



**Karolinska  
Institutet**

# **On-going increase of overdose deaths: contribution of polydrug use**

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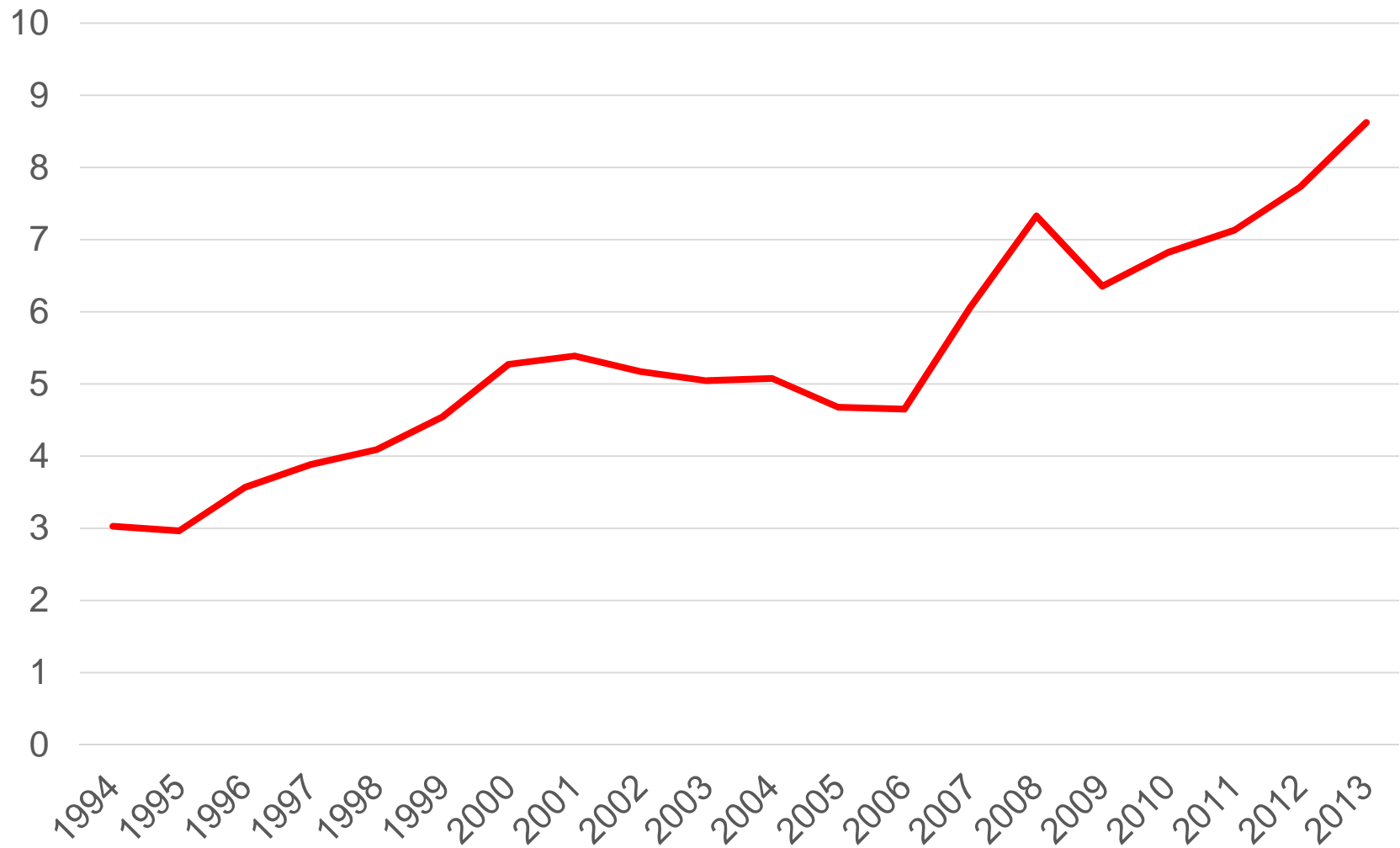
# TOXREG – a background

- Toxreg includes all forensically examined deaths in Sweden with presence of illicit drugs or methadone, buprenorphine and fentanyl in the body at death.
- As 92 % of all unnatural deaths (intoxication or external violence) are forensically examined in Sweden, TOXREG includes the main part of acute drug-related deaths.

