



European Monitoring Centre
for Drugs and Drug Addiction

Epidemiological Key Indicators; understanding the drug situation

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22-23 October 2013. Zadar, Croatia

TAIEX Workshop on
National Drugs Monitoring System in Croatia

- Core epidemiological monitoring programmes that permit the EMCDDA to provide timely, reliable and comparable annual picture on the drug phenomenon and its consequences



Key Epidemiological Indicators

- Looking at the General Population
 - Indicator “Prevalence and patterns of drug use in the general population” (GPS)
- Looking at High risk drug users / Problem drug users
 - Indicator “Problem Drug Use” (PDU)
 - Indicator “Treatment Demand” (TDI)
- Looking at serious consequences of drug use
 - Indicator “Drug-related Deaths” (DRD)
 - Indicator “Drug-related Infectious Diseases” (DRID)



- <http://www.emcdda.europa.eu/themes/key-indicators>



Related links

Data and analysis

[Statistical bulletin](#)

[Annual report](#)

[Country overviews](#)

Related documents

[Key indicators recommendation \(January 2001\)](#)

[Council resolution on key indicators \(November 2001\)](#)

Partners

[Reitox national focal points](#)

[Pompidou Group of the Council of Europe](#)

[United Nations Office on Drugs and Crime \(UNODC\)](#)

[World Health Organisation \(UNODC\)](#)

[Eurostat](#)

[ESPAD](#)

[EuroHIV](#)

[HBSC](#)

Key indicators

The EMCDDA uses five key epidemiological indicators to achieve its goal of providing factual, objective, reliable and comparable information on drugs and drug addiction at European level. These indicators have been developed by the Centre in close collaboration with the Reitox network, experts across Europe and with other international organisations competent in the field of drugs and drug addiction.

The five key epidemiological indicators underpin the EMCDDA's reporting on trends and developments in the EU drug situation. They are also a necessary component of any analysis of the coverage of responses or the assessment of the impact of policies and actions.

In this section of the website, you can learn

Select an indicator



General population surveys (GPS)

General population surveys are used to obtain information on drug use among the general population.



Problem drug use (PDU)

This key indicator collects data on the prevalence and incidence of problem drug use at national and local level.



Treatment demand indicator (TDI)

The treatment demand indicator is used to describe the population of problem drug users entering treatment.



Drug-related deaths and mortality (DRD)

The aim of this indicator is to obtain statistics on the number and characteristics of people who die as a consequence of drug use.



Drug-related infectious diseases (DRID)

This key indicator collects data on drug-related infectious diseases, particularly among injecting drug users.



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Prevalence and patterns of drug use among the general population

GPS Indicator

Prevalence and patterns of drug use among the general population

The aim of this Key Indicator is to provide valid, reliable and comparable information on the extent and pattern of drug use in the general population in European Countries

This information is obtained through national representative probabilistic surveys of the general population (adults and school children).



Populations of interest

- The general population, with particular focus on young adults.
 - For convenience and cost considerations, the standard EMCDDA age range for adults is 15 to 64 years olds
- The children attending schools (school population).
 - The EMCDDA has not defined a standard age range, some countries collect data on 14-18 years olds. The ESPAD project focuses on 15-16 years olds (children born in a given year)
- Note that 'Hidden populations' (e.g. prison population, individuals with no fixed address) are often excluded from sampling frames of adult household surveys.



Basic definitions

- **Lifetime Prevalence (LTP; ‘ever used’)**

Example question “Have you ever taken cannabis yourself?”

- **Last Year Prevalence (LYP; ‘recent user’)**

“During the last 12 months have you taken cannabis?”

- **Last Month Prevalence (LMP; ‘current user’)**

“During the last 30 days have you taken cannabis?”



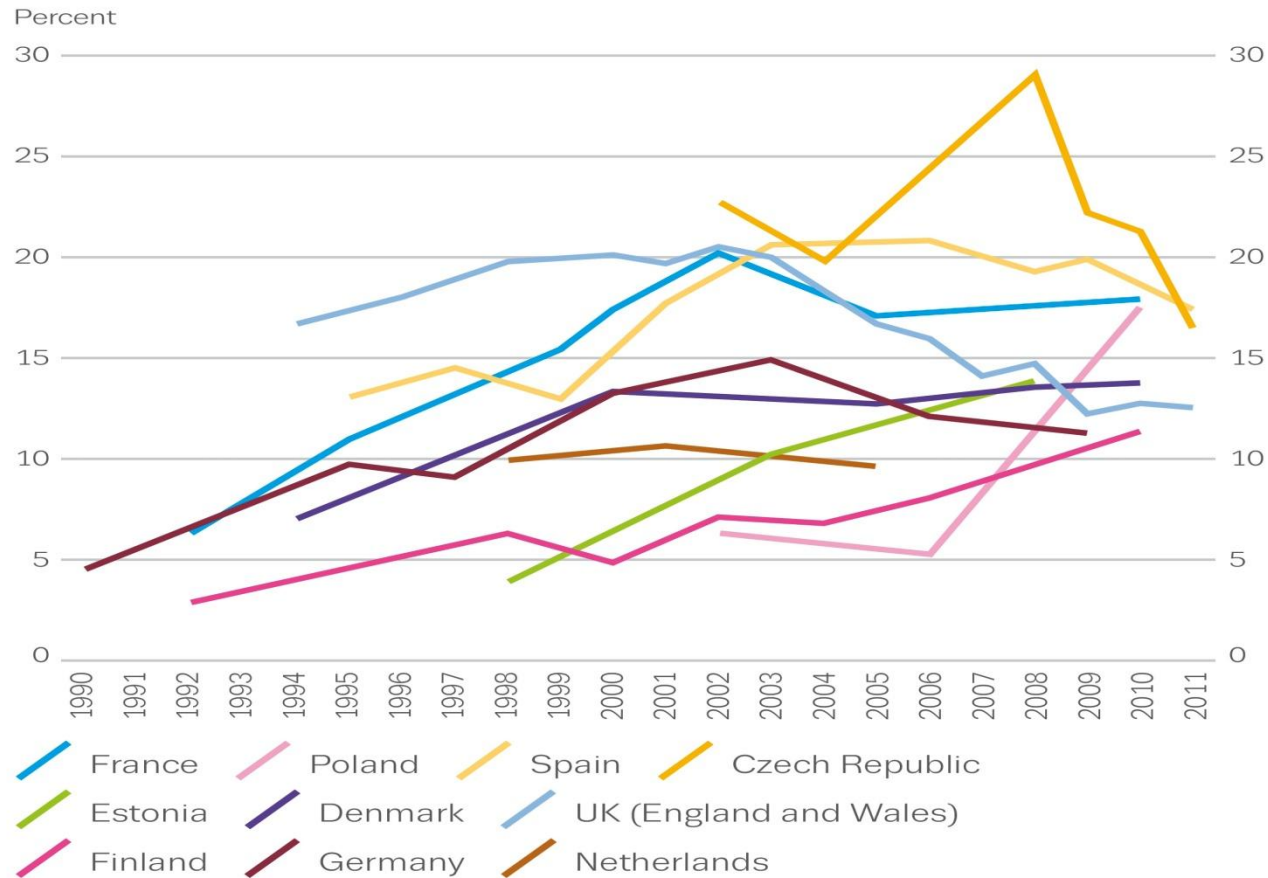
European Model Questionnaire (EMQ)

- The core component of the guidelines included in the *Handbook* consist of a list of common items, called the European Model Questionnaire (EMQ).
- Can be included in questionnaires of national surveys
- National questionnaires can be limited to the items considered in the EMQ
- Is spilt into sections assessing drug use prevalence, behaviours, attitudes, and social demographic characteristics of users



Trends in prevalence of cannabis use in selected EU countries.

Last year prevalence among 15-34 years old

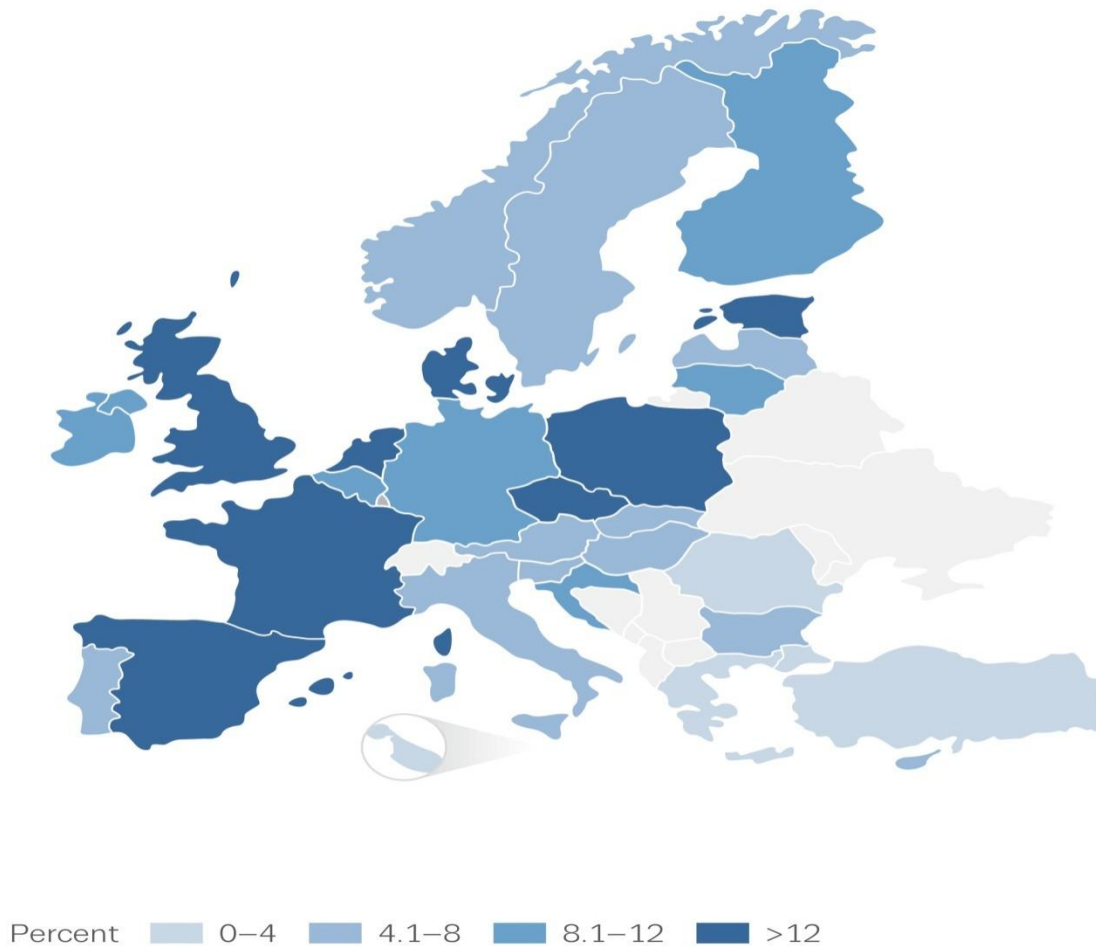


NB: Trends for ten countries with the highest prevalence and three or more surveys.

