

# Drug Market Variations and Drug Use Practices among People Who Inject Drugs (PWID) in the Province of Québec, Canada

## BACKGROUND

- Until 2003, PWIDs in Québec were injecting mainly powder cocaine and heroin.
- The drug market has significantly diversified since then, with increasing availability of crack and of prescription opioids (PO).
- This could have led to changes in drug use practices among PWIDs.

## OBJECTIVES

- Examine annual trends in injection of different drugs, crack smoking and frequent injection.
- Examine relationships between main drug injected and frequent injection among PWIDs.

## METHODS: The SurUDI network

- SurUDI is a second-generation surveillance program of HIV and HCV infections and risk behaviors among PWID in eastern central Canada.
- Ongoing network implemented in 1995.
- Based on a convenience sample of hard-to-reach PWIDs.
- Covers 8 health districts located in the province of Québec. Two urban areas (Montréal and Québec City) and six semi-urban/rural regions.

### Recruitment

- PWIDs are recruited mainly in harm reduction programs.
- Other settings: drop-in and detention centers, detoxification clinics, rehabilitation programs.

### Eligibility criteria:

- being aged 14 and older,
- injecting at least once within the past six months,
- speaking French or English, and
- being able to provide informed consent.

### Each visit includes:

- the achievement of participant's informed consent,
- an interviewer-administered questionnaire addressing socio-demographic characteristics, sexual and drug use behaviors,
- the collection of an oral fluid sample for HIV and HCV antibody testing,
- a stipend (CAN\$5.00 to \$10.00).

Participants are encouraged to complete interviews at 6-month intervals.

### Analyses

#### Descriptive analyses (at first visit)

- *Variables:* age, gender and region of recruitment.
- *Analyses:* simple proportions and median calculations.

#### Analysis 1: Annual trends analyses on drugs and frequent injection

- *Sample:* All PWIDs recruited in SurUDI from 2003 to 2014.
- *Analyses:*
  - Generalized estimating equations (GEE) methods. For subjects with multiple visits in the same year, only the first visit was considered in any given year.
  - Log-binomial regression to estimate prevalence ratios (PR) and 95% Confidence Intervals (95%CI).
- *Variables:*
  - *Dependent variables:* cocaine/crack injection, heroin injection, PO injection and crack smoking. These variables referred to the six months prior to interview. Frequent injection was defined as injecting  $\geq 120$  times (upper quartile) in the month prior to interview. One model was built for each dependent variable.
  - *Independent variable:* year of observation treated as a continuous variable.

#### Analysis 2: Association between frequent injection and main drug injected

- *Sample:* All PWIDs recruited in SurUDI from 2011 to 2015 and injecting in the month prior to interview.
- *Analyses:*
  - GEE methods. For subjects with multiple visits in the study period, all visits were considered.
  - Log-binomial regression to estimate PR and 95%CI.
- *Variables:*
  - *Independent variables:* main drug injected (cocaine/crack, heroin, PO or others drugs) in the month prior to interview.
  - *Dependent variable:* frequent injection (injecting  $\geq 120$  times) in the month prior to interview.
  - *Confusion variables:* age, gender, homelessness, income and smoking crack.

### Ethics