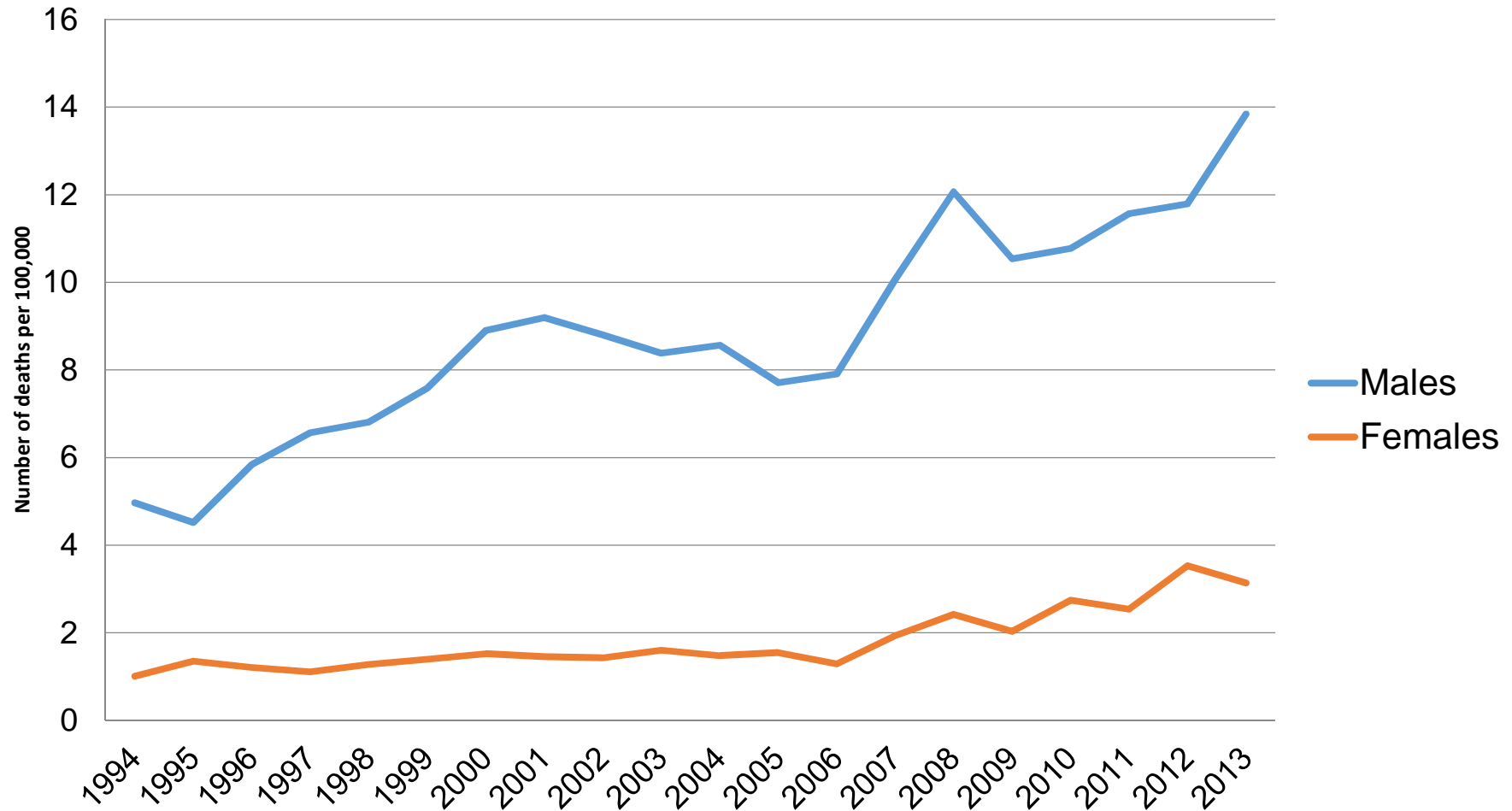
# Objective

- The main objective is to identify trends in drug-related mortality by drug types.
- The main use of TOXREG is surveillance of the drug situation and provision of early data. Annual data are provided in March-April the next year.
- TOXREG is also used as a research register and, by linking to other national registers, information is obtained about causes of death, previous prescriptions of drugs and inpatient or outpatient care.

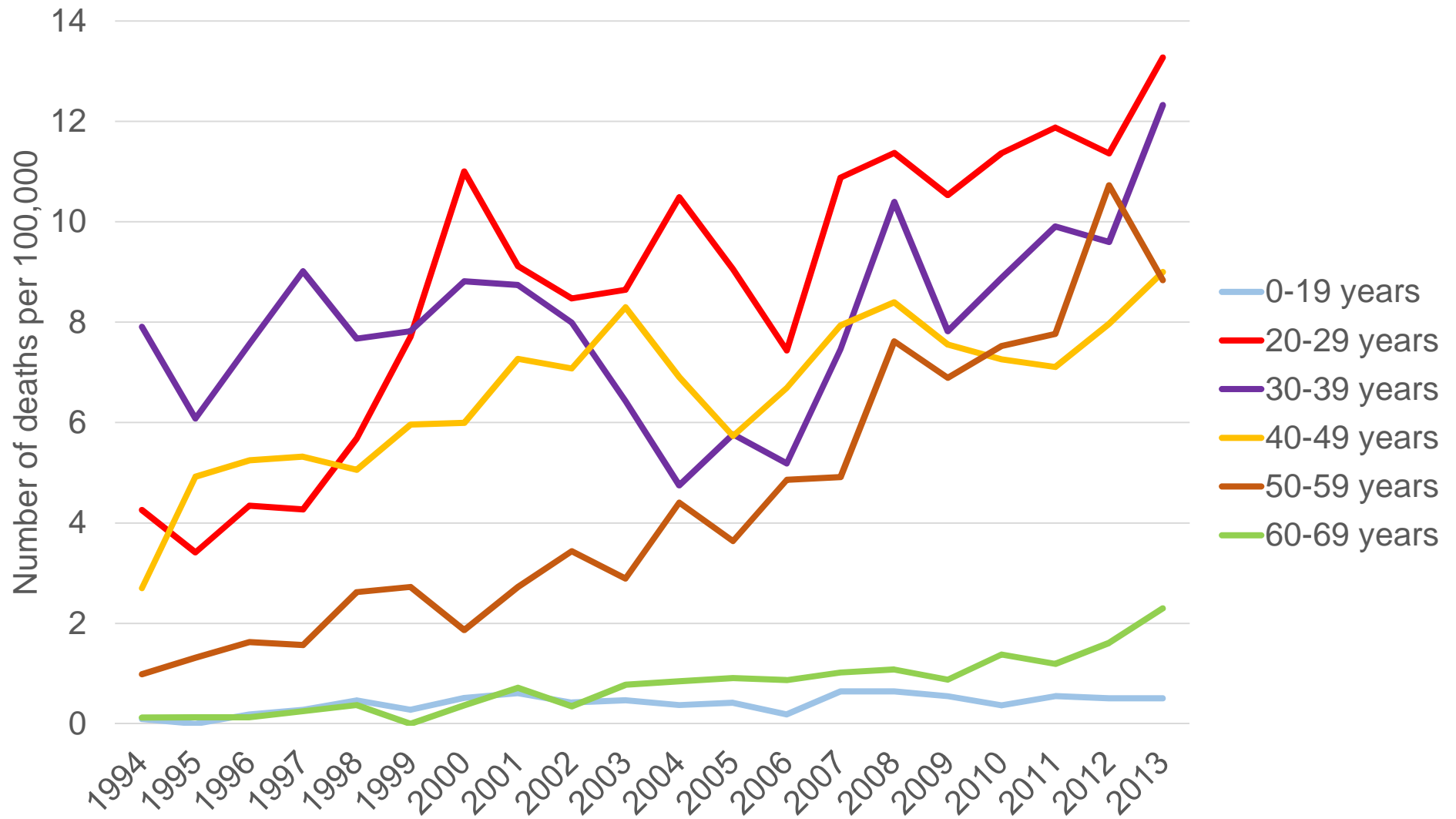
# Annual number of drug-related deaths according to TOXREG, number of deaths per 100,000, age standardized



