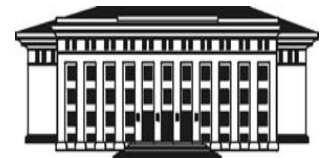


Use of HIV/AIDS Surveillance Data for Program Planning and M&E



M&E Seminar
AIDS Action Europe
23-26 November 2006



**Andrija Štampar School of
Public Health**

Key questions in M&E

- **Are we doing the right thing?**
- **Are we doing it right?**
- **Are we doing it on a large enough scale to make a difference?**

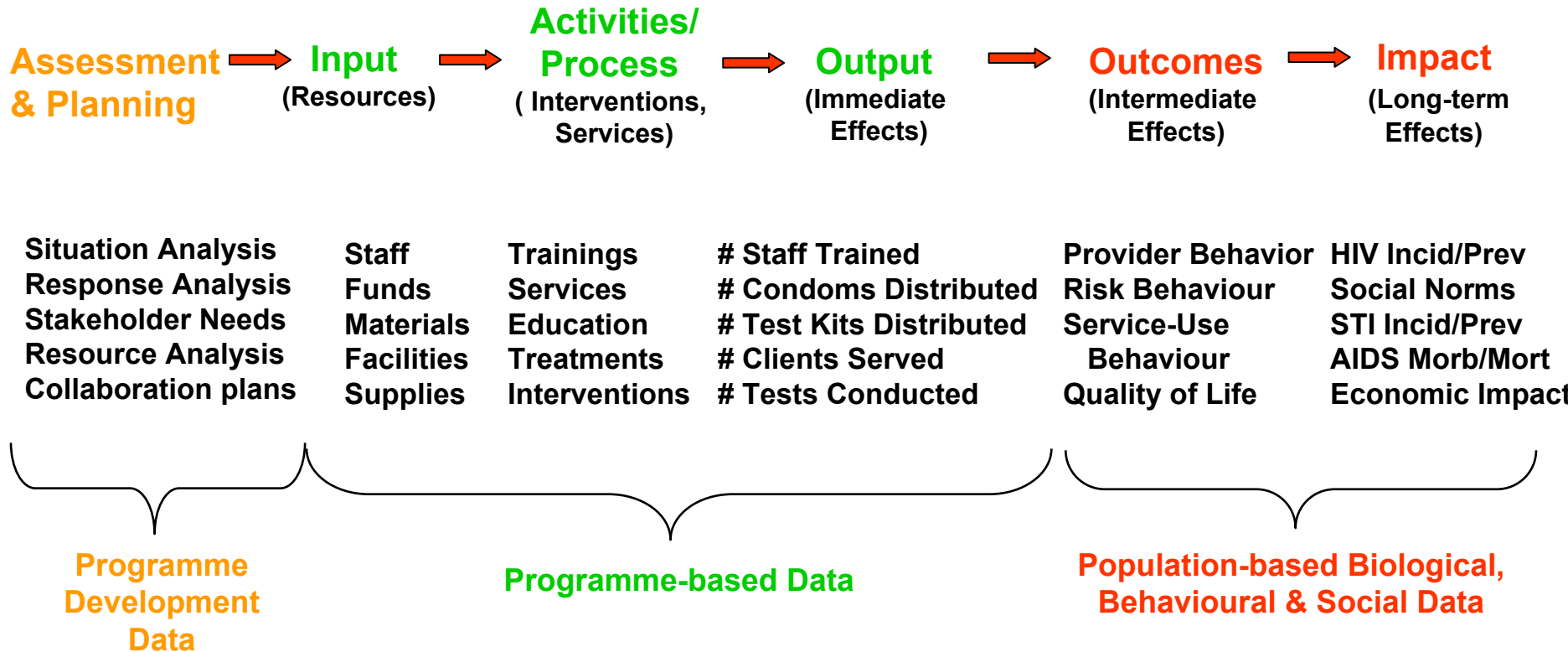
What is Monitoring and Evaluation (M&E)?

- ✓ **Monitoring** – ongoing, routine, recurrent, day-to-day assessment of ongoing activities/progress
- ✓ **Evaluation** – episodic/periodic assessment of overall achievements

Levels of M&E

| Level | Description |
|------------------------------|--|
| Inputs | People, training, equipment and resources put into a project |
| Processes Outputs | Activities or services delivered Quality, unit costs, access and coverage of services delivered |
| Outcomes | Changes in behaviours or skills |
| Impacts | Measurable health impacts, particularly reduced STI/HIV transmission and AIDS illness |

M&E Levels and Illustrative Data Types



How are Different Levels Measured? (1)

| Level | Component |
|-----------------|--|
| Impacts | Surveillance – <i>biological</i> |
| Outcomes | Surveillance – <i>behavioural</i> |
| Outputs | Programme activity monitoring |
| Inputs | Programme monitoring Financial monitoring |

FRAMEWORK for Monitoring & Evaluation

Input → Process → Output → Outcome → Impact

People
Money
Equipment
Policies
etc.

Training
Logistics
Management
IEC/BCC
etc.

Services
Service use
Knowledge

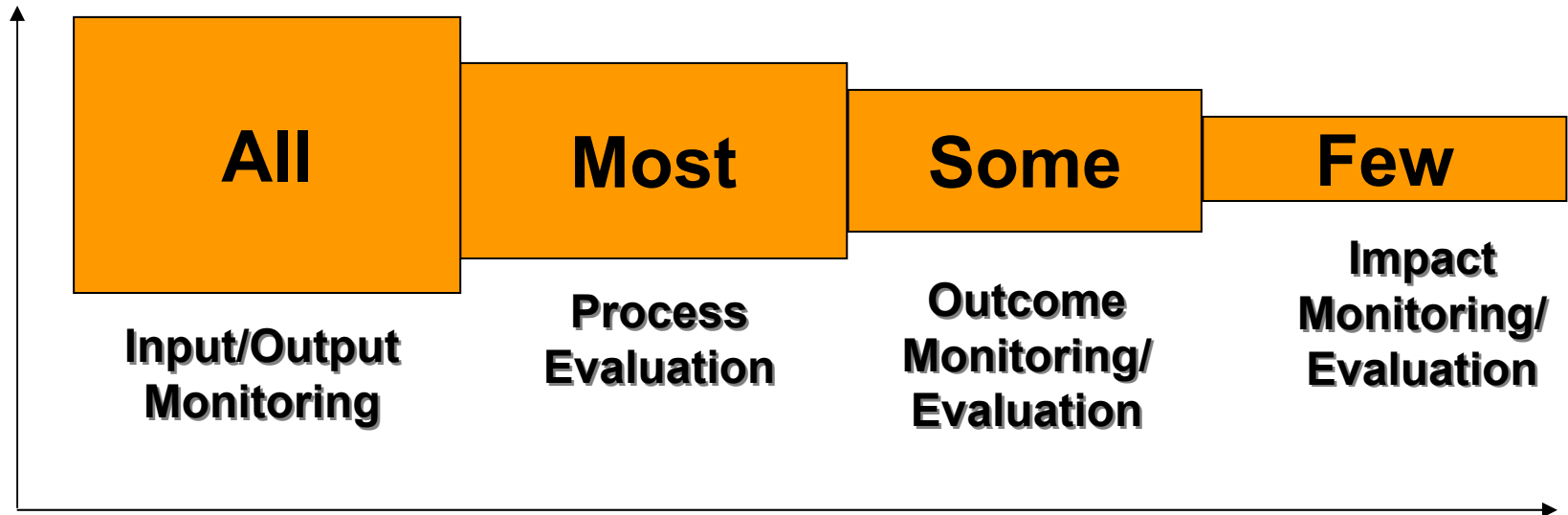
Behavior
Safer
Practices
(population
level)

HIV/STI
transmission
Reduced
HIV impact

GFATM: “Process”, “Coverage” and “Impact”

M&E: Who should do what?

Monitoring & Evaluation Pipeline



Levels of Monitoring & Evaluation

How are Different Levels Measured? (2)

| Level | Component |
|-----------------------------------|-----------------------------|
| Impacts Outcomes | Surveillance |
| Outputs Inputs | Programme Monitoring |

Definition

‘The **continued** watchfulness over the distribution and trend of incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and relevant data together with **timely** and **regular dissemination** to those who need to know.’

Langmuir 1963

not a survey (avoid)

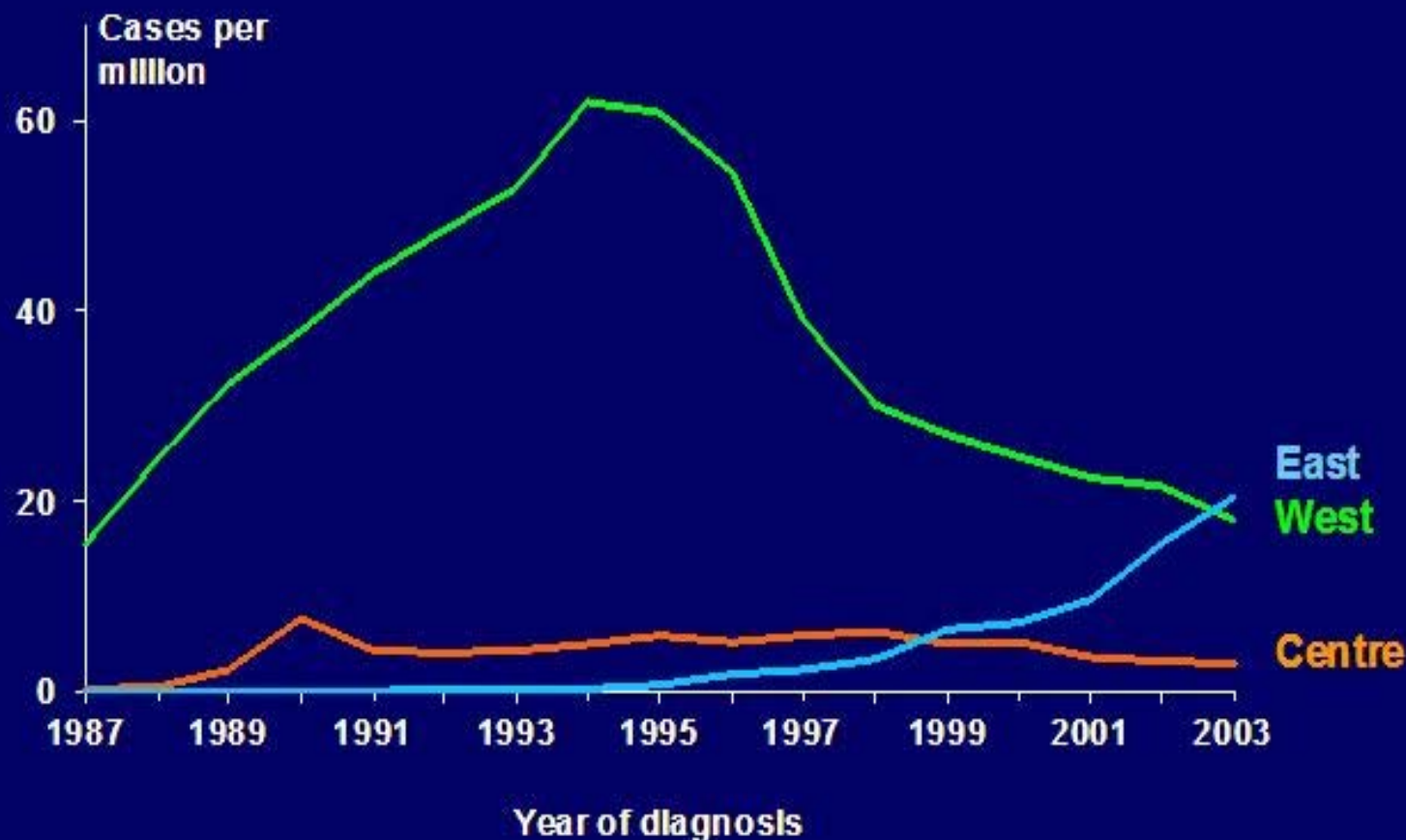
not an epidemiological study (avoid)

Three ones???

Caution

- Surveillance systems are not designed to monitor single interventions
- Changes will rather be attributed to comprehensive national program

AIDS incidence per million population, by geographic area, 1987-2003, WHO European Region

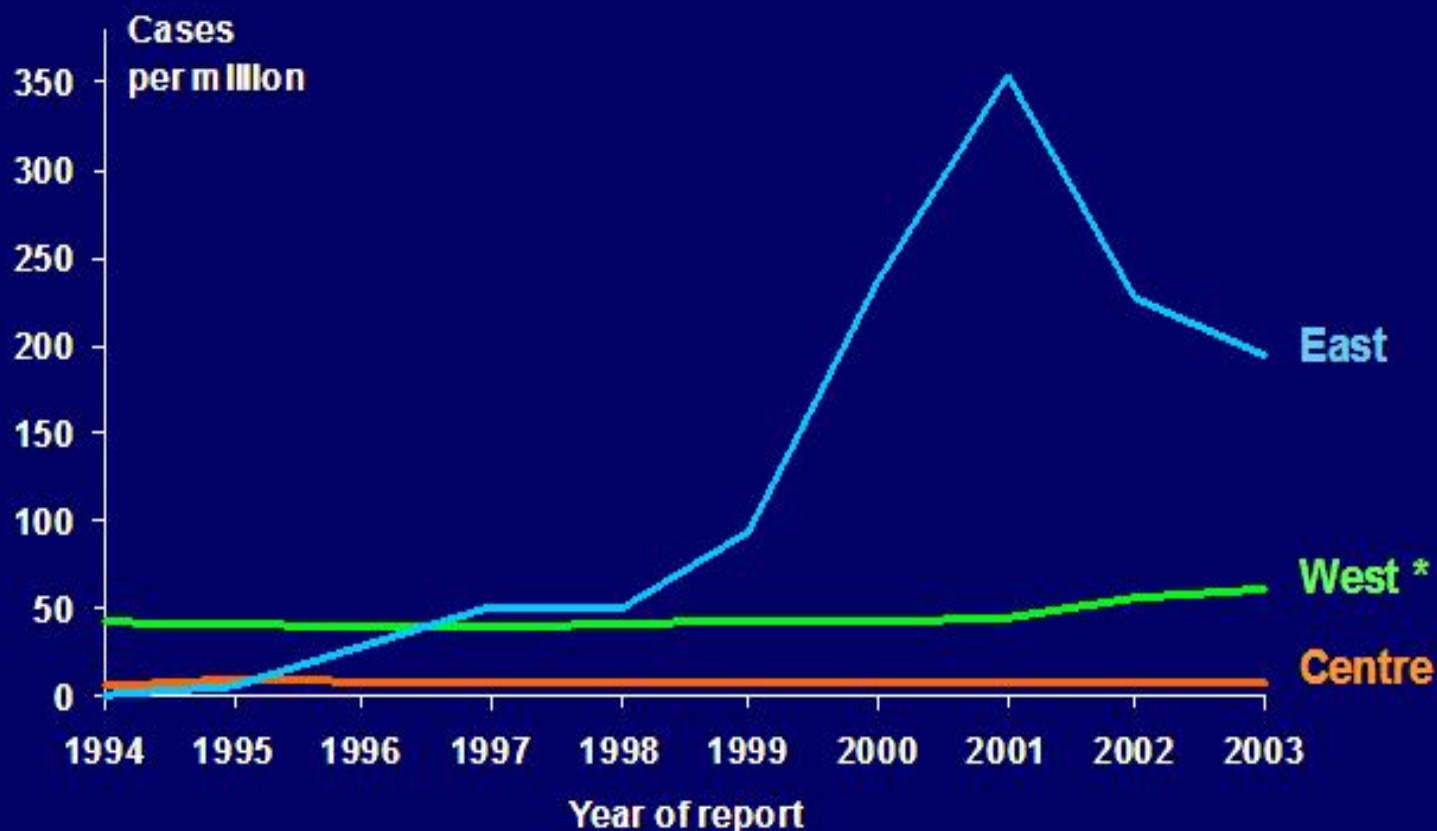


Update at 31 December 2003

Data adjusted for reporting delays

EuroHIV

HIV infections newly diagnosed per million population by year of report (1994-2003) and geographic area WHO European Region*



Update at 31 December 2003

EuroHIV

* Austria, France, Italy, Netherlands, Portugal, Spain excluded: national data not available for the whole period

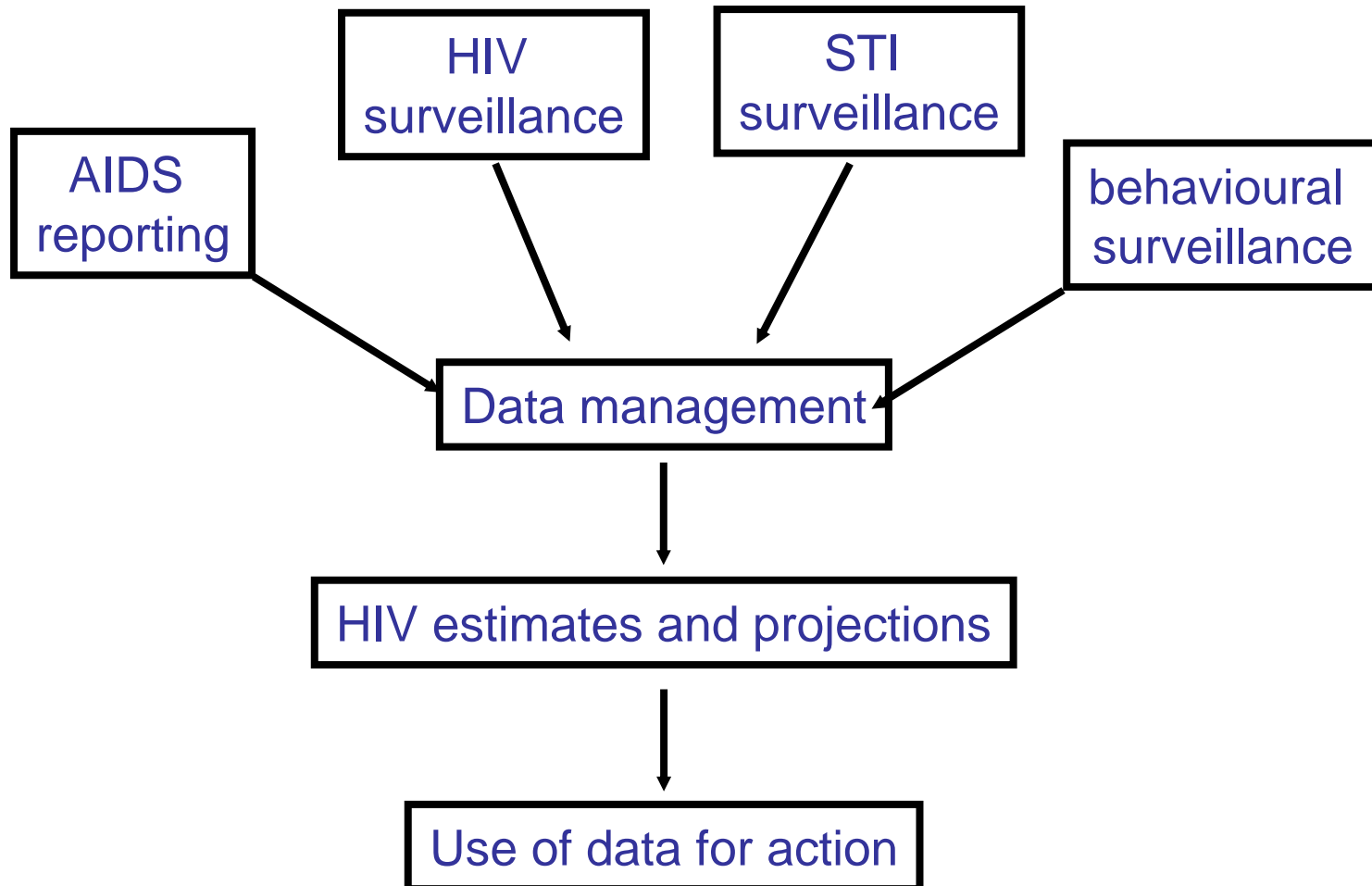
Lessons learned from first generation surveillance

- Epidemics does not follow the same course in all societies
- Affects different geographical areas and sub-populations in different ways and times
- Lacks information to understand different epidemics
- Fail to provide data required for program planning and M&E

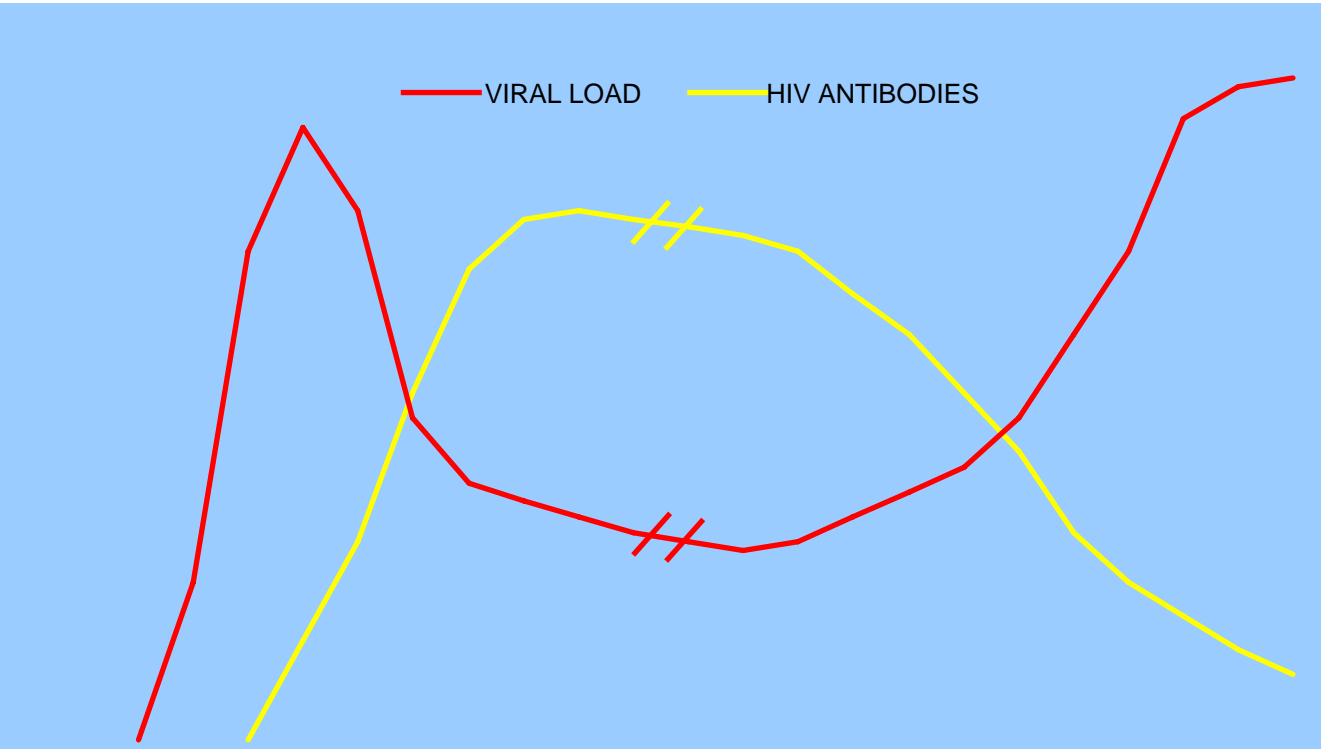
Public Health Surveillance of HIV

The collection, analysis and dissemination of epidemiological information of sufficient accuracy and completeness regarding the distribution and spread of HIV infection to be relevant to the planning, implementation and monitoring of HIV/AIDS prevention and control programmes.

2nd generation HIV surveillance



| | | | | |
|------------------------|-------------------------------|--------------------------------|---------------------------|----------------|
| “RISK” SURVEILLANCE | HIV INCIDENCE SURVEILLANCE | HIV PREVALENCE SURVEILLANCE | AIDS CASE SURVEILLANCE | AIDS DEATHS |
|------------------------|-------------------------------|--------------------------------|---------------------------|----------------|



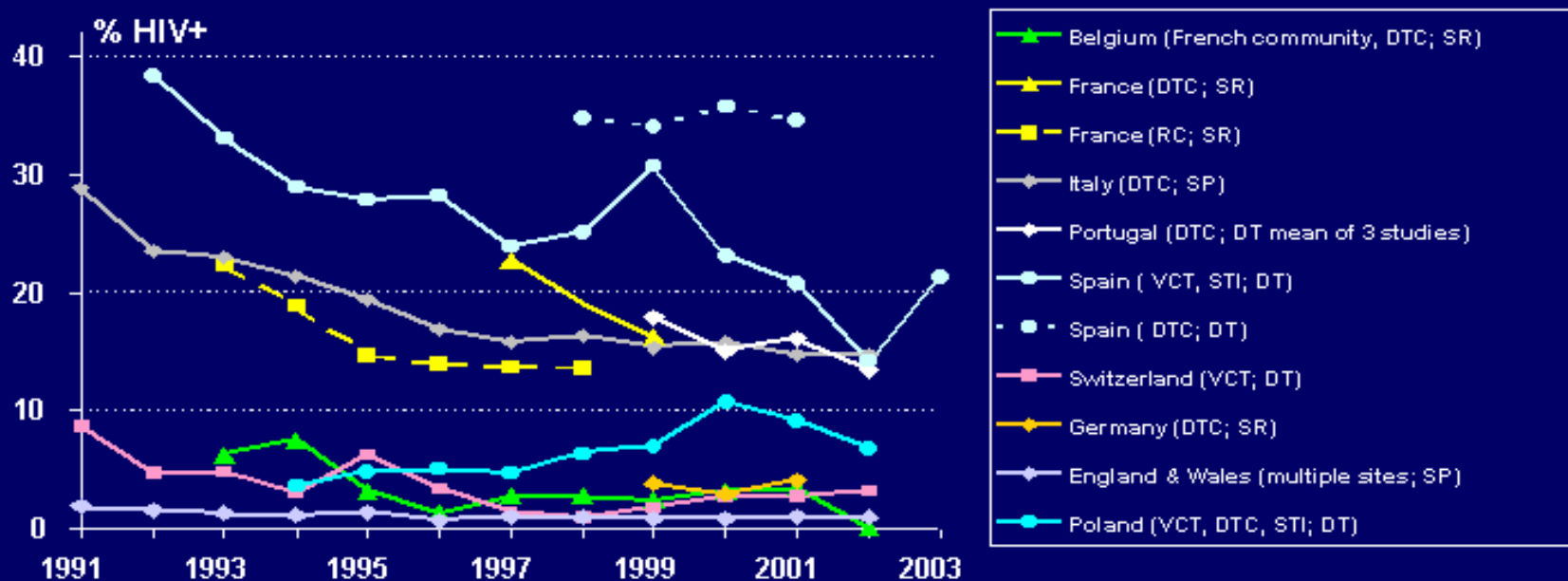
INFECTION “WINDOW” PERIOD ASYMPTOMATIC PERIOD HIV ILLNESS or AIDS DEATH

HIV Sentinel Surveillance

- Repeated cross-sectional HIV prevalence studies in **selected population groups** at **selected sites**
- Trends of HIV infection are monitored over time, by group and by place or site.
- Results can be applied confidently only to the selected population and sites surveyed.
- Passive versus active surveillance
- Community(population)-based (e.g.:CSW, IDU, MSM)
- Clinic/health facility based (e.g.: ANC, STI, TB)

Service based HIV Surveillance - example

HIV prevalence (%) among injecting drug users: prevalence studies and diagnostic testing, western and central Europe, 1991 -2003



EuroHIV

SR = Self reported HIV status
SP = Seroprevalence studies
DT = Diagnostic testing

DTC = Drug treatment centres
RC = Residential centres for ex -drug users
Multiple sites = DTC, needle exchange programmes, lowthreshold

VCT = HIV voluntary counselling & testing centres
STI = STI clinics
services for drug users, street, hospitals

Indicators that we receive from surveillance

- Biological: HIV prevalence in particular sub populations
- Behavioral: risk behaviors in particular sub populations

Community based surveillance

- Repeated cross sectional studies in particular populations of interest.
- Involve sampling of population of interest
- Provides comparable values for indicators studied over time
- The data can be representative for the studied population
- Representativeness will depend on applied sampling method

The primary goal...

**...is to be able to generalize findings -
from our sample to the specific
population (i.e. IDUs in prisons, sex
workers in brothels...)**

**In other words, we want our sample to
be *REPRESENTATIVE***

Types of Probability Samples

- ***In case of “fixed” populations:***
 - Simple random sample
 - Systematic sample
 - Stratified sample
 - Cluster sample
- ***In case of “floating” populations:***
 - Time-location sampling
 - Respondent driven sampling

Sampling Frame

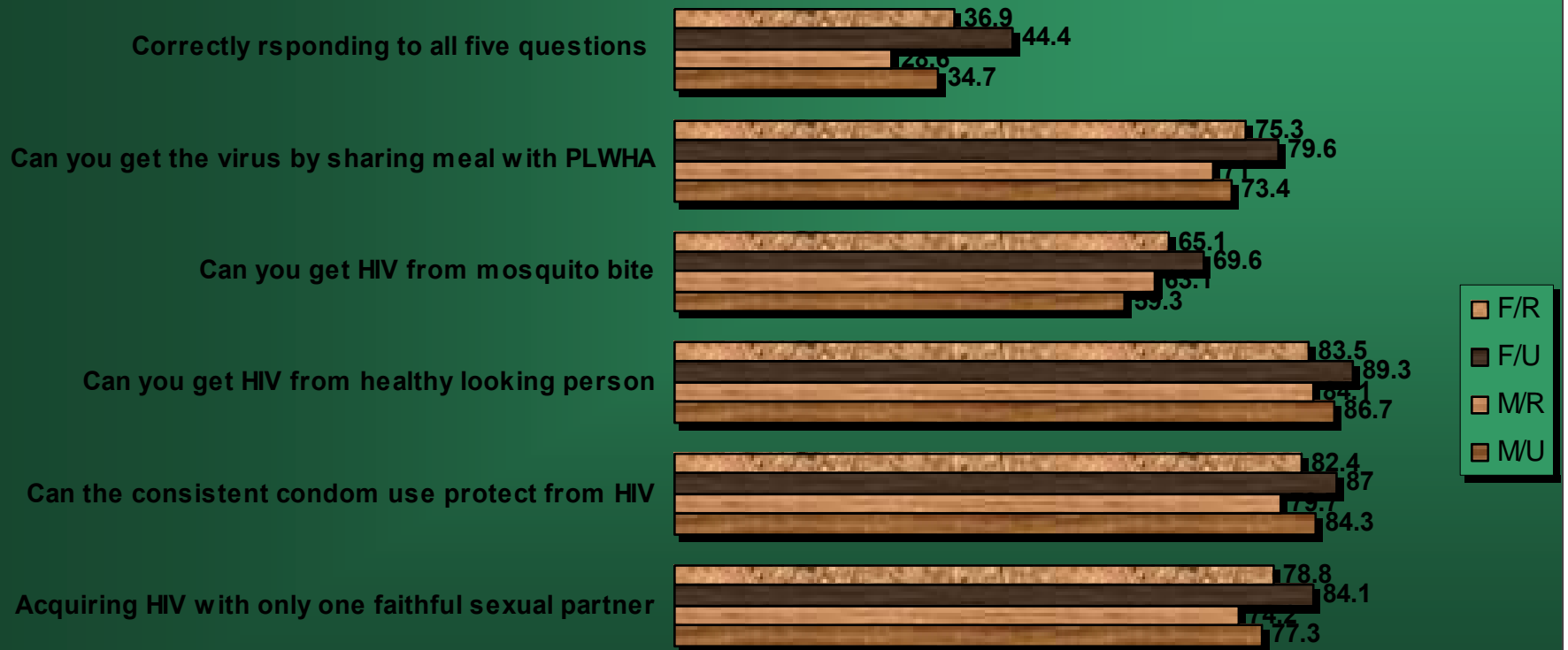
Requirement for any form of probability sample is the existence of a sampling frame. Respondents are selected from the sampling frame.

What is a sampling frame?

- A list of **ALL** members of the population of interest (i.e. voting register).
- If no list exists, then the sampling frame is some equivalent procedure for identifying the persons in the population of interest.
- In case of hard-to-reach populations sampling frame development involves specific research (**mapping**)

Probability sample of fixed populations

Percentage of young people who both correctly identify ways of HIV prevention and reject major misconceptions about HIV



Source: Stulhofer et al.: Nationally representative survey on sexual behaviors among 18-24 years old, 2005

Probability Sampling of “Floating” Populations

- Two strategies:
 - Time-location sampling (TLS)
 - Respondent driven sampling (RDS)

Time-location sampling

- A form of 2-stage cluster sampling.
- Used to improve the generalisability of samples of “floating” hard-to-reach populations
- Requires a list of locations * times (*clusters or PSUs*) as a sampling frame and an estimate of the total number of population members who appear at certain location during certain time (*measure of size*)
- Information is collected by interviewing all or a (randomly selected) group of individuals present at the site/venue at certain time.

Time/location or time/space sample designs. Two-Stage Design

Sampling frame: List of locations at different times

Stage I: time-location clusters are selected at random from the sampling frame



Stage II: a fixed number of individuals is selected from each time-location cluster

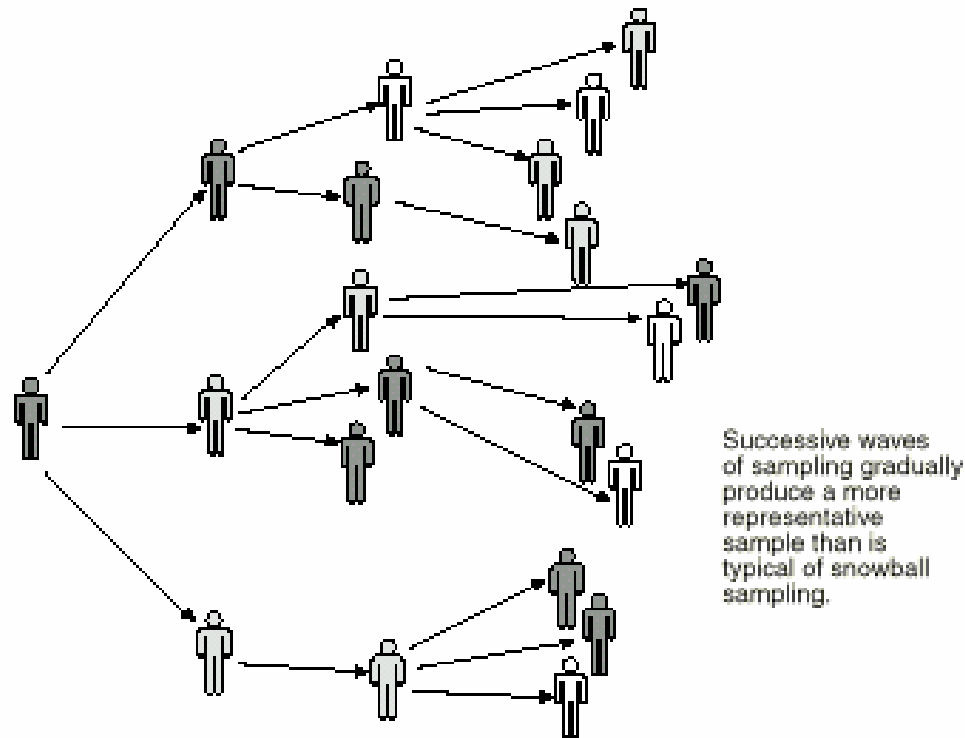
Respondent Driven Sampling (RDS)

- Derived from chain-referral (network) sampling
- It has higher external validity than snowball or targeted sampling
- The differences are that "seeds" network sizes are controlled for, as well as the effect of choice of seeds (*post-stratification method*; Heckathorn, 1997)
- This enables longer recruitment chains and better "reach" of the sample
- Potentially cost-effective tool for behavioral surveillance of hard-to-reach populations

Snowball Sampling: Respondent-Driven Sampling

A more systematic version of snowball sampling that can reduce the potential for bias (gives financial incentives to respondents to recruit peers)

Exhibit 5.11 Respondent-Driven Sampling



Instructions to respondents:

"We'll pay you \$5 each for up to three names, but only one of those names can be somebody from your own town. The others have to be from somewhere else."

Coupon design example

Coupon for participation in the study

Coupon number:

Come with the coupon on working days between 3-7pm

from (dd.mm.gg)

untill (dd.mm.gg)

To avoid rushes please make a phone reservation on 091 92.69.779 on working days from 3-7pm. Don't forget to bring the coupon.

Referral center for AIDS, Hospital for Infectious Diseases - Mirogojska 8, Zagreb

Secondary incentive coupon

Coupon number:

For each participant you refer to this research (up to 3 persons) you will get incentive which can be paid 3 weeks from issuing date of this coupon on working days from 2-3pm.

For more information call 091 92.69.779 on working days between 3-7pm or visit www.rds-istrzivanje.com website.

Referral center for AIDS, Hospital for Infectious Diseases - Mirogojska 8, Zagreb

Please come with this coupon, and if you fullfill eligibility criteria for participation in research, you will be given:

- money incentive of 100 kn for filled questionnaire and anonymous testing on HIV and other STI's from blood and urine
- free information about HIV and STI's
- results from all tests and counseling about possible treatments

This coupon won't be accepted if:

- it has expired
- participant has already participated in this research

For more information please call 091 92.69.779 every working day from 3-7pm or visit the www.rds-istrzivanje.com website.



You will get incentive for each person you direct to the research if he:

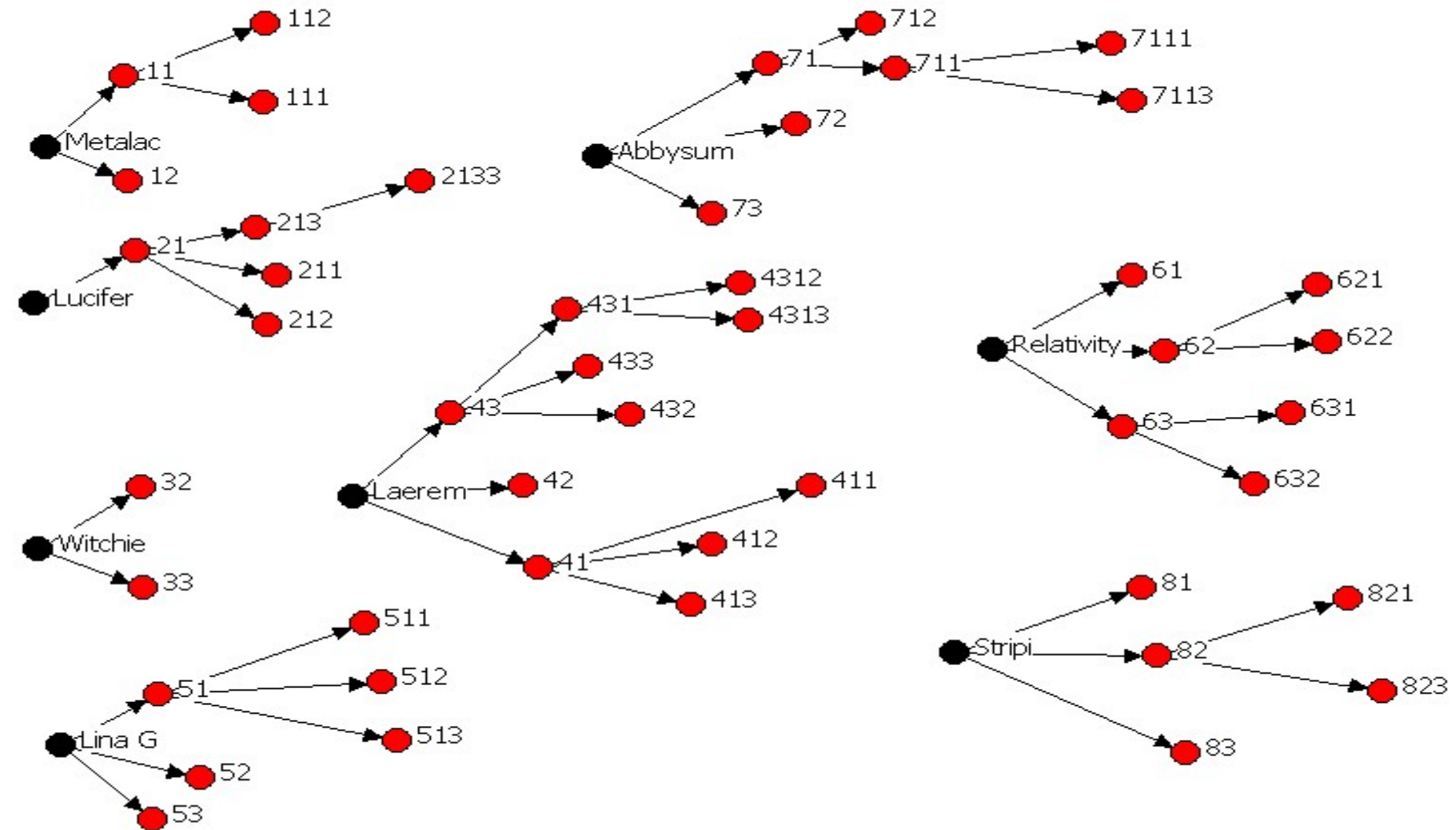
- is eligible for the research
- didn't participated in the research
- has come before expiry date of coupon
- has filled out the questionnaire
- has given blood and urine sample

This coupon will not be accepted if:

- coupon was changed or damaged

For more information please call 091 92.69.779 every working day from 3-7pm or visit the www.rds-istrzivanje.com website.

RDS recruitment chains



The role of NGO in Surveillance

- Community ownership
- Gain and use of data for planning
- Facilitating recruitment
- Community dissemination of results

Sets of problems encountered when using surveillance data for M&E

- Problems arising from lack of attention to M&E in program planning and setting the targets
- Problems with indicators definitions
- Problems arising from characteristics of surveillance systems
- Problems arising from lack of harmonization between M&E and surveillance system

1. Program target concerns/planning

- Targeting impact (prevalence)
 - Lack of baseline data both biological and behavioral
 - Lack of tradition to set measurable targets
 - Requires good surveillance system capable of providing comparable data over time
 - Not sufficiently targeting most at risk
- Targeting coverage
 - Requires system for coverage estimates
 - Requires reliable estimates of target population

2. Indicator definition – the need for operational definition consistent over time

DEFINITION: % of IDU who have adopted behaviors that reduce HIV transmission

Numerator: Not having shared needles in the last month and used condoms at last sex

Denominator: Number of respondents who report both injecting drugs and having sex in the last month

Measurement: Time location cluster sample or targeted snowball sample

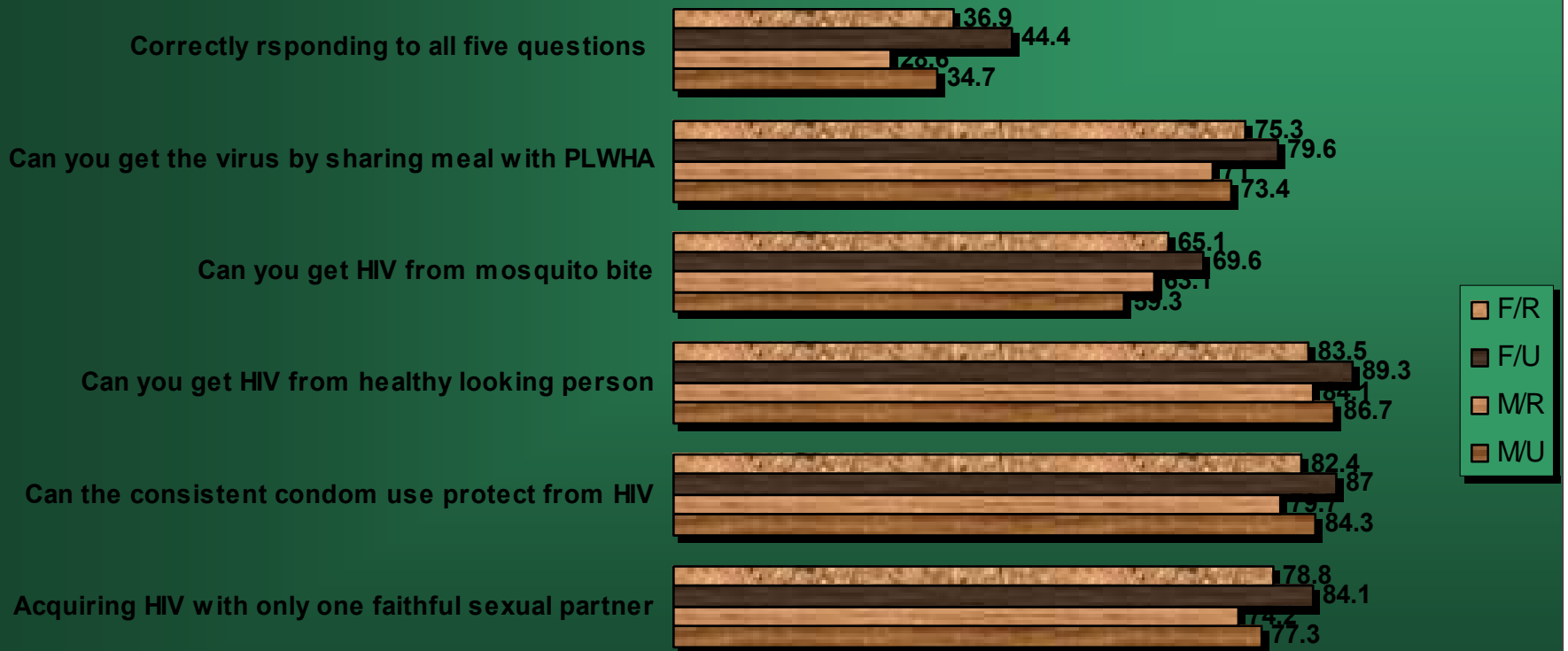
How many questions you need in your questionnaire? How do you compute value?

Indicator definition

- N= total sample of your respondents
- #those who did not share equipment last month and used condom A
- # those reporting having injected and had sex last month B (B is lower than N)
- Indicator value formula: $A/B * 100$

Targeting HIV Knowledge

Percentage of young people who both correctly identify ways of HIV prevention and reject major misconceptions about HIV



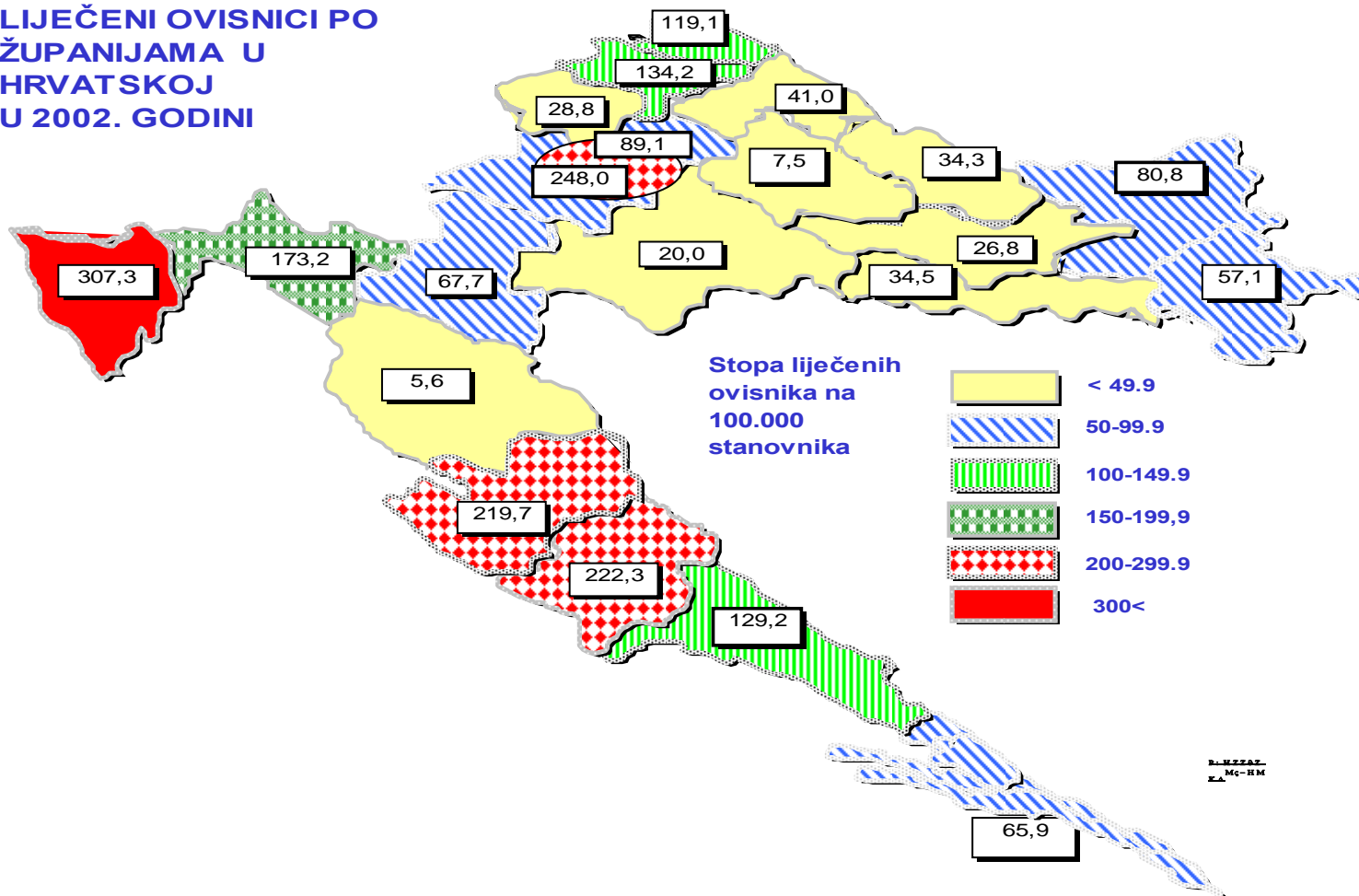
Source: Stulhofer et al.: Nationally representative survey on sexual behaviors among 18-24 years old, 2005

Indicator definition

- % of young people 14-18 who use condoms regularly (always, sometimes, never)
- % of young people 14-25, who used condom at last sex with non-cohabitating partner (non-regular)
- The average duration of regular relationship among secondary school students range between 2-6 months
- Condom use at first and last intercourse

3. Characteristics of surveillance system: case reporting

LIJEČENI OVISNICI PO
ŽUPANIJAMA U
HRVATSKOJ
U 2002. GODINI



Dr. M. ZAR
Mg-HM

3. Characteristics of surveillance system: Can we trust our data?

Table 2: Results of HIV sentinel surveillance in Ukraine in 2002

| Place | HIV Prevalence among injecting drug users (number tested) | HIV Prevalence among sex workers (number tested) | HIV Prevalence among injecting drug using sex workers (number tested) | HIV Prevalence among non-injecting drug using sex workers (number tested) | HIV Prevalence among patients reporting sexually transmitted infections (number tested) |
|-------------------|---|--|---|---|---|
| Donetsk | 40% (250) | 31% (102) | 36% (73) | 21% (29) | 1% (482) |
| Lutsk | 32% (250) | 4% (51) | 33% (3) | 2% (48) | 1% (310) |
| Nikolaev | 53% (250) | 30% (100) | 83% (18) | 18% (82) | 28% (300) |
| Odessa | 58% (259) | 22% (103) | 33% (57) | 9% (46) | 10% (333) |
| Poltava | 32% (250) | 17% (100) | 33% (35) | 8% (65) | 2% (300) |
| Simferopol | 28% (250) | 6% (100) | 32% (19) | 0.0% (81) | 12% (300) |
| Kharkiv | 17% (250) | 12% (90) | 39% (18) | 6% (72) | 0.3% (300) |

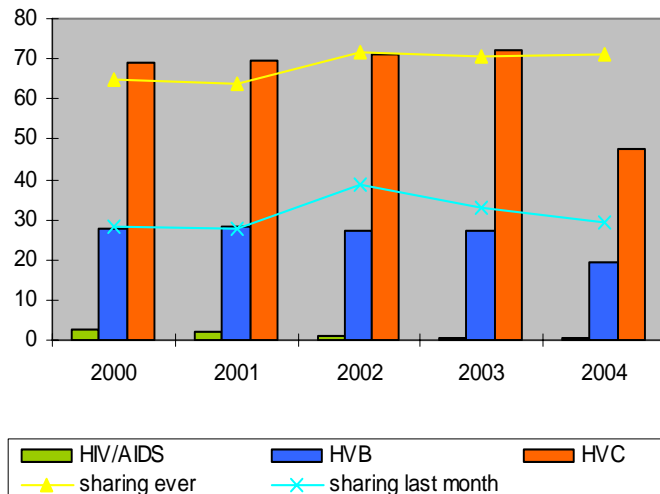
Source: Ministry of Health of Ukraine (2003).

4. Some indicators are resistant to changes

Did increased coverage with outreach services make any difference?

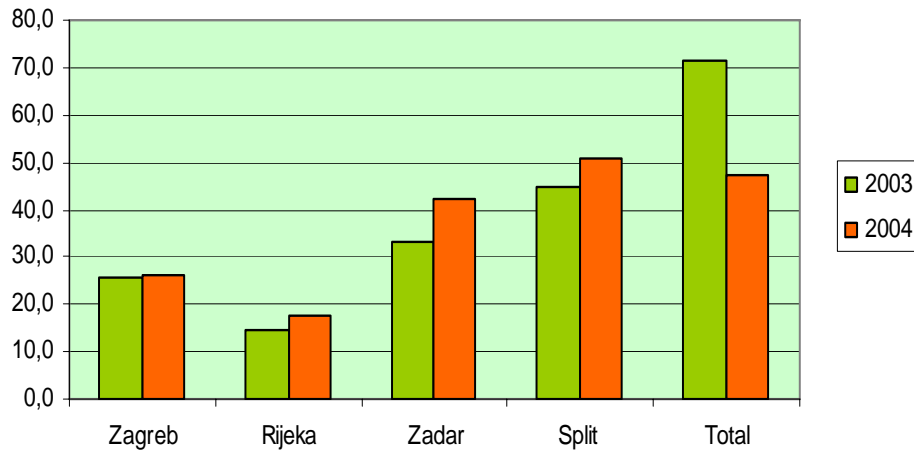
- Saturation: virus is present in a large proportion of people
- Avoid cumulative effect and limit the upper age of your sample

Rates of HCV, HBV, HIV and needle sharing in IDUs in treatment programs - self reported data



Possible strategy 1: analyse local level

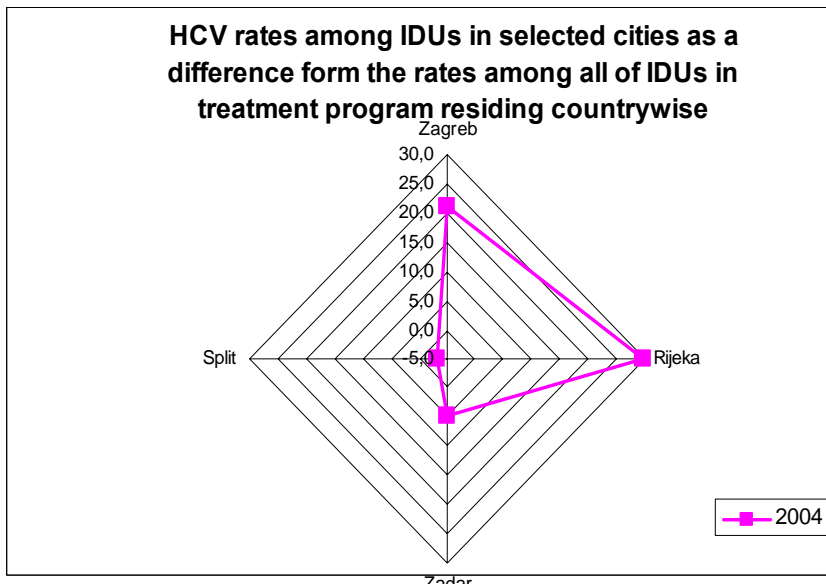
HCV prevalence in IDUs in treatment program in selected cities compared to total number of people in treatment



- HCV rates at all 4 sites are either equal or lower than nationally obtained figures
- Younger cohort – earlier epidemics
- NEX users approach services earlier
- There are differences in relative coverage with NEX
- Different coverage with treatment (methadone)

4. The differences between sites are probably the result of more than just one factor:

- NEX work best in the context where the diversified treatment and prevention options are available.



TESTINGS ON HIV, HEPATITIS B AND C – TERRA Rijeka

| | # testings | Hep C + (%) | Hep B + (%) | HIV + (%) |
|------|------------|-------------|-------------|-----------|
| 2002 | 56 | 40,3 % | 1,8% | 0% |
| 2003 | 51 | 29,4 % | 0% | 0% |
| 2004 | 150 | 14,7 % | 0% | 0% |

5. Sensitivity of surveillance system need for harmonization with planing and M&E

- The national program sets target to reduce sharing of injecting equipment by 50% , by scaling up prevention programs (program target).
- The baseline survey indicate that 20% of IDU are sharing injecting equipment
- Decline by 50% means from 20% to 10%
- What do you need to be able to detect change?

Note: for the change to be obtained one needs change and surveillance system that is sensitive enough to detect the change

5. Sample size required for determining a significant change between two proportions

| Baseline prevalence (%) | Sample size, given % proportional change | | | | | | | | |
|-------------------------|--|--------|--------|------|------|------|------|------|------|
| | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% |
| 1 | 145,800 | 34,000 | 14,000 | 7290 | 4280 | 3000 | 2070 | 1459 | 1060 |
| 5 | 28,000 | 6550 | 2800 | 1500 | 903 | 585 | 400 | 282 | 204 |
| 10 | 13,300 | 3200 | 1350 | 718 | 432 | 280 | 190 | 135 | 97 |
| 15 | 8500 | 2030 | 850 | 457 | 275 | 178 | 122 | 86 | 62 |
| 20 | 6000 | 1425 | 612 | 326 | 197 | 128 | 87 | 61 | 44 |
| 25 | 4500 | 1090 | 463 | 247 | 149 | 97 | 66 | 46 | 33 |

With a power of 80% (beta = 0.80) and a significance level of $P < 0.05$.

Sample size requirements for determining significance of trends based on more than two observations e.g., prevalence estimates) may be larger or smaller, depending on the values of the intervening proportions.

Source: Snedecor and Cochran, 1967.

Example: If the baseline prevalence is 20%, a sample size of 197 is required to detect a decline of 50% in prevalence between two time periods (from 20% to 10%).

Use of data for evaluating policy

- Concept of policy framework
- Sometimes you have effective policy and you may not know about it.
- Good policy may not be effective and require follow up and evaluation.

Summary – lessons learned

- Has anyone managed to contain/reverse the epidemics?
- Can the drug use epidemic be contained?
- Are there comparative examples?
- Effective policy based on data: find people with HIV and protect them in any way (confidentiality, treatment access...). Develop highly effective programs aimed at covering 100% of population.
- Any attempt to protect uninfected population from those infected resulted in aggravating the situation.