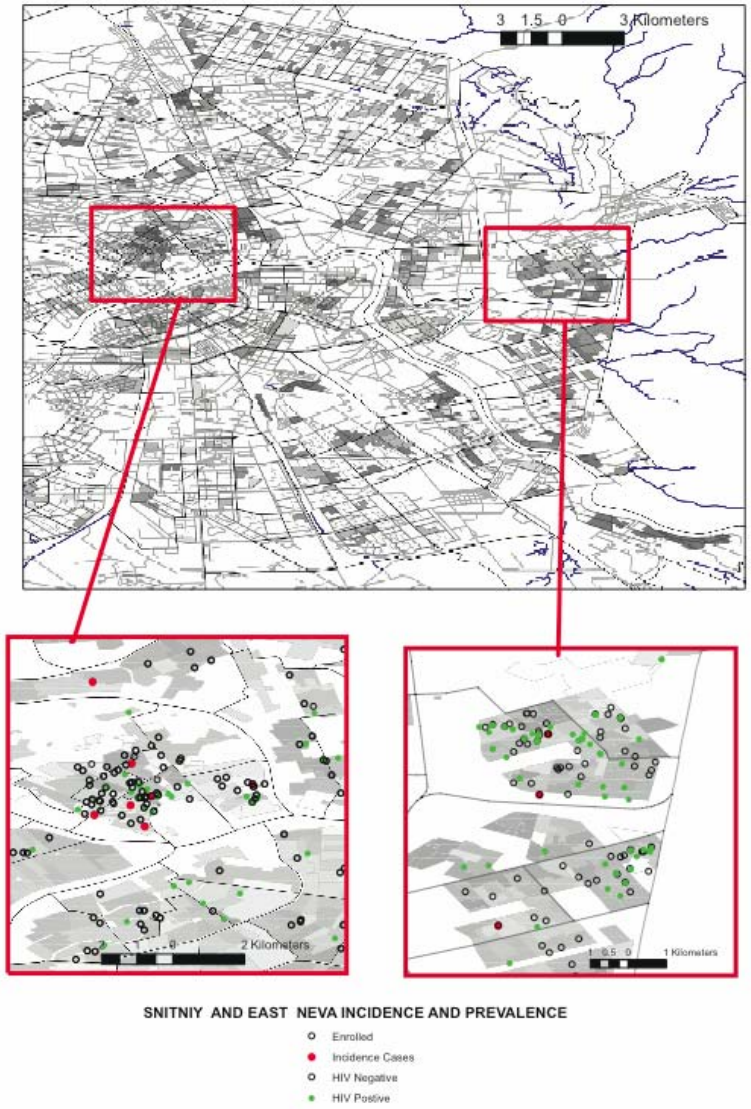
- No risks behaviors associated with the prevalent HIV cases in the HPTN033 study.
- Association of prevalent cases with age resulted from no infections in anyone over 30.
- Nothing about association of incidence with methamphetamine use “explains” finding.
- No variables in common between prevalent and incident cases.