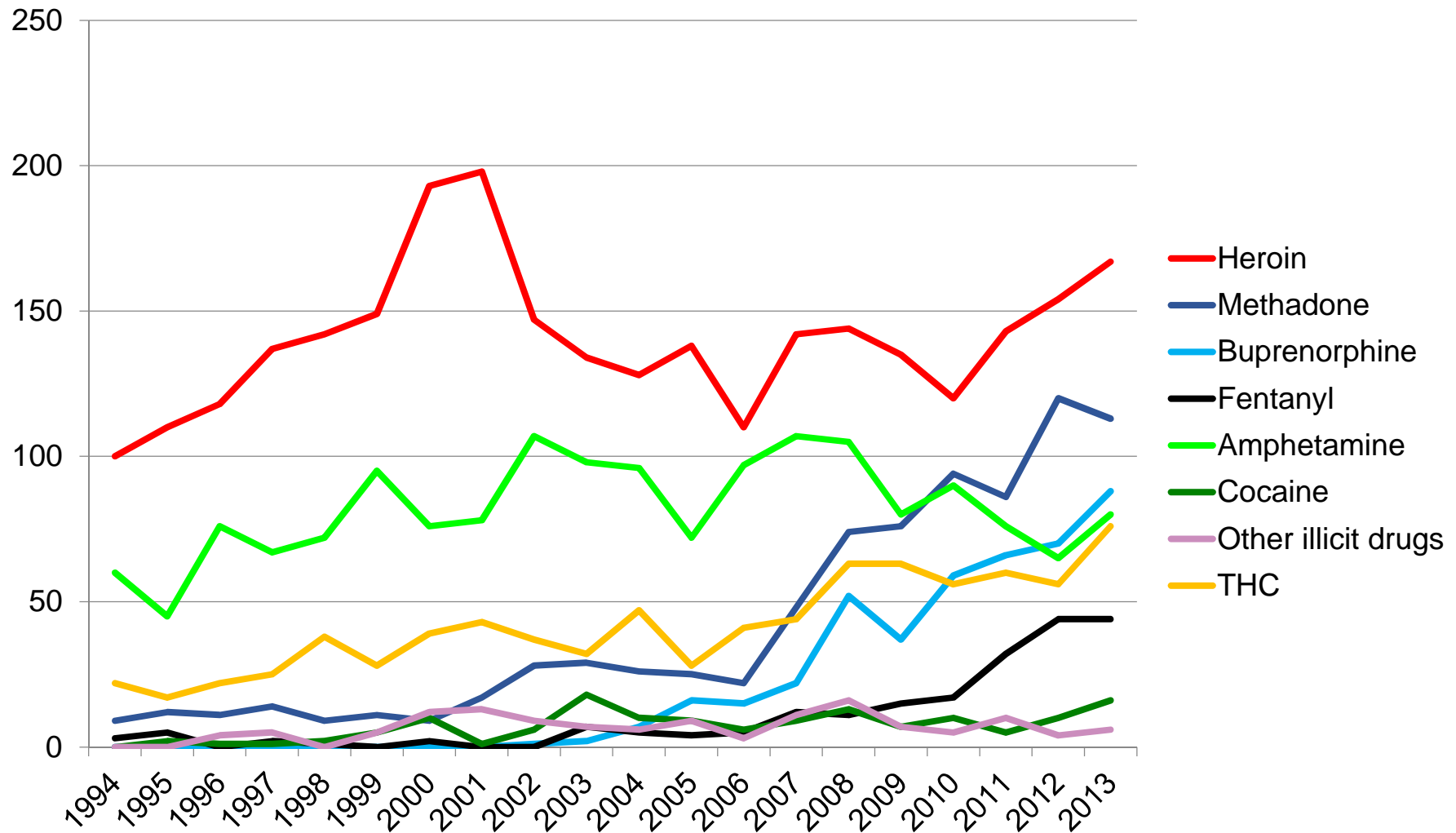
# Annual number of drug-related deaths according to TOXREG, number of deaths per 100,000, age standardized, males and females