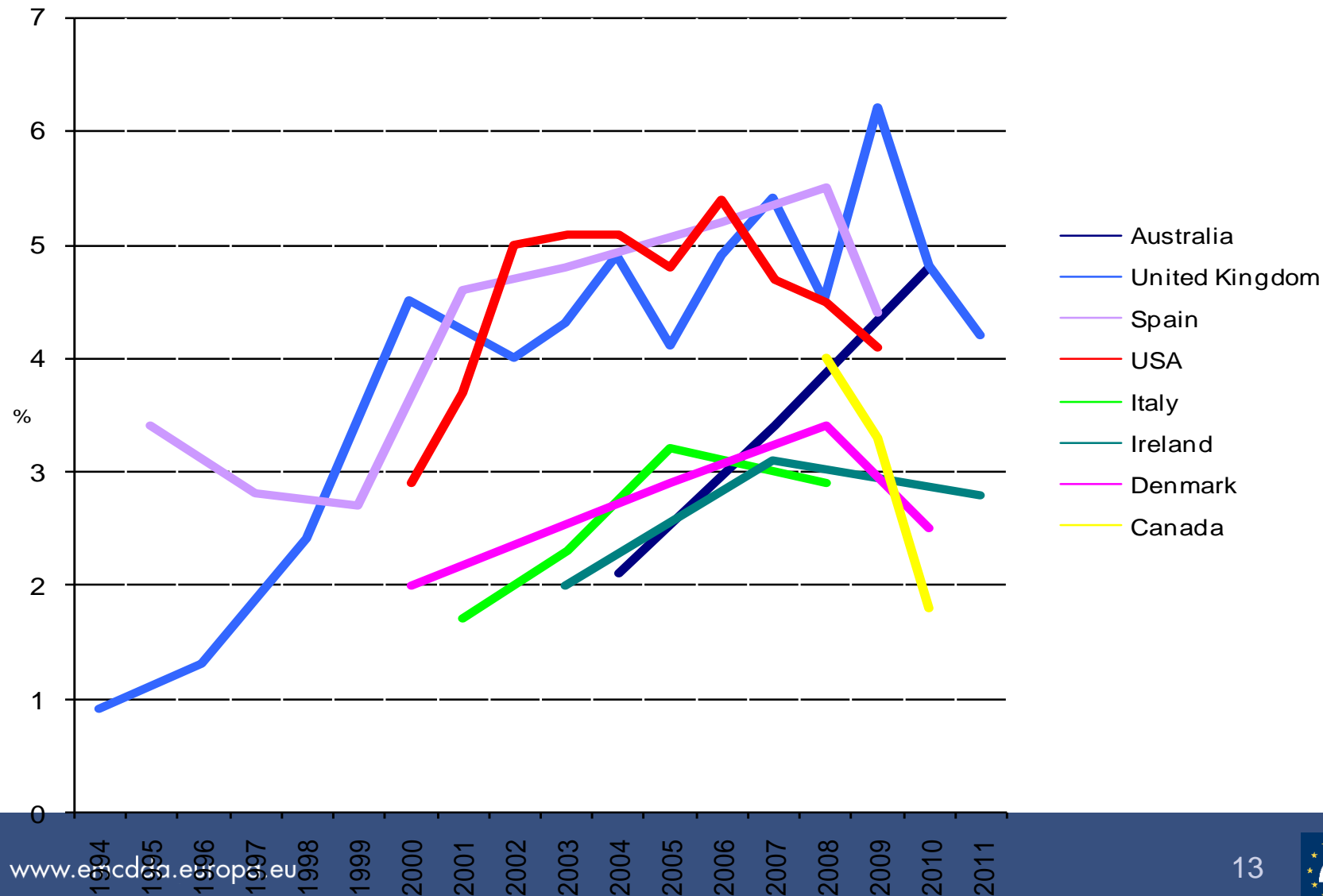


Prevalence of cannabis use in EU countries.

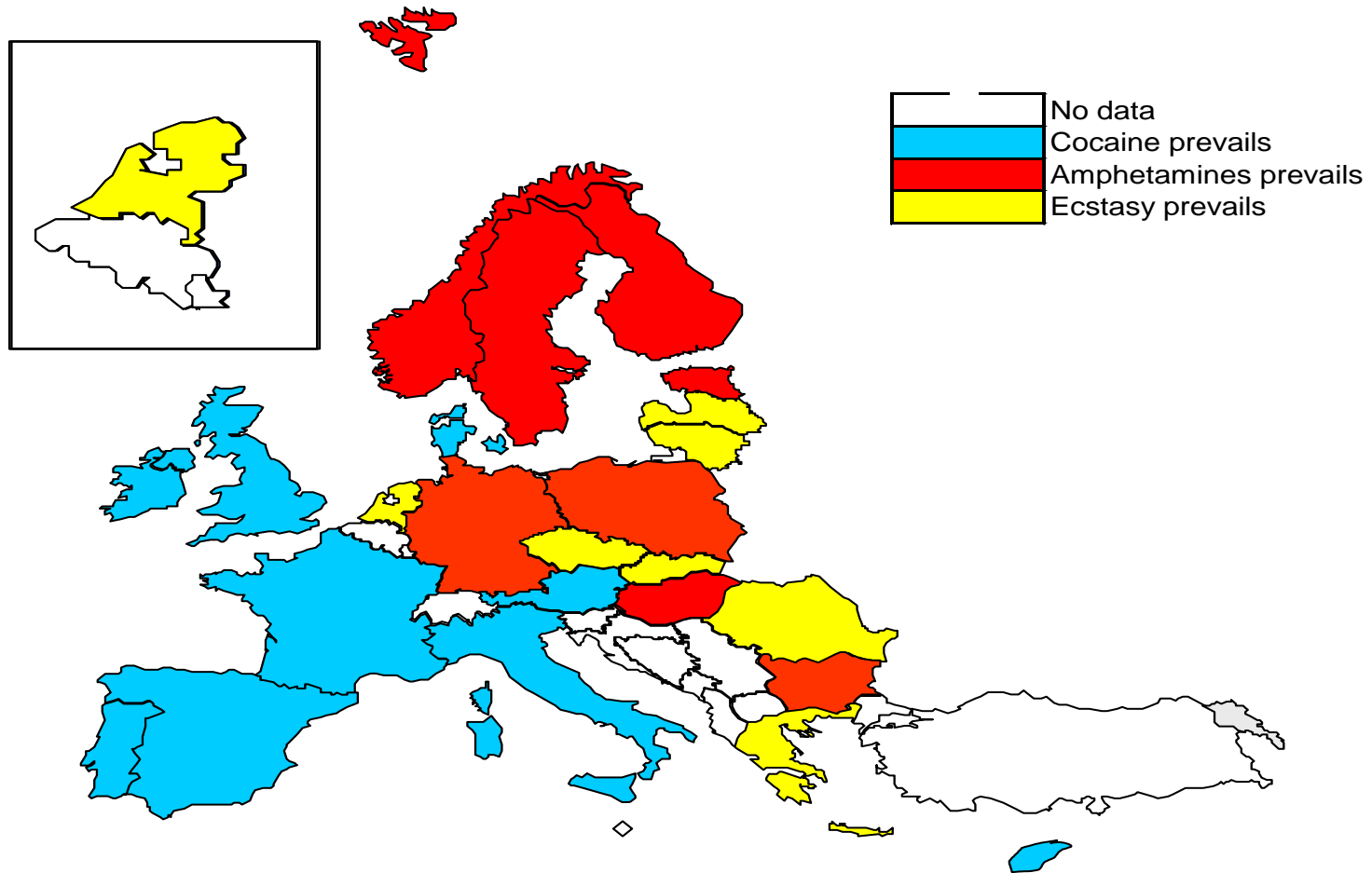
Last GPS survey available. Last year prevalence among 15-34 years



Trends in last year prevalence of cocaine among young adults (aged 15 to 34)



Last year prevalence of amphetamines, ecstasy and cocaine among young adults (aged 15 to 34)





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***Measuring and understanding* the more
intense and risky forms of drug use in Europe**



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Measuring-estimating the number of people

High Risk Drug Use/Problem Drug Use indicator
(PDU)

EMCDDA: from Problem drug use to High risk drug use

- **Previous EMCDDA definition:** “Problem Drug Use”
→ ‘injecting drug use or long-duration/regular use of opioids, cocaine and/or amphetamines’
- Now “High Risk Drug Use” meaning
- “recurrent drug use that is causing actual harms (negative consequences) to the person (including dependence, but also other health, psychological or social problems) or is placing the person at a high probability/risk of suffering such harms ”.



Methods for monitoring prevalence/numbers and trends in them

- Indirect methods – statistical extrapolations from existing observations
 - Suitable for hidden, stigmatised and even illegal activities
 - Successful application in high risk opioids use, injecting drug use, and in some countries high risk cocaine and amphetamines use
- Direct methods – general population surveys
 - More suitable for drug use with higher prevalence and higher social acceptance
 - **For instance; intensive cannabis use by short psychometric scales (e.g. CAST).**

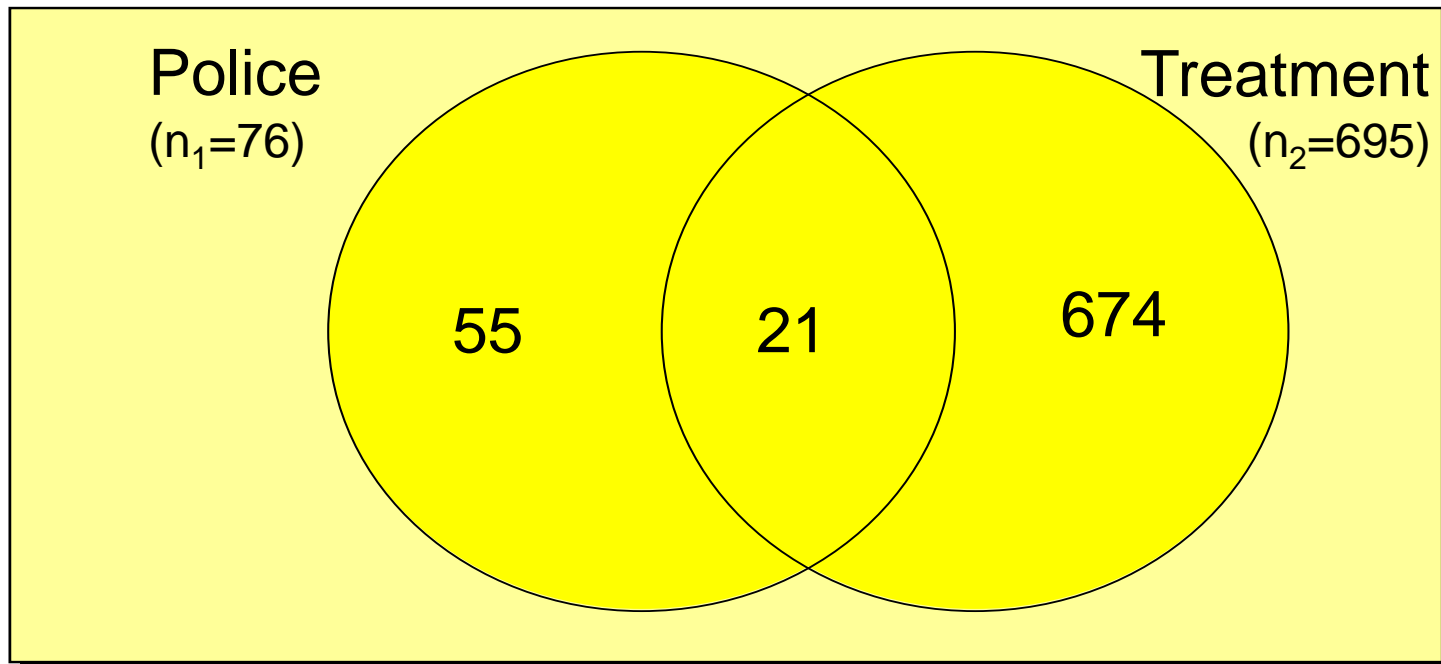


Two-sample capture-recapture example (Problem Drug Use)

- Identify two sources, for example
 - Treatment data
 - Police data
- Find overlap
- Estimate population size