Mapping Prevalence in 2002





Incident Cases in the HPTN033 Cohort



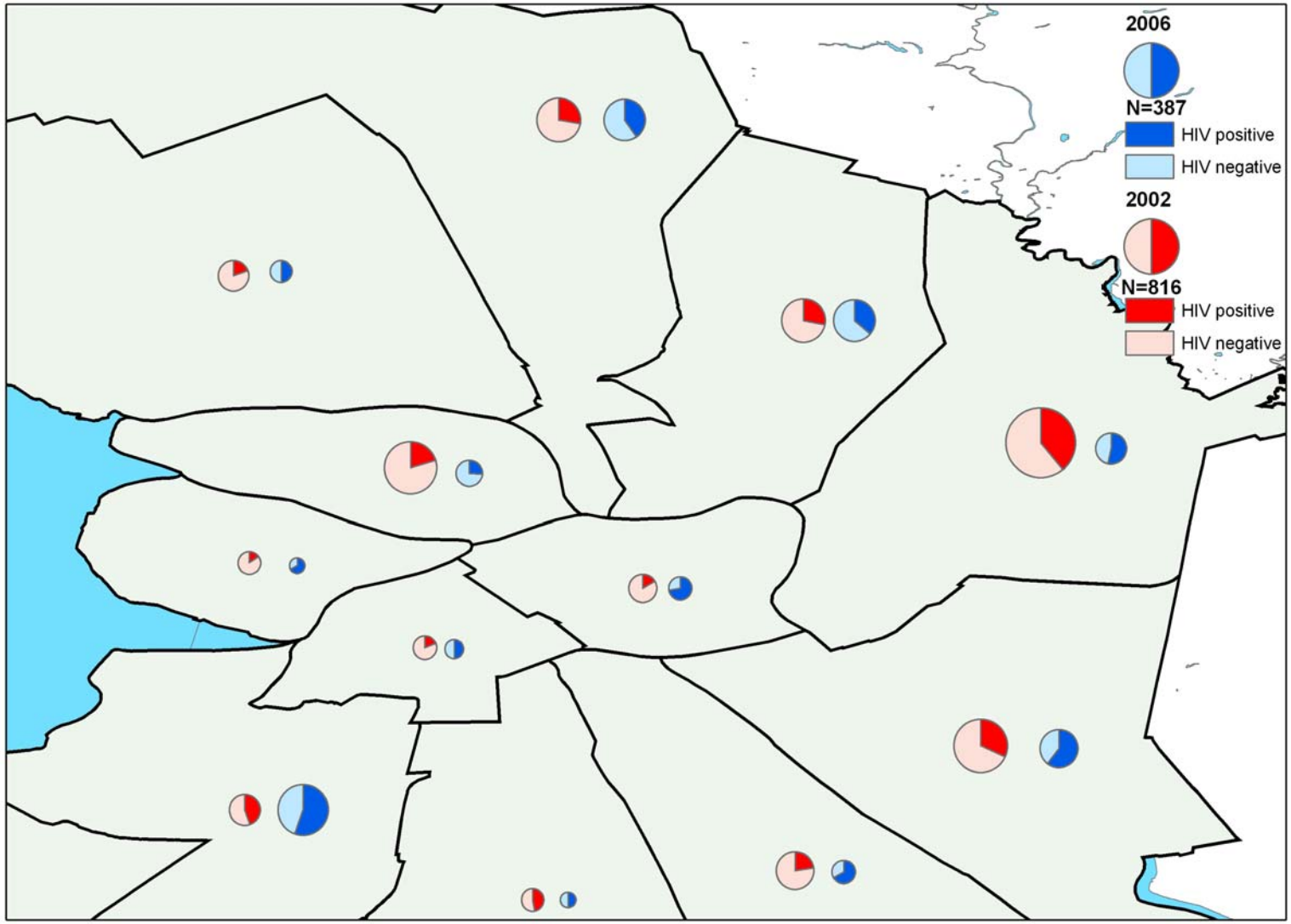
- We mapped 18 of 20 incident cases recorded in 2003.
- Incident cases were not themselves clustered -- too few for statistical significance.
- 10 mapped in or adjacent to the prevalence clusters.