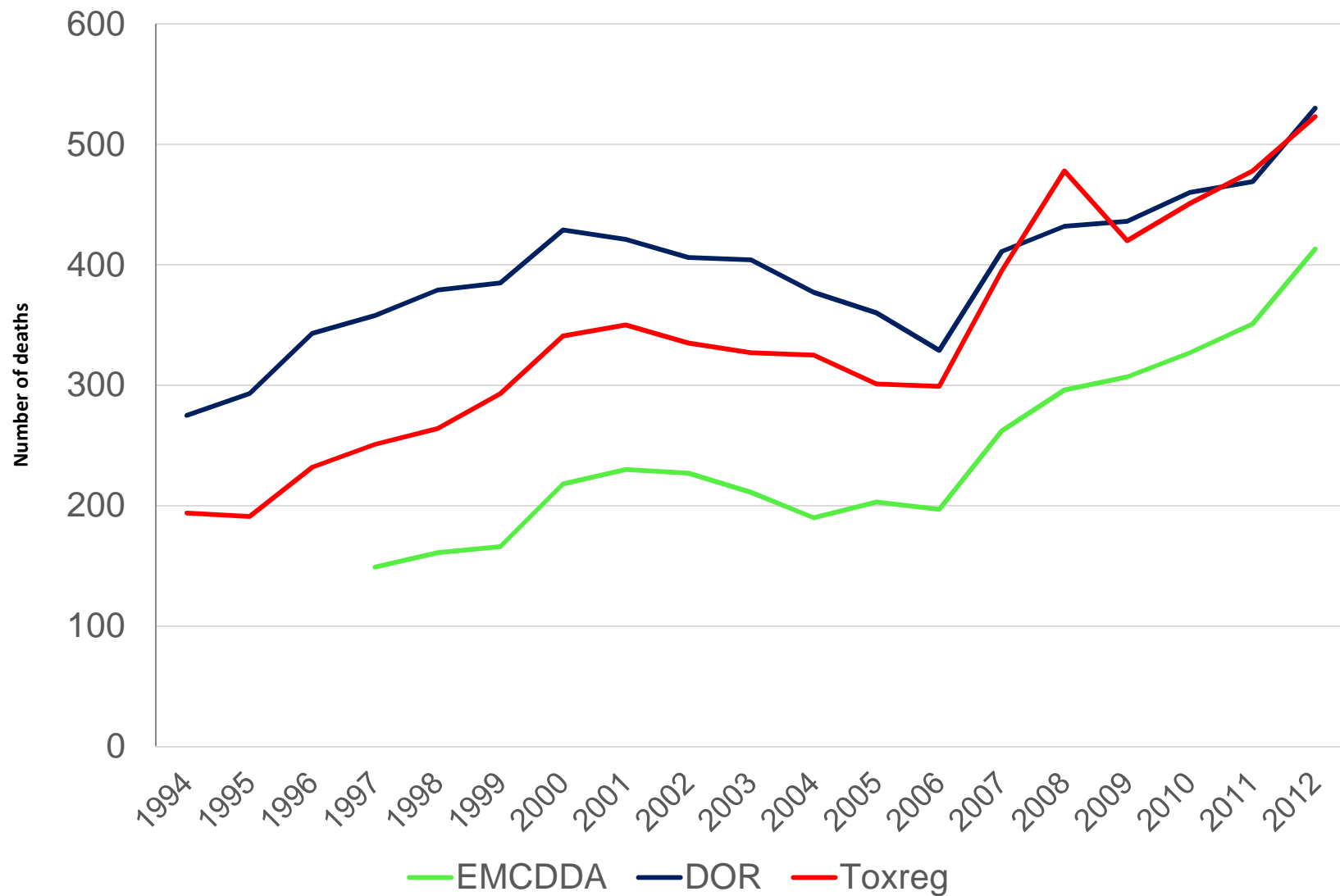
## Annual number of drug-related deaths according to TOXREG by age group, number of deaths per 100,000



# Annual number of forensically examined deaths in Sweden with presence of illicit drugs or methadone, buprenorphine and fentanyl, by main drugs



**Annual number of drug-related deaths in Sweden according to the general mortality register (DOR), Toxreg and the EMCDDA-index**