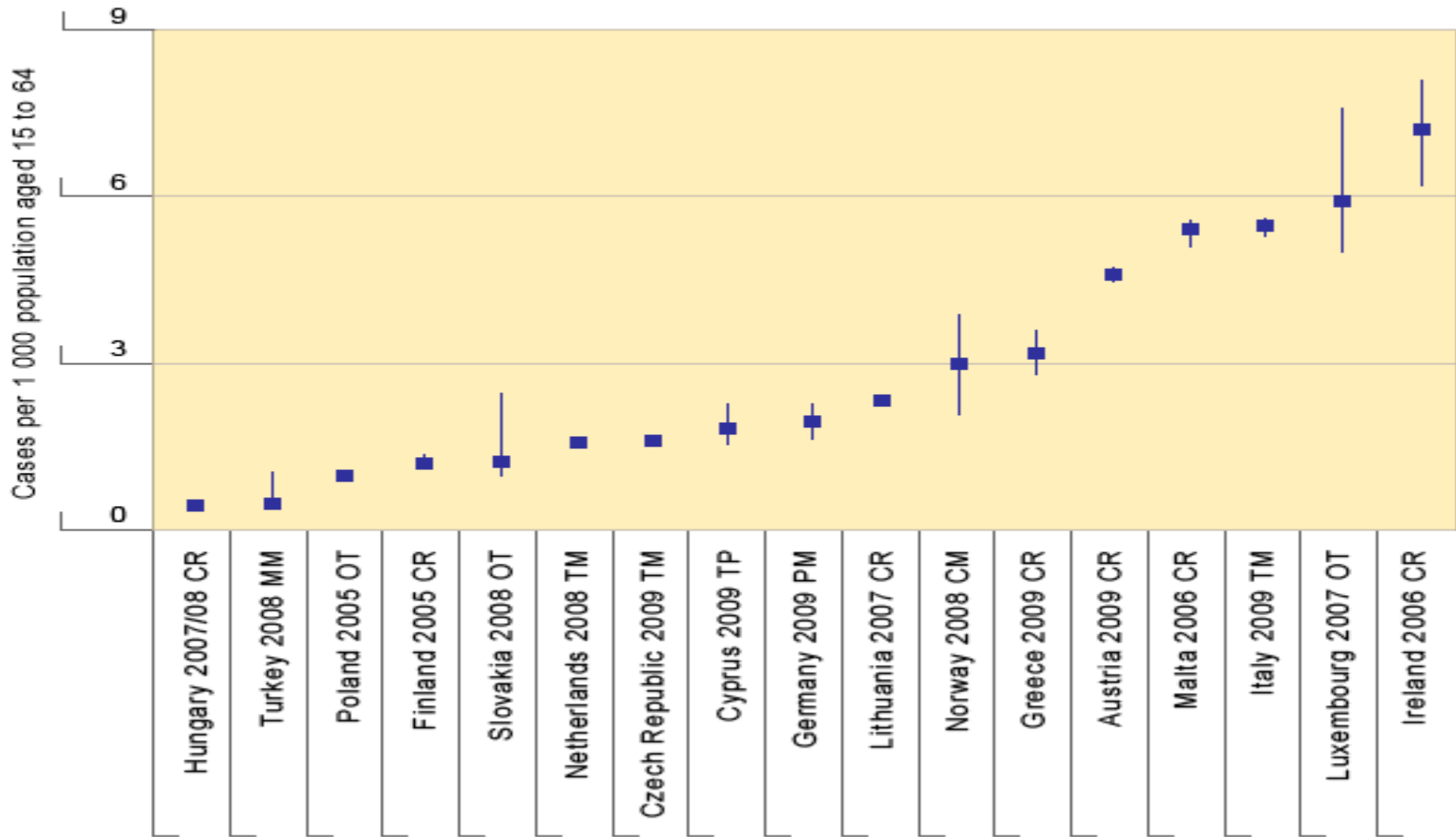


Two-sample capture-recapture example (Problem Drug Use)

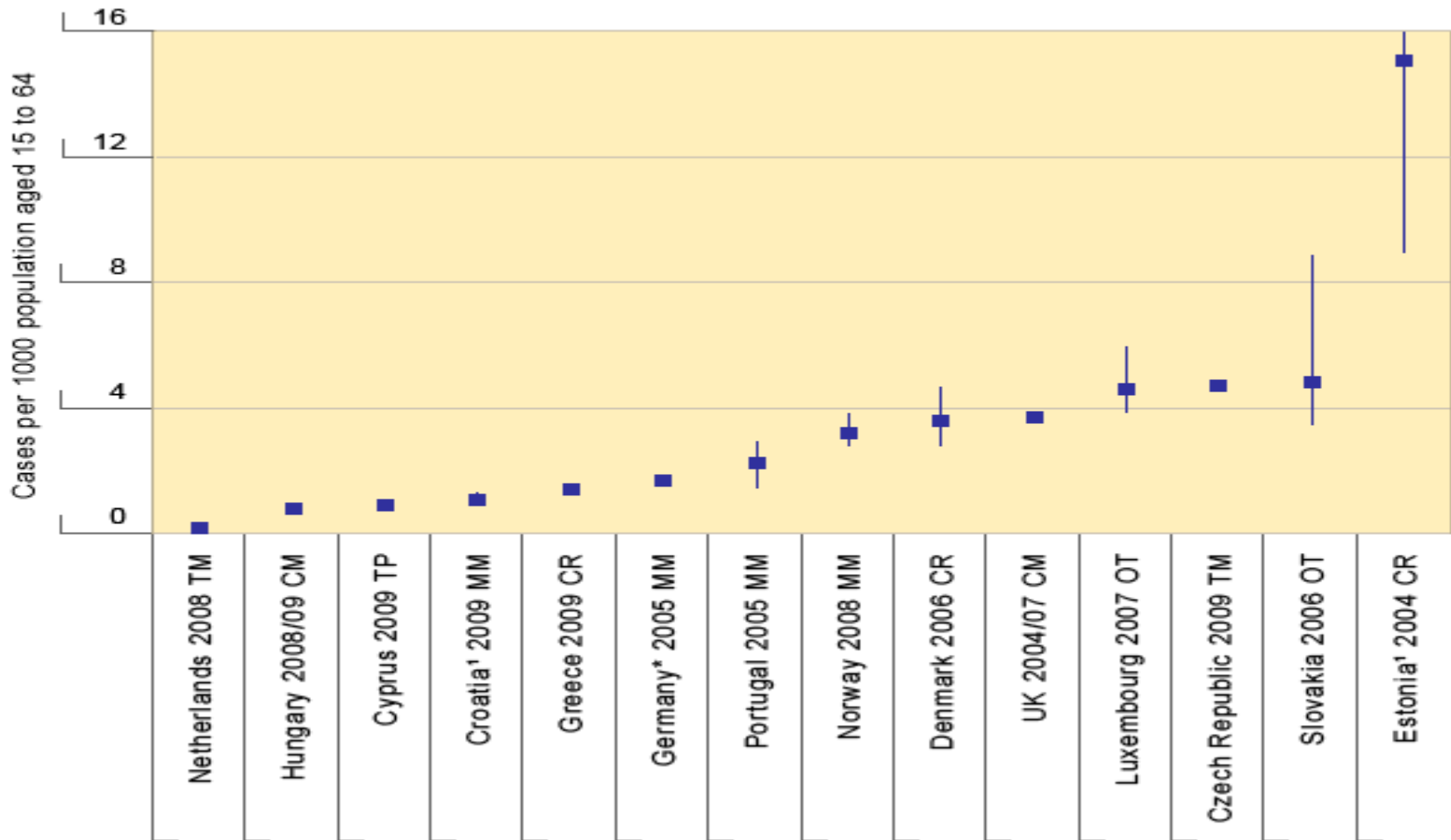


$$N = \frac{76 \times 695}{21} = 2439$$

Prevalence estimates of problem opioids use



Prevalence estimates of injecting drug use





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Understanding drug problems/patterns and trends

**Based on service contacts: Treatment Demand
Indicator (TDI)**

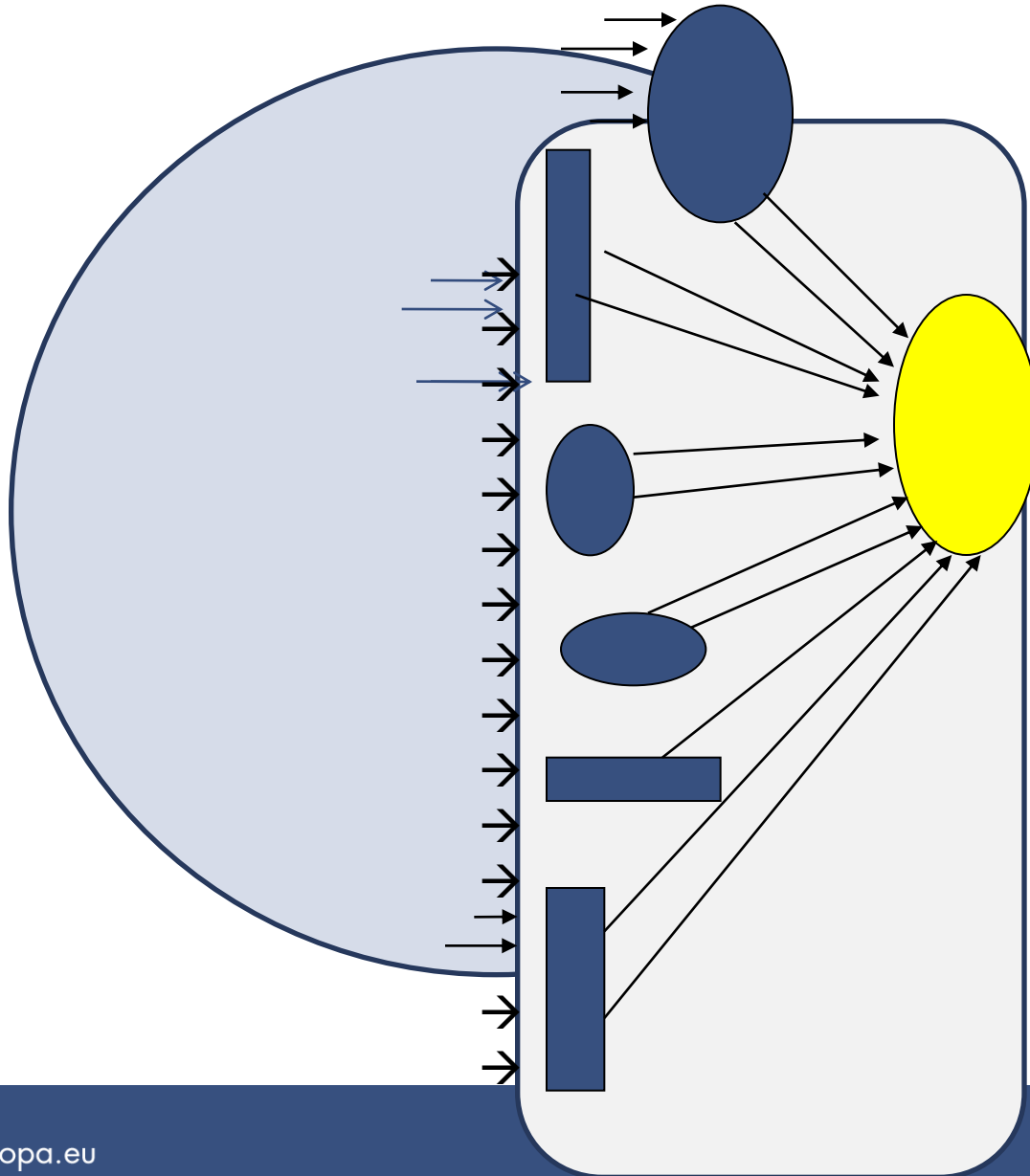
Use of TDI indicator as epidemiological indicator

- Problem drug users is a small and hidden population
- Where to find them? How to quantify them and to know their characteristics?
- When they contact with services:
 - In particular specialised drug services.
 - It is the Treatment Demand Indicator (TDI) that links with the Problem Drug Use indicator (PDU) “two sides of same coin”



Population



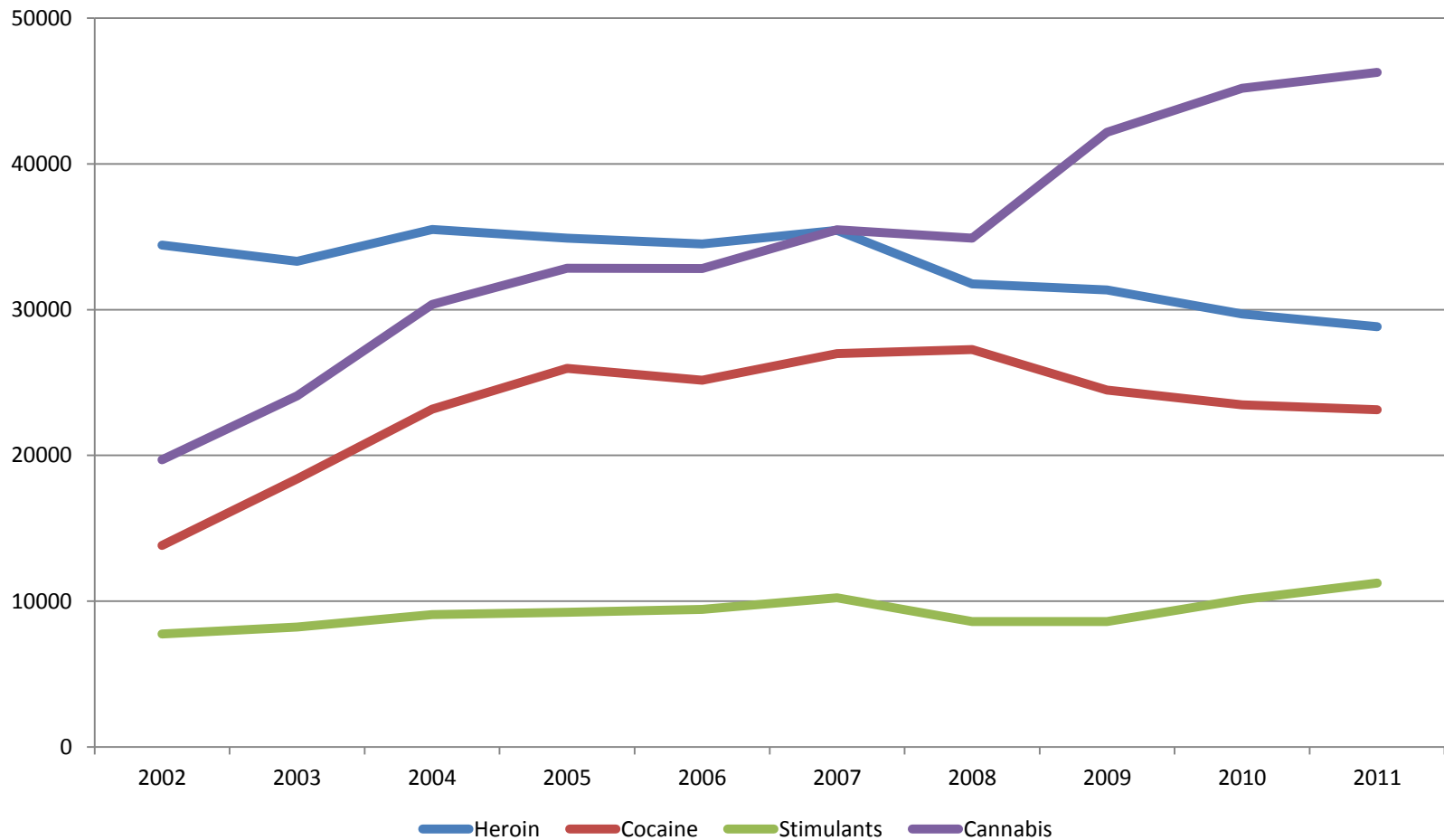


Caveats and interpretation of results of TDI

- Availability of contact points (services)
 - Accessibility
 - Organization
 - Attractiveness to users
-
- Other questions: derivation practices from law enforcement agencies or other health services



Trend of new clients entering treatment by primary drugs, 2002 to 2011 (numbers)



Patterns of drug problems in Europe


Primary drug recorded in TDI

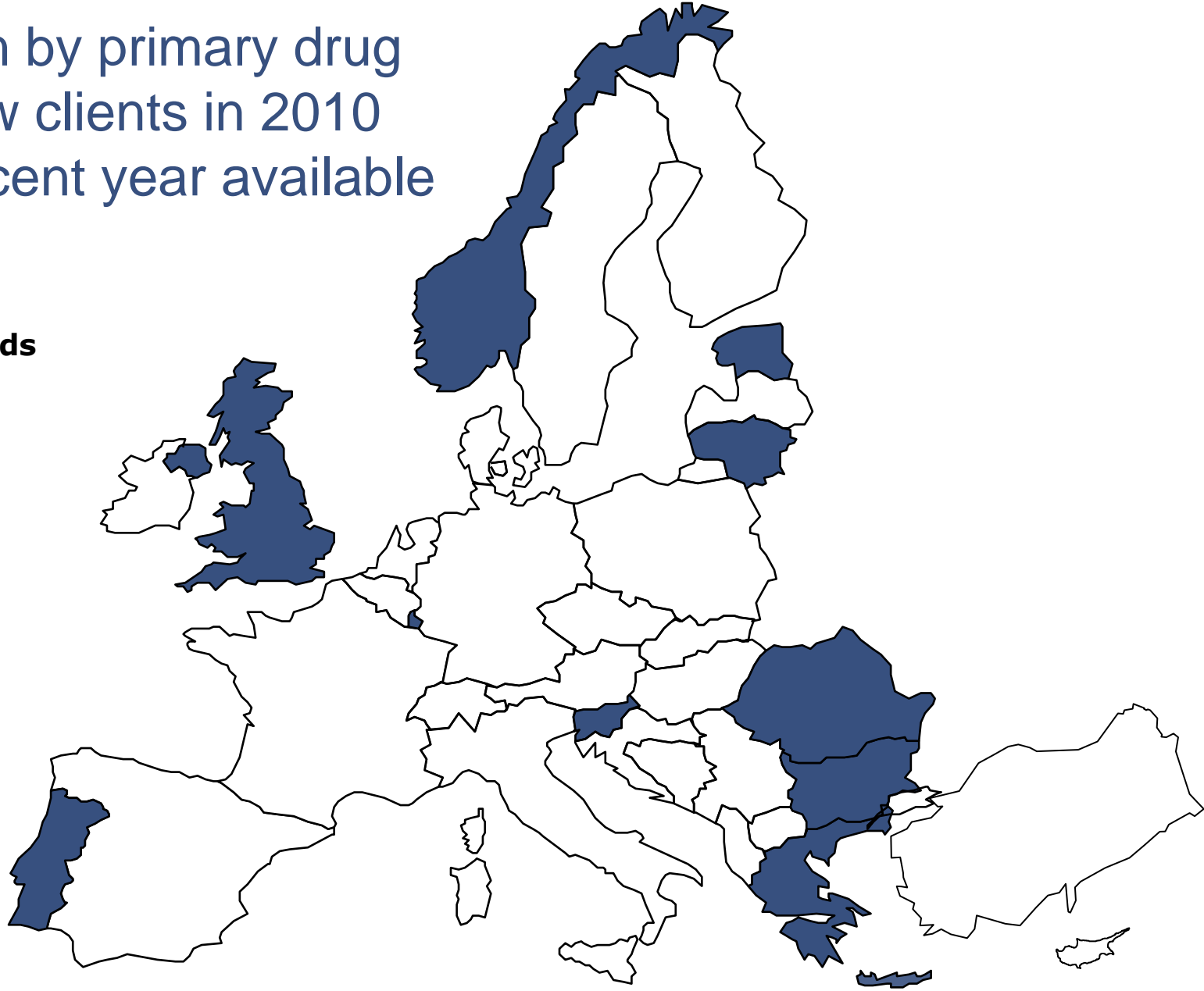
(selected cut off points that can be modified as needed)

- >40% opioids clients
- >30% cannabis clients
- >20% amphetamines clients
- >20% cocaine clients






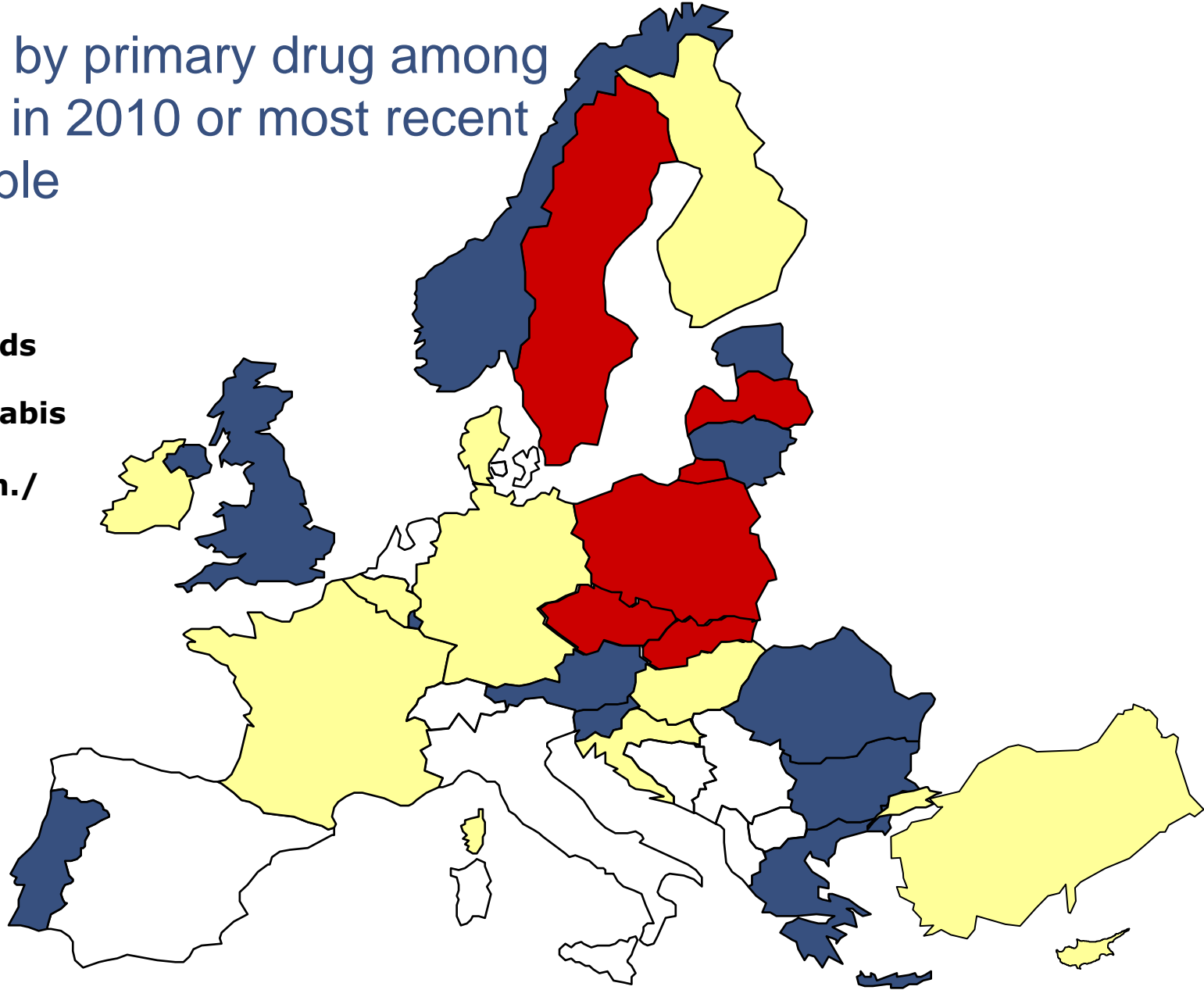
Distribution by primary drug among new clients in 2010 or most recent year available

 **>40% Opioids**







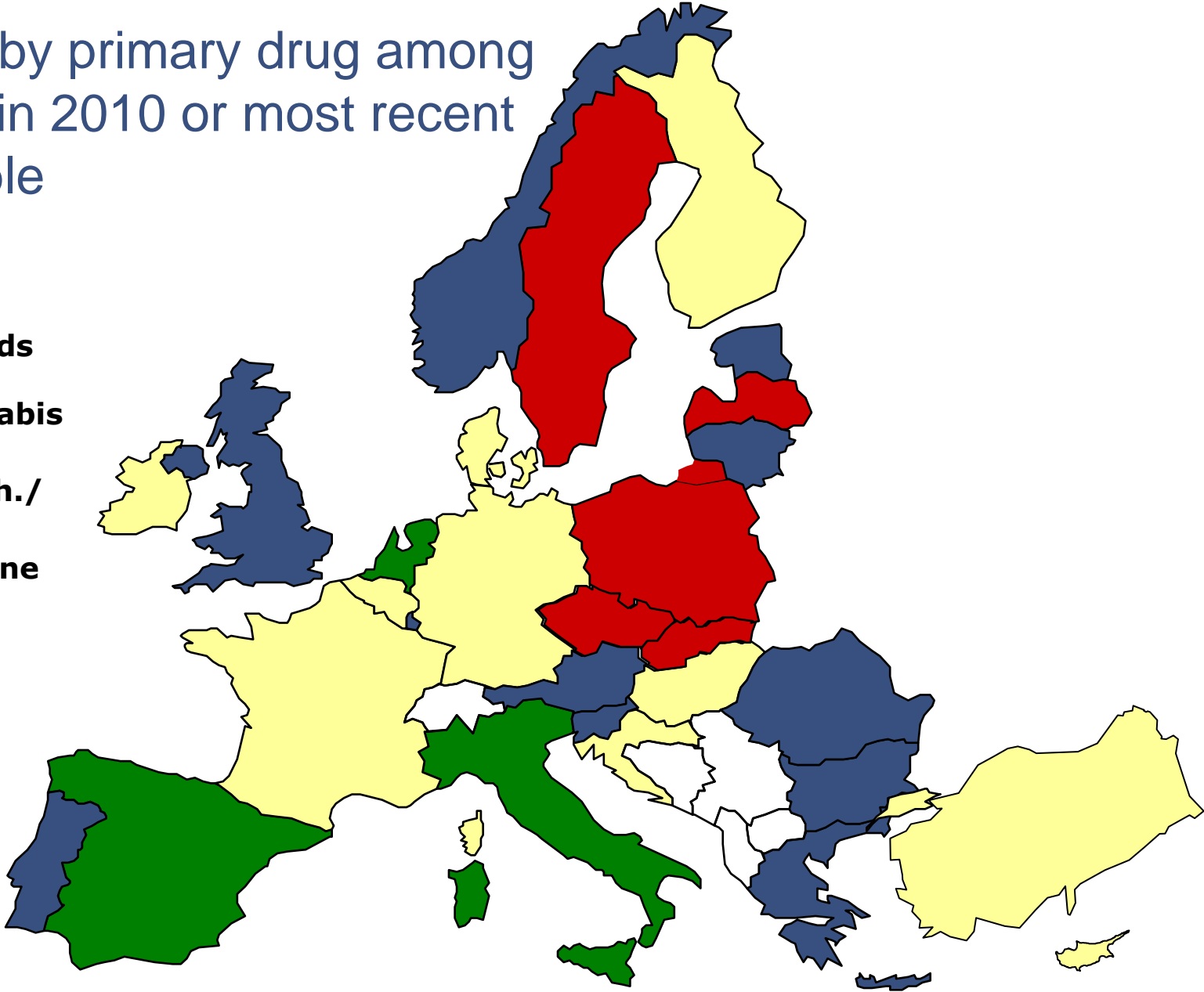
Distribution by primary drug among new clients in 2010 or most recent year available

-  **>40% Opioids**
-  **>30% Cannabis**
-  **>20% Amph./Meth.**



Distribution by primary drug among new clients in 2010 or most recent year available

-  **>40% Opioids**
-  **>30% Cannabis**
-  **>20% Amph./Meth.**
-  **>20% Cocaine**





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Drug-related Infectious Diseases

DRID indicator

Objectives of DRID

- Surveillance of infections in injecting drug users (IDU) –
- Detect trends, early warning
- Identify ‘hot spots’ and high risk groups for specific action by member states
- Understand factors related to spread (risk, protective) to inform prevention
- EU networking for knowledge sharing and collaboration



Main activities

- Collect available data on the prevalence of HIV, HCV and HBV in IDUs
- Collect case notification data for hepatitis B and hepatitis C (for HIV data is collected by ECDC)
- EU expert network with annual meeting
- Collaborate with international partners (EU Commission, ECDC, WHO, UNODC, UNAIDS...)



Minimum requirements: main issues (see ST9)

Prevalence studies

- HIV and HCV antibodies in samples of (ever) intravenous drug users, repeated in time
- Data from ad-hoc seroprevalence surveys (SP) and/or from diagnostic testing (DT)
- Data from drug treatment and non-treatment settings
- National level data, and breakdown (main) cities / regions
- Breakdown of data: new injectors and young injectors



Drug Related Infectious Diseases (DRID) module on Behavioral Surveillance

- Focus on both HIV and viral hepatitis, not only HIV (e.g. two testing uptake indicators, needle sharing and paraphernalia sharing)
- Indicators included for
 - Testing (HIV, HCV)
 - Injecting risks
 - Sexual risks
 - Intervention coverage
 - Socio-demographic



Behavioural indicators (as revised per 2012)

4 “Core” indicators (%)

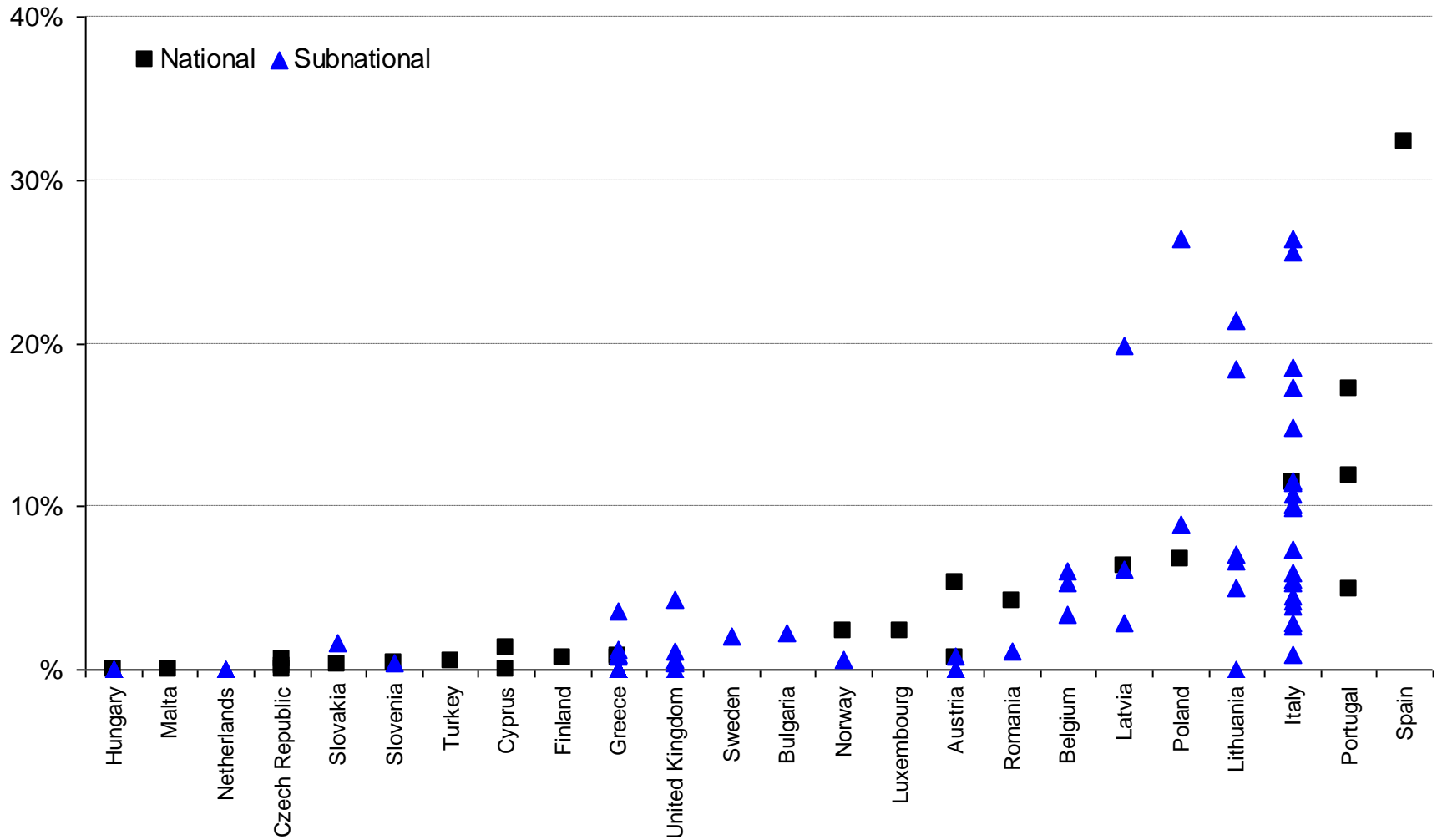
- Sharing used needles/syringes (4wk)
 - Sharing other used paraphernalia (4wk)
 - HIV tested (12m)
 - HCV tested (12m)
-

14 “Additional” indicators (%)

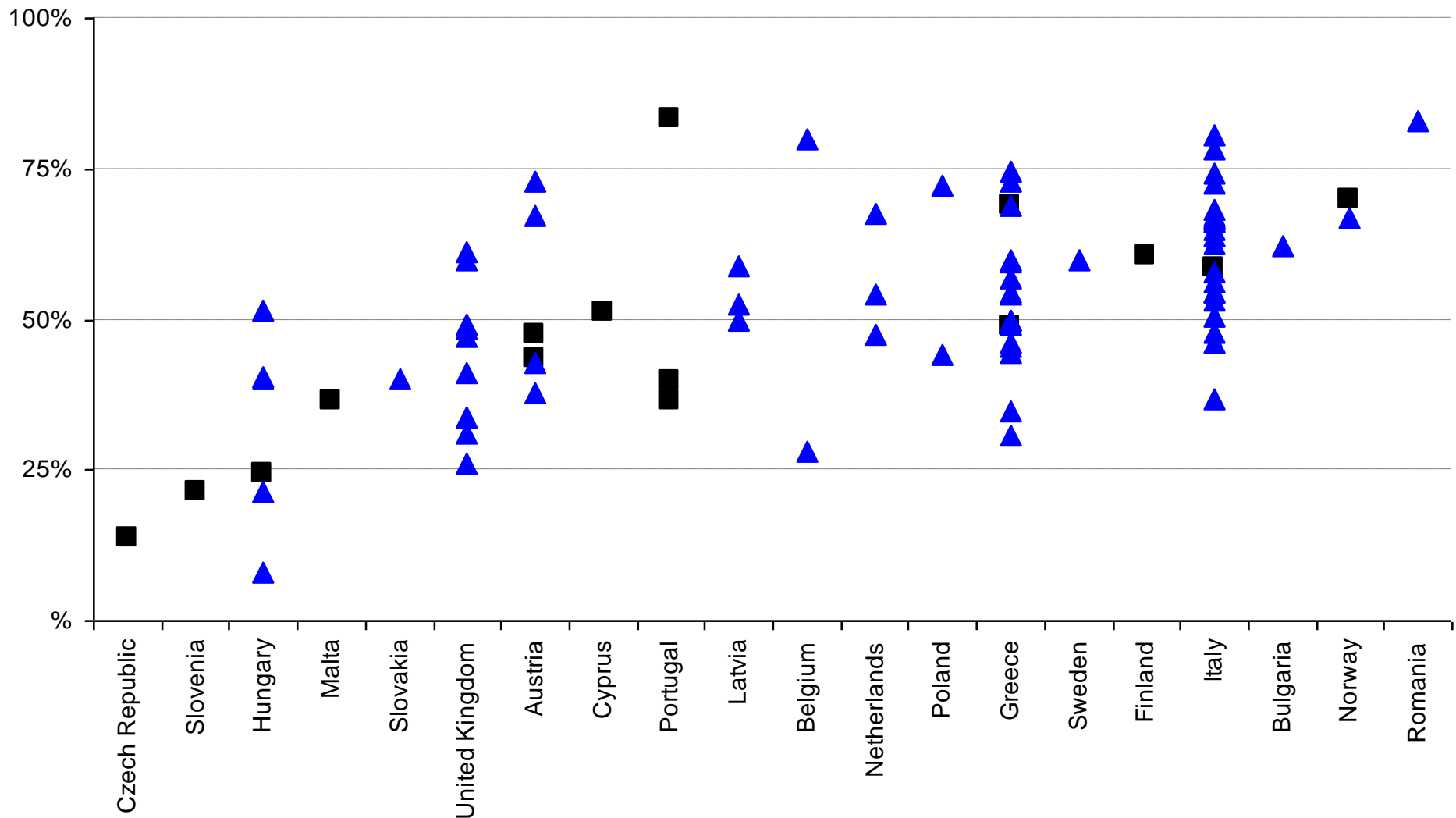
- Sterile needle/syringe at last injection (4wk)
- Injecting once per day or more (4wk)
- Paid for sex / sex work (12m)
- Condom use last intercourse (12m)
- More than one sexual partner (12m)
- No. sterile needles for personal use (4wk)
- Opioid substitution treatment (4wk)
- Under age 25
- Female
- Less than 2 years since first injection
- Opioids as primary drug (4wk)
- Ever in prison
- Born outside country
- Homeless (12m)



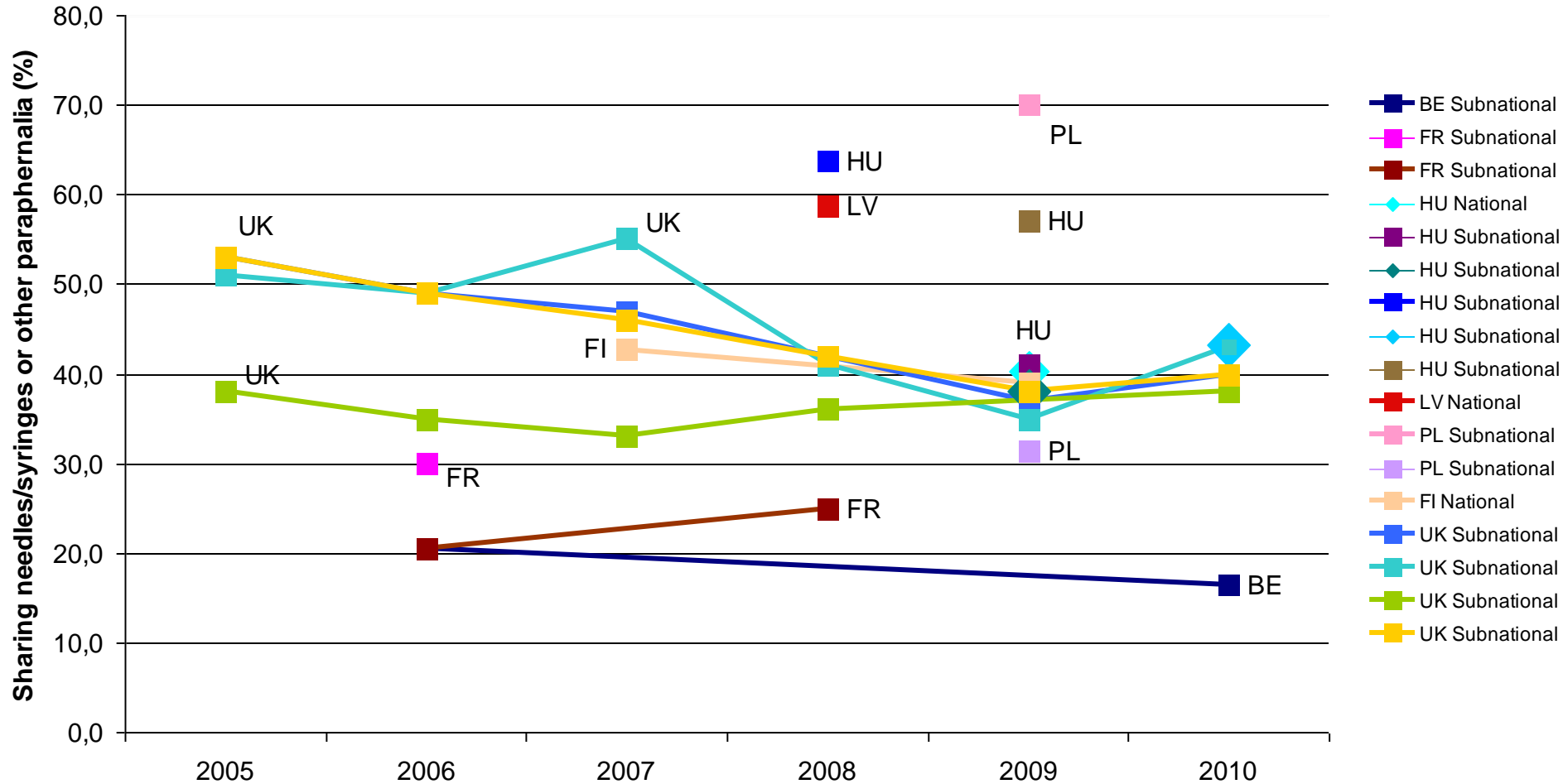
HIV prevalence among injecting drug users – studies with national and subnational coverage 2009-2010



HCV antibody prevalence among injecting drug users – studies with national and subnational coverage 2009-2010



Recent sharing of needles/syringes or other para-phernalia (last 4 weeks/month/30 days) 2005-2010



17 studies / 7 countries



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Drug-related deaths and mortality among drug users

DRD Indicator

In this indicator: two components

- Overdoses – drug induced deaths – deaths directly attributable to drugs
 - How many die? Who are they? What are the trends?
- Mortality among drug users
 - Cohort studies: EMCDDA recommendations



Objective

- Overdoses – drug induced deaths
- To provide reliable and comparable information on the number and characteristics of people who die directly due to illicit drug use



Case definition

- Deaths happening shortly after consumption of one or more illicit psychoactive drugs, and directly related to this consumption although they often may happen in combination with other substances such as alcohol or psychoactive medicines
- DRD EMCDDA protocol
<http://www.emcdda.europa.eu/html.cfm/index107404EN.html>



Sources

- General mortality register and / or
- Special register: forensic, police
- 30 countries contribute
- Reports of aggregated numbers of overdoses

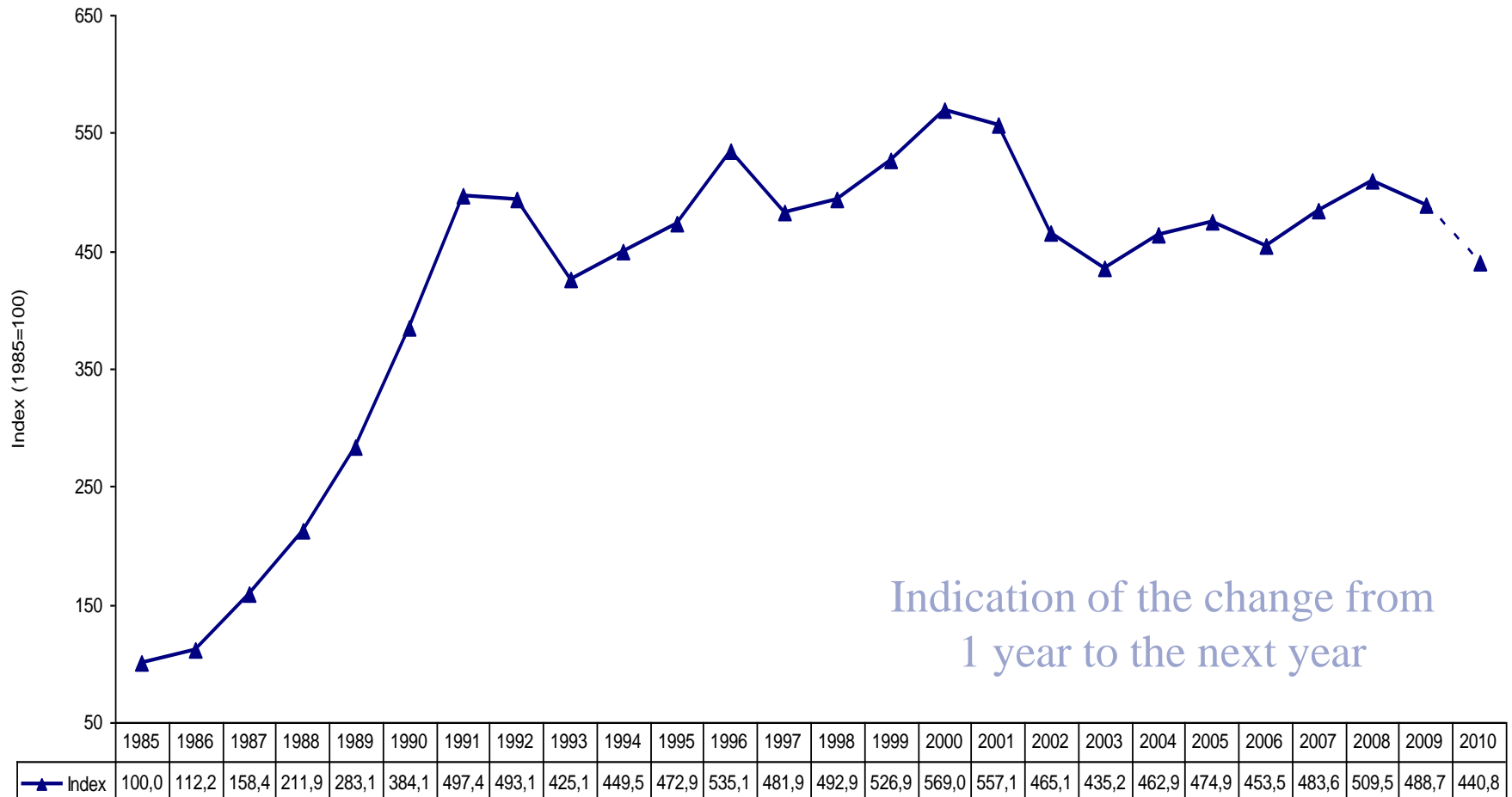


Results

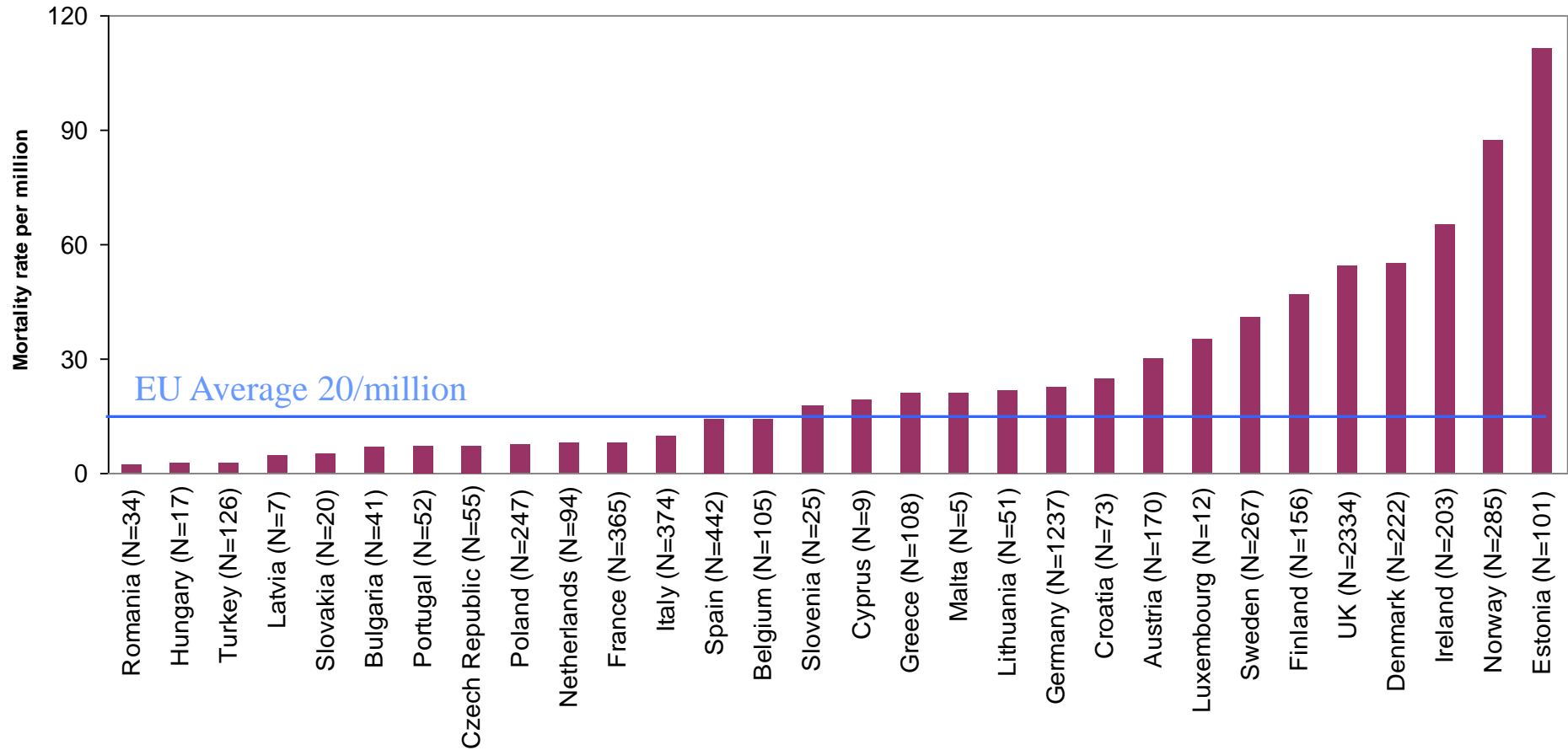
- ~7 000 reported overdose deaths in 2010
- Mainly with opioids
- 8/10 are males
- Polydrug use is the norm
 - E.g. in Finland average number of drugs found was 5
- ‘At least’ 640 reported cocaine-related deaths



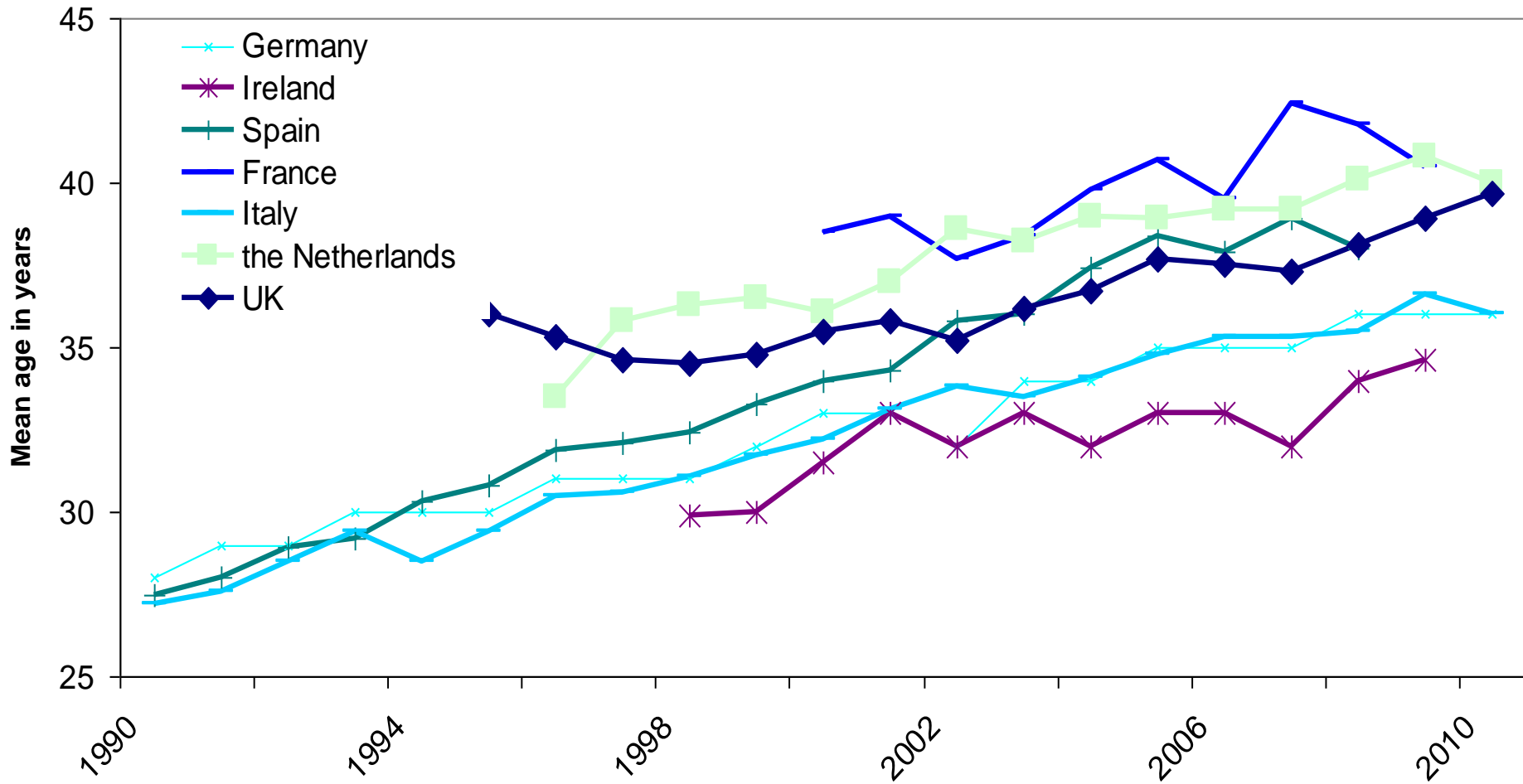
Indexed long term trend in drug-induced deaths in the EU-15 Member States and Norway, 1985-2010



Mortality due to drug-induced deaths among adults (15-64 years) in most recent year reported



Trends in mean age of reported overdose



Cohort studies: definition

- Mortality cohort studies track the same groups of problem drug users over time and, through linkage with mortality registries, try to identify the causes of all deaths occurring in the group



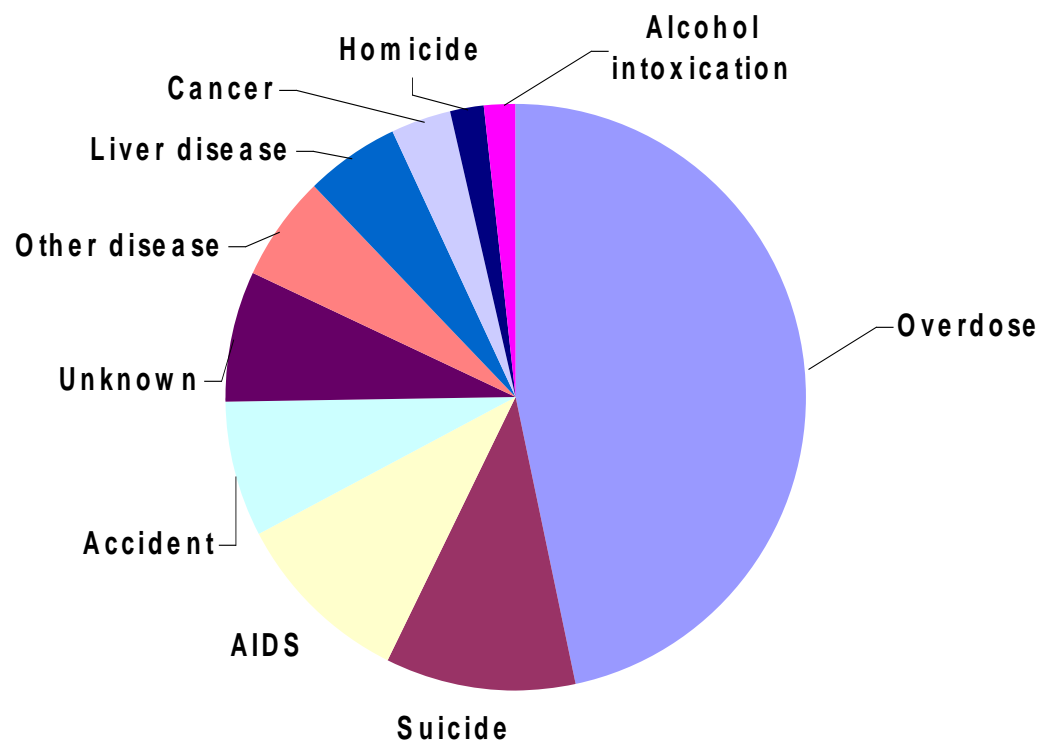
What do cohort studies tell us?

- Mortality rates among drug users
 - By age, gender, other characteristics
 - Excess risk compared to the general population
 - Causes of deaths beyond overdoses
- For public health
 - Identify risk factors, follow the trends and compare groups, to inform interventions



Causes of death among drug users - Norway

- 189 deaths/501 drug abusers admitted to treatment
- Mean observation time 15 years
- Overdose death rate 14/1000 males and 8/1000 females



Ødegård E, Amundsen EJ, Kielland KB. Fatal overdoses and deaths by other causes in a cohort of Norwegian drug abusers--a competing risk approach. Drug Alcohol Depend. 2007 Jul 10;89(2-3):176-82.



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Issues on deaths related to methadone and deaths related to cocaine

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Deaths related to methadone

- 700,000 opioid users in substitution treatment in the European Union
- Deaths related to methadone have come to the spotlight (often mentioned in toxicology, sometimes as cause of death)



Main message

- Methadone is an effective treatment for problem opioid use.
- Opioid users in methadone treatment have 1/3 of overall mortality than out of treatment.
- The overall mortality decreases by 85% for those in methadone treatment more than 12 months
- While in methadone treatment, clients have an overdose mortality 5-10 times lower than in other treatments or out of treatment.



- A study in the UK showed a substantial decrease of methadone deaths after introduction of better prescription guidelines.



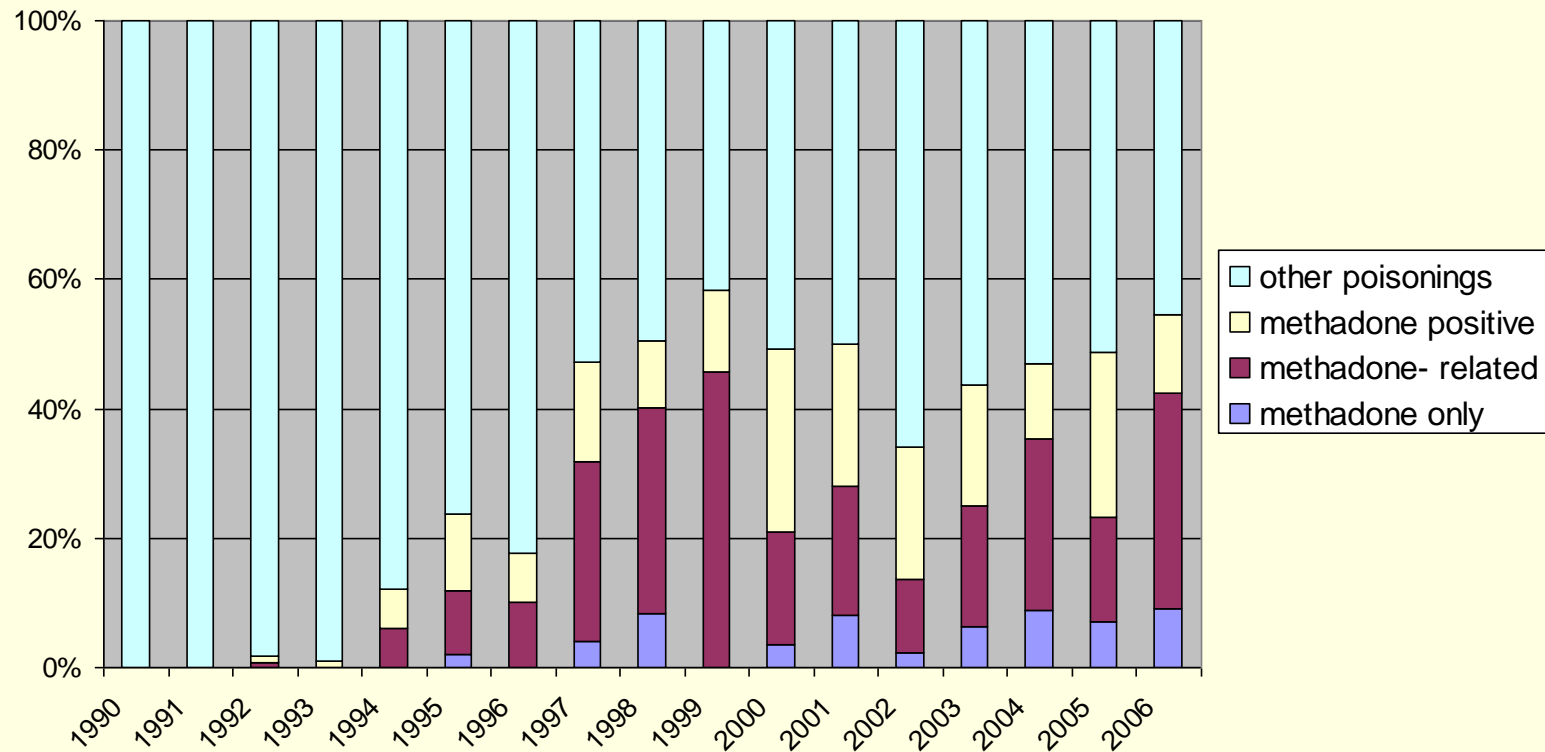
However there are indeed deaths related to methadone

- Natural deaths in methadone clients
- Accidents or trauma deaths in methadone clients
- Deaths due to toxicity when starting treatment (→ clinical management)
- Deaths due to cardiac toxicity (high dosages or pre-existing problems)
- Deaths due to methadone overdose. Often among people not in treatment (improve clinical management, guidelines for take home, and improved access to treatment)



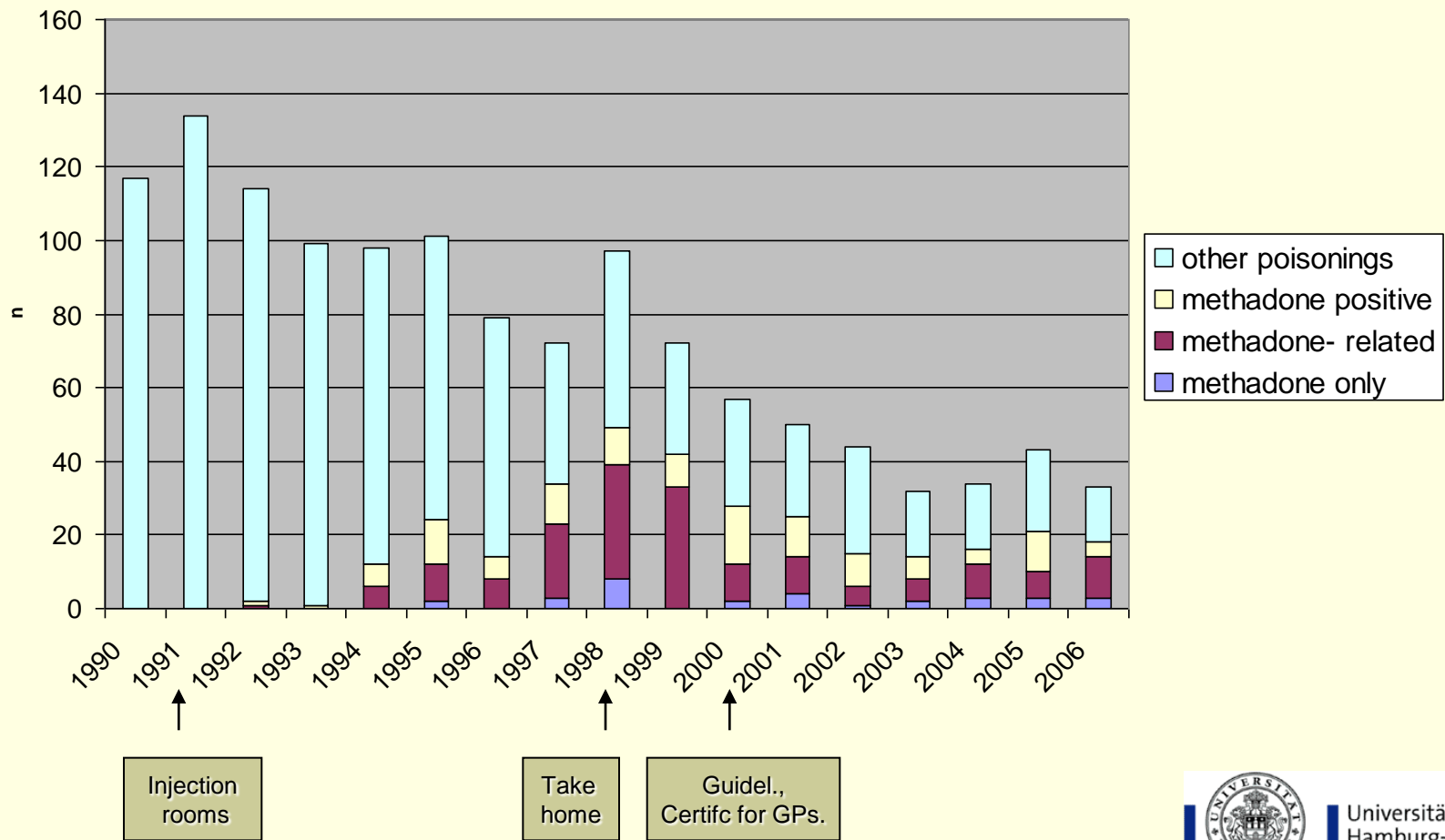
Overdoses in Hamburg 1990-2005 (%)

Abb.1: Overdoses in Hamburg 1990-2006 (%): Role of methadone



Overdoses in Hamburg 1990-2005

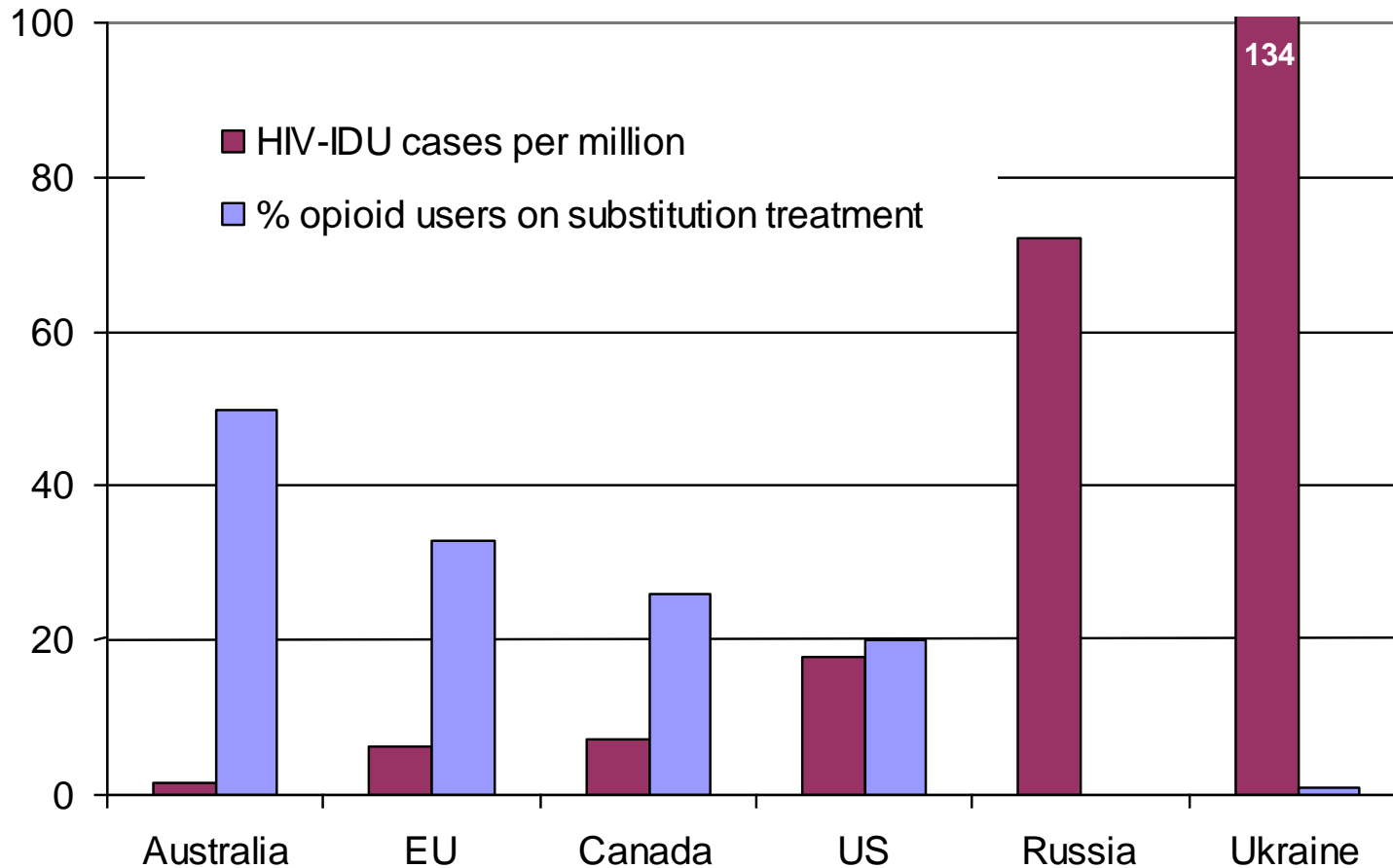
Abb.1: Overdoses in Hamburg 1990-2006 (%): Role of methadone



- Methadone appears to reduce the risk of HIV infection by 50% compared to withdrawal or not treatment



Incidence of diagnosed HIV in IDUs per million population (2005) and % coverage of opioid substitution treatment (2000-2004) (Wiessing et al., Am J Public Health 2009)



Cocaine related deaths

- Cocaine deaths are more difficult to identify than opioid deaths and the causal link is less clear
- Cocaine deaths are uncommonly due to direct pharmacological intoxication
- Due to previous reason and social profile of victims, they may not come to the attention of the police or medical personnel



Cocaine related deaths

- Most fatalities are caused by cardiovascular or cerebrovascular accidents
- Pre-existing conditions are a risk factor (spontaneous or due to chronic cocaine use)
- The most common case: chronic use may cause also chronic problems (atherosclerosis, ventricular hypertrophy) and subsequent deaths by arrhythmias or myocardial infarction.



- Alcohol use may increase toxicity of cocaine by increased blood levels (30%) and production of cocaethylene.
- Follow up (cohort) studies are important to assess the mortality related to cocaine.
- Some studies indicate 4-8 higher mortality than in general population (overdoses, Aids, cardiovascular, accidents, violence). In part due to intravenous use or concomitant opioid use



- Cocaine use often produces psychiatric problems (anxiety, paranoid ideas) that tend to resolve in a short period of time
- It is necessary to increase awareness of potential role of cocaine in cardiovascular and cerebrovascular problems, in particular among young adults.