SATHCAP HIV Testing Results -- 2006

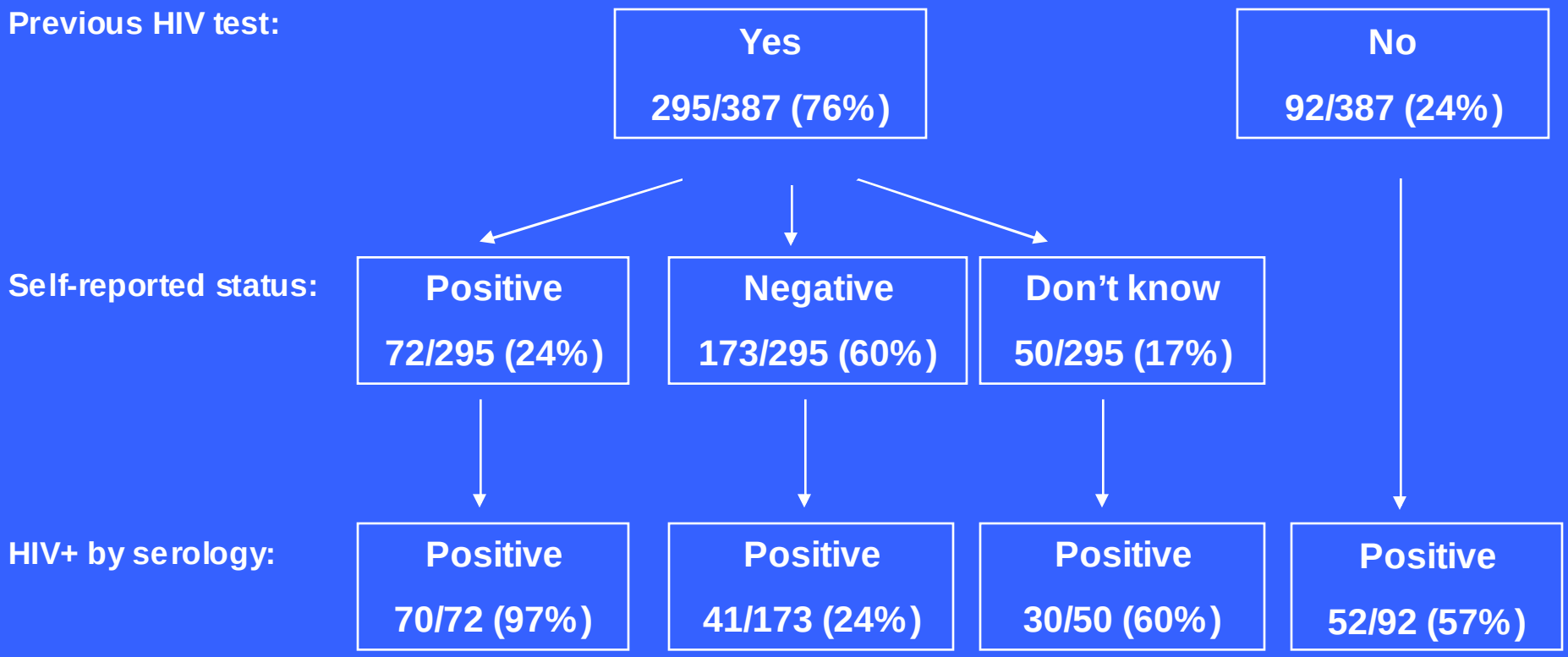
- Drug use is overwhelmingly by injection -- 387 of 416 drug users were injectors.
- IDUs and MSM are young-- median age late 20's.
- HIV prevalence in bridge populations is high.

	IDU	Non-IDU drug user	IDU sex partner	MSM	MSM/IDU	MSM/DU
# tested	382	18	45	64	5	11
% HIV+	50%	0%	16%	18%	60%	27%