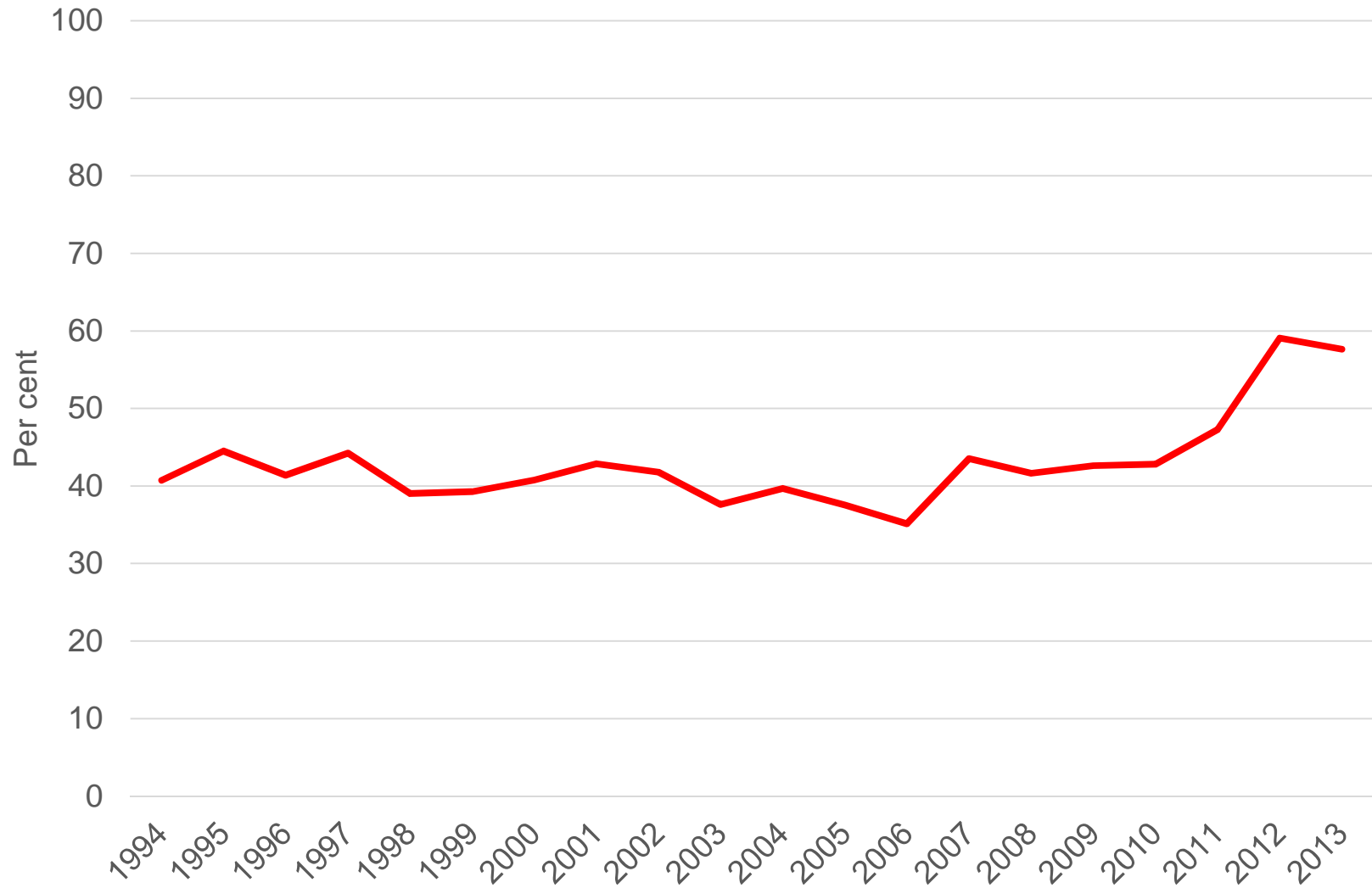




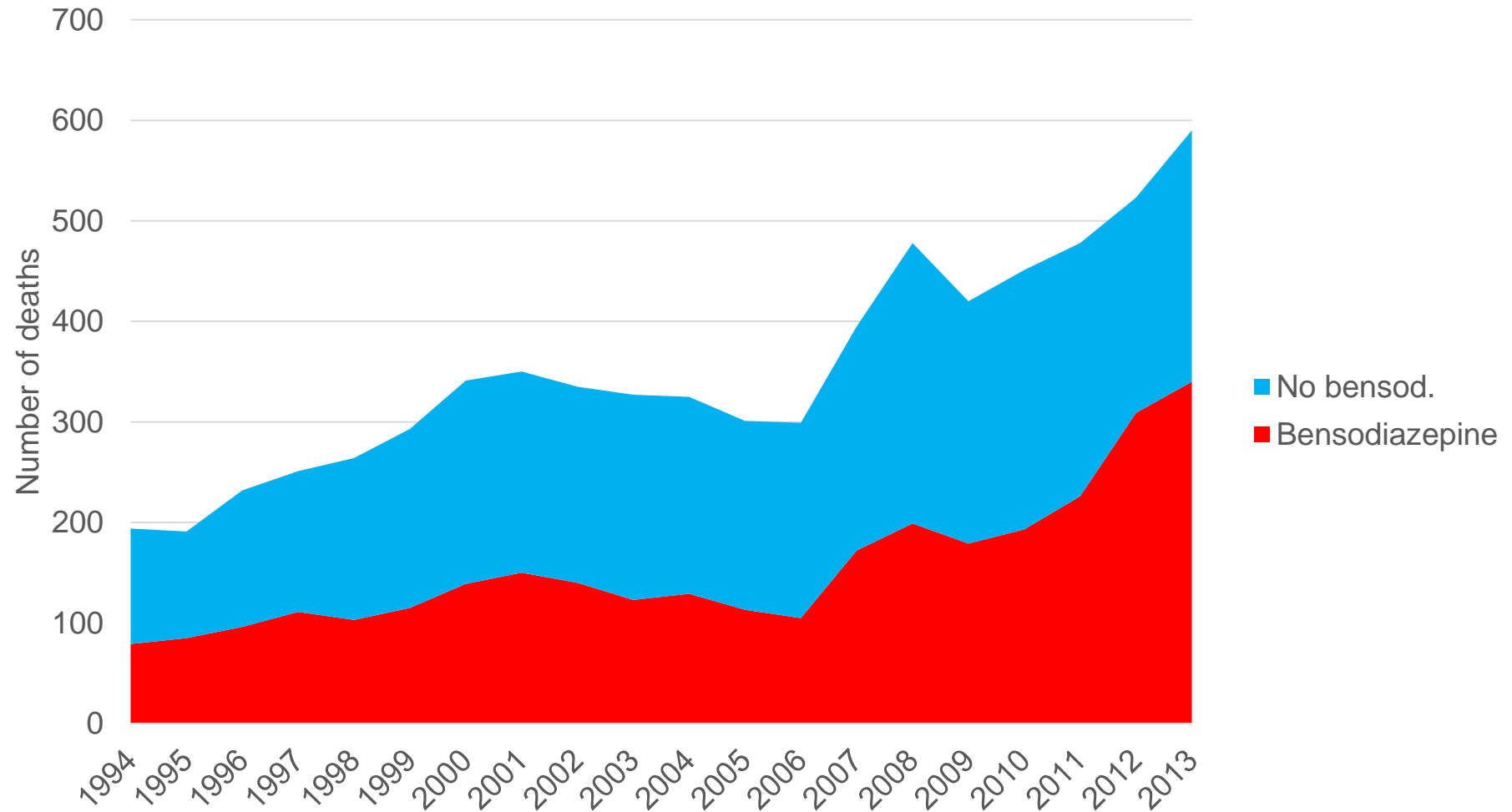
# Polydrug use

- TOXREG includes information about illicit drugs, prescribed drugs and alcohol at death.
- The deaths are related to main drug according to a fixed manual but additional information about other drugs and alcohol makes it possible to show trends in polydrug use.
- There is no information about NPD and AAS as those substances are not included in the regular screening of drugs.

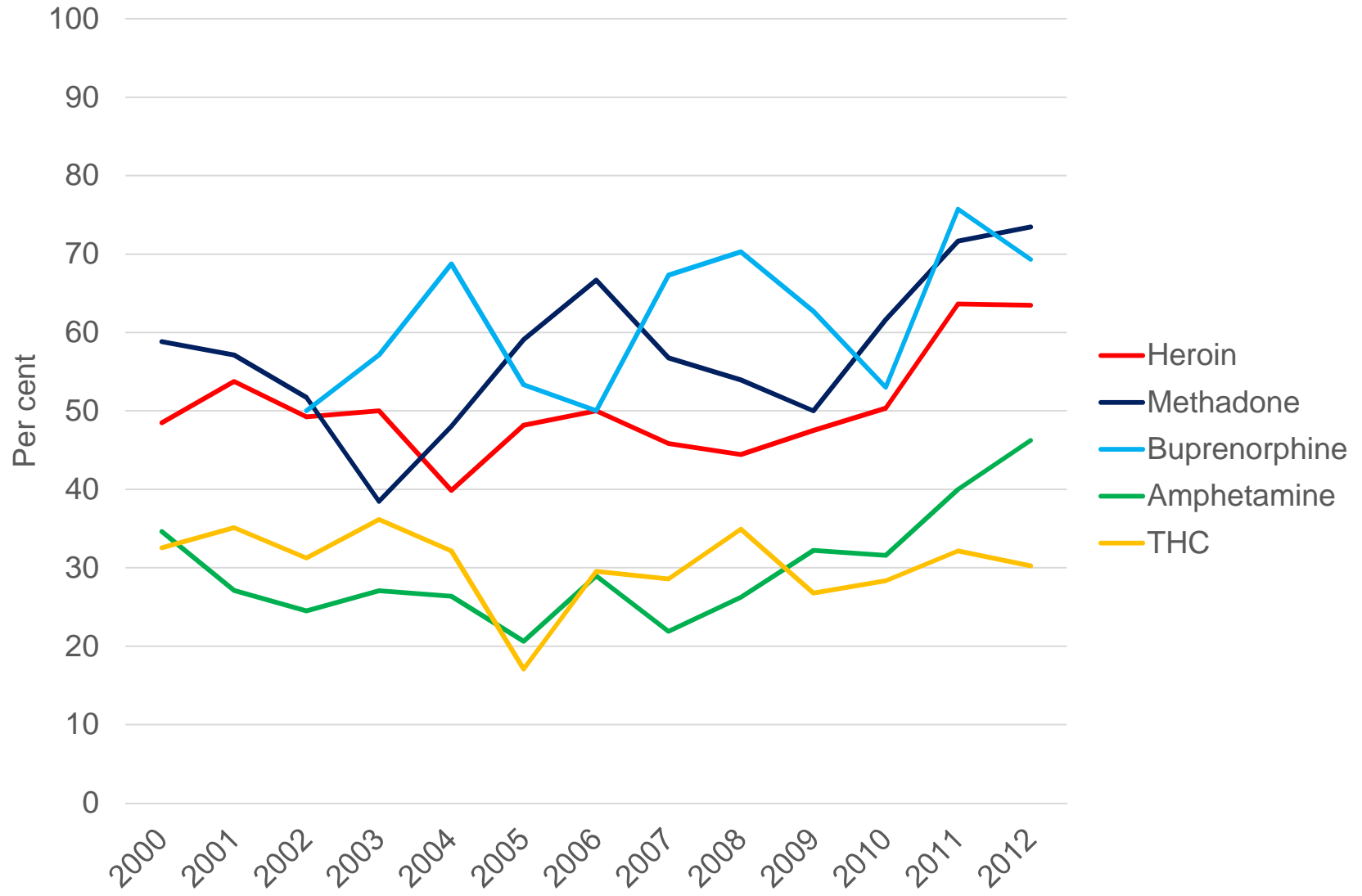
## Percentage of drug related deaths with presence of benzodiazepines in Sweden (Toxreg)



## Presence of benzodiazepines among drug-related deaths in Sweden (Toxreg)



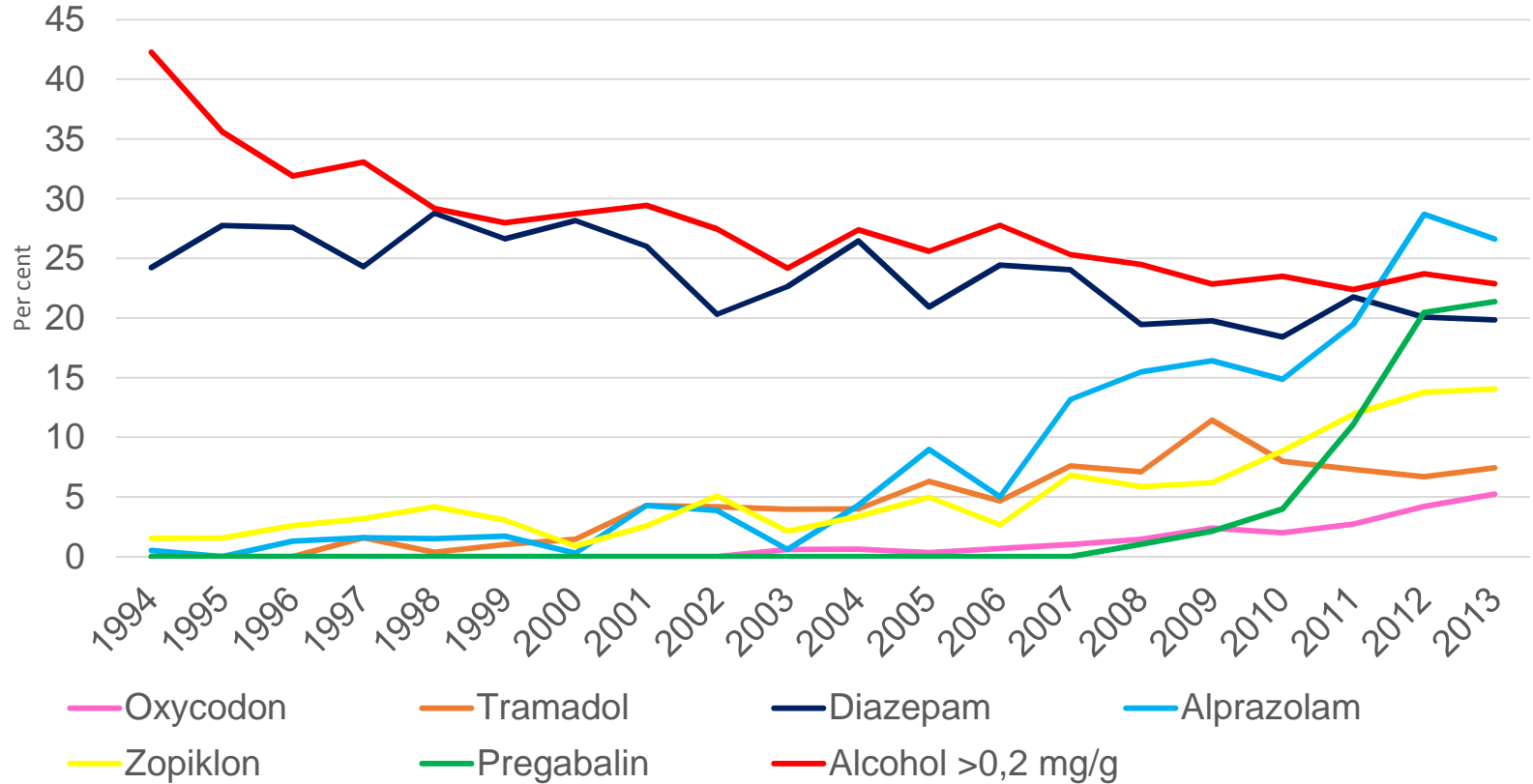
# Percentage of deaths with presence of benzodiazepines according to main drug (Toxreg)



# Presence of specific drugs or alcohol in Toxreg 2013

• Diazepam/Nordazepam	21.9 %
• Alprazolam	26.6 %
• Zopiklon	14.1 %
• Pregabalin	21.4 %
• Oxycodone	5.3 %
• Tramadol	7.5 %
• Alcohol (>0.2mg/g)	22.9 %

# Presence of alcohol or other drugs in TOXREG



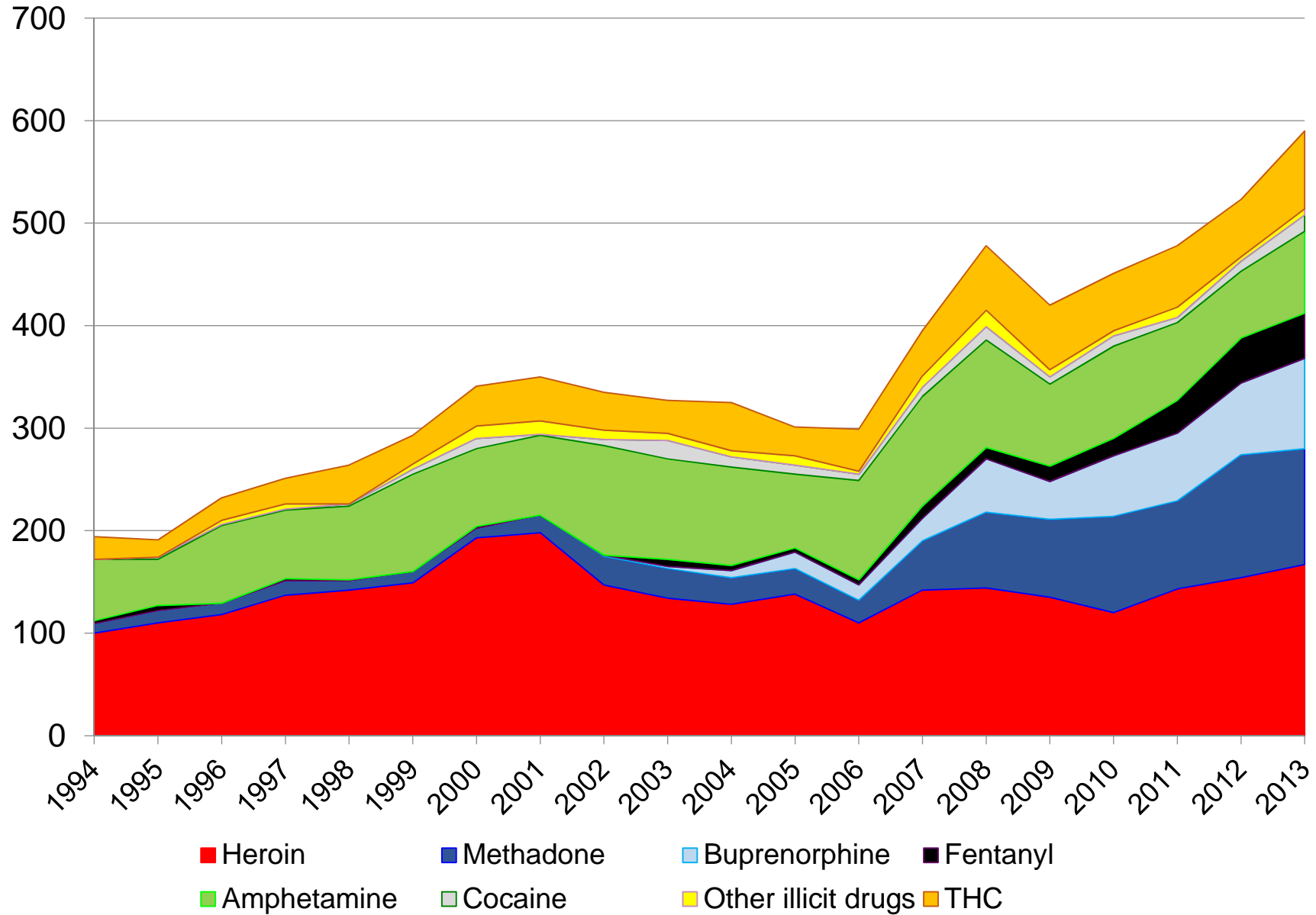
**Increase of DRD after 2006**

## **The increase in drug-related deaths after 2006**

- The increase in the total number of drug-related deaths is mainly related to an increase in the number of deaths related to methadone, buprenorphine or fentanyl.



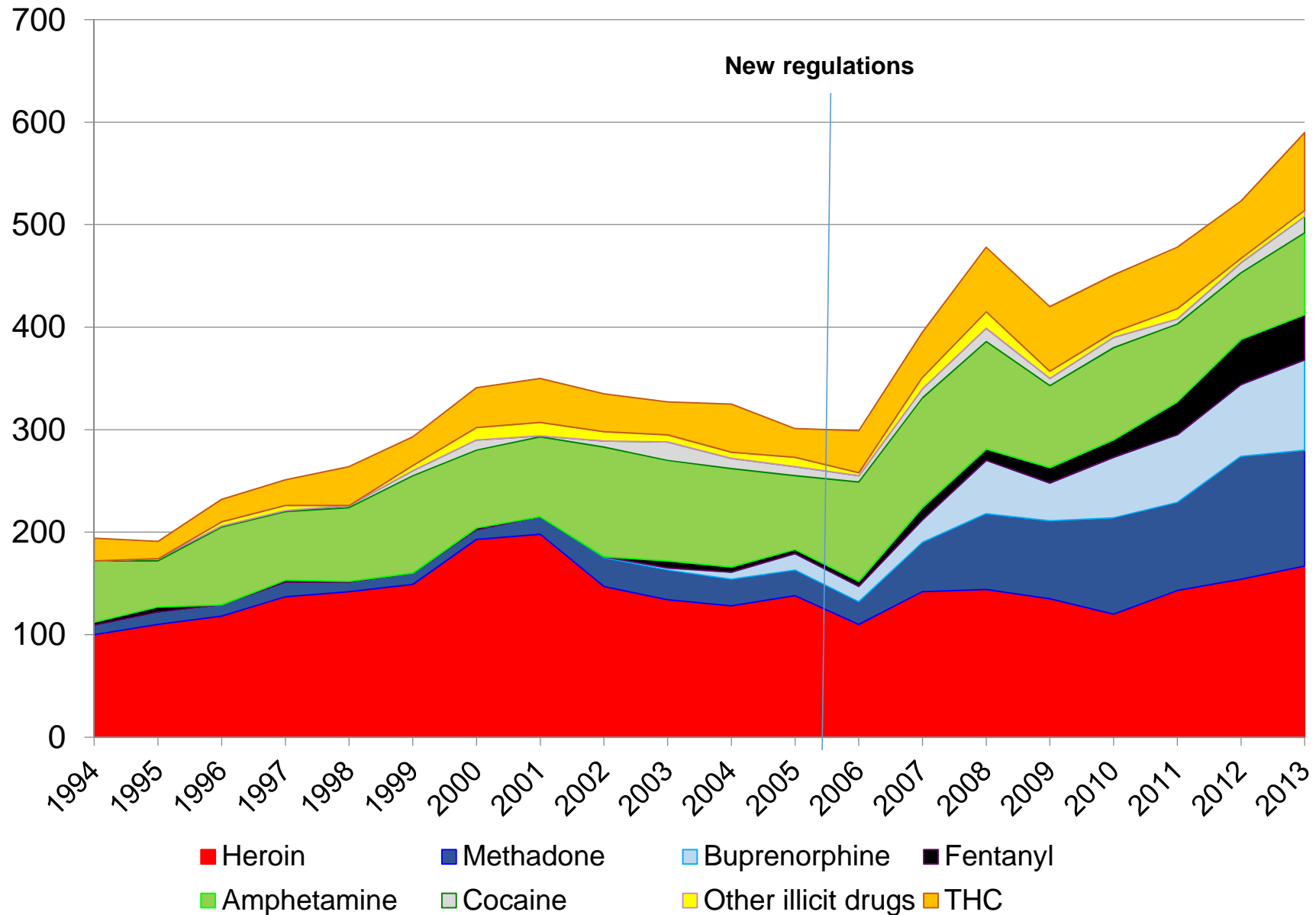
## Annual number of drug-related deaths 1994-2013 according to TOXREG, by main drug



# **New regulations for substitution treatment**

- In 2005 the strict rules for methadone treatment were eased after 40 years. After 2005 there was no limitation to the number of participants and it became easier to start new programmes.
- In 2005 there were 6 separate programmes with 800 persons in treatment. In 2012 there were 114 treatment units and more than 5000 persons in treatment.

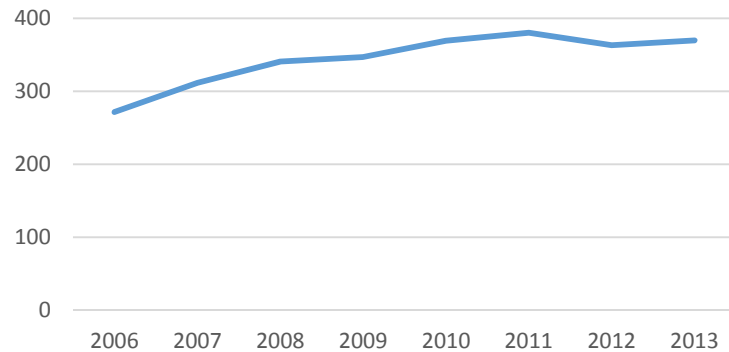
# Annual number of drug-related deaths 1994-2013 according to TOXREG, by main drug



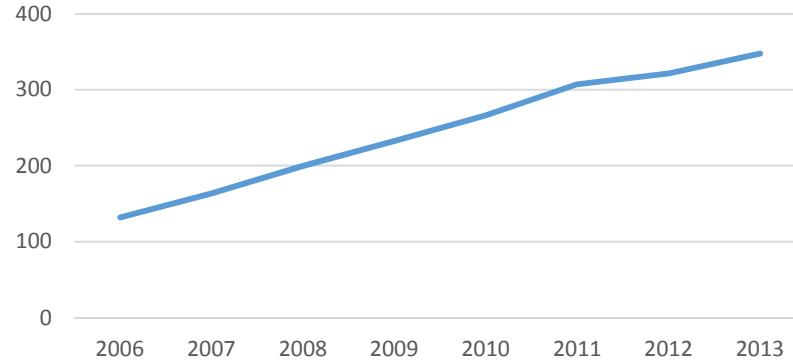
# Increase in prescriptions of opiates

- There has been an increase in the number of prescriptions of opiate drugs both in substitution treatment and in order to relieve pain.

Prescriptions of Fentanyl, number of Daily Defined Doses per 1000



Prescriptions of Buprenorphine, number of Daily Defined Doses per 1000



# Conclusions

- Both TOXREG and the General Mortality Register show an increase in the number of drug-related deaths after 2006.
- The increase is mainly related to prescribed opioids as methadone, buprenorphine or fentanyl.
- The main source of the drugs is the health services. There is probably a leakage from substitution treatment and from prescriptions of analgesic opiates.
- A common contributing factor may be that there have been major revisions in the Swedish health service system such as an increased market orientation and performance based reimbursement.