Comparing Prevalence: 2002 HPTN033 vs. 2006 SATHCAP



IDUs Have Poor Knowledge of Their HIV Serostatus

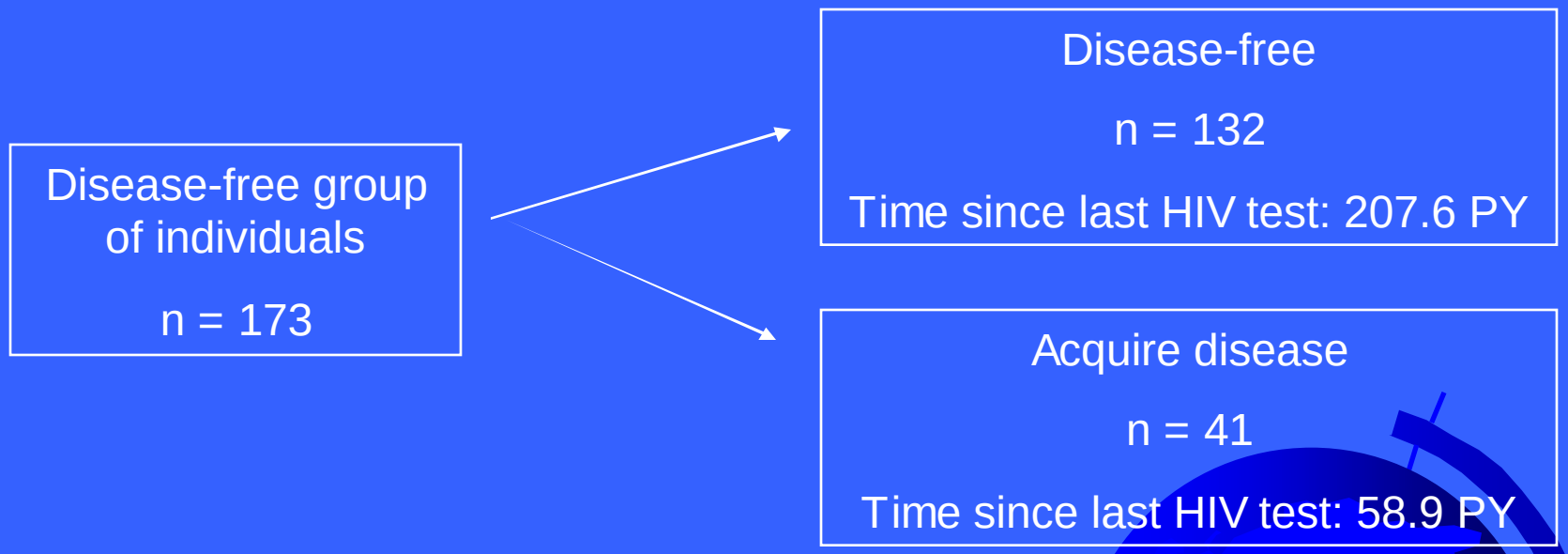


Sensitivity of self-report for true HIV status: 70/192 = 36%

Two Methods for Estimating Incidence

- Retrospective cohort
  - Takes into account self-reported prior HIV testing and HIV status.
  - Involves all people who reported themselves negative at last test.
- BED testing
  - Takes into account all people with HIV positive test from SATHCAP testing.
  - Involves second EIA to detect those likely to have had a recent HIV infection.

Estimating HIV Incidence Using a Retrospective Cohort Method



Total amount of retrospective follow-up time = 207.6 + (0.5) (58.9) = 237.1 PY

$$\text{IR} = \frac{\text{41 new cases}}{\text{237.1 PY}} * 100 = \text{17.3 per 100 PY (12.1, 22.6)}$$

Estimating Incidence Using the BED Assay

- BED assay detects increasing levels of HIV antibodies soon after seroconversion that can be used to detect recent HIV infection (past 155 days).
- 27 IDUs in our sample were potentially recently infected.
- HIV incidence estimate based on these results is:

IR = 28.3 per 100 PY (17.5, 38.8)

Conclusions

- As of 2006, half of IDUs in our sample is infected with HIV and prevalence will continue to increase since incidence rates may be 17%-22% per year.
- Much more active prevention programs that target IDUs and their environment need to be established in St. Petersburg.
  - Barriers to HIV testing need to be addressed.
  - Active prevention for the core groups (IDUs and MSM) and their bridges to the general population needs to be enhanced.
  - More research is needed on factors associated with initiation of injection drug use among St. Petersburg youth.

Acknowledgements

HPTN003

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SATHCAP

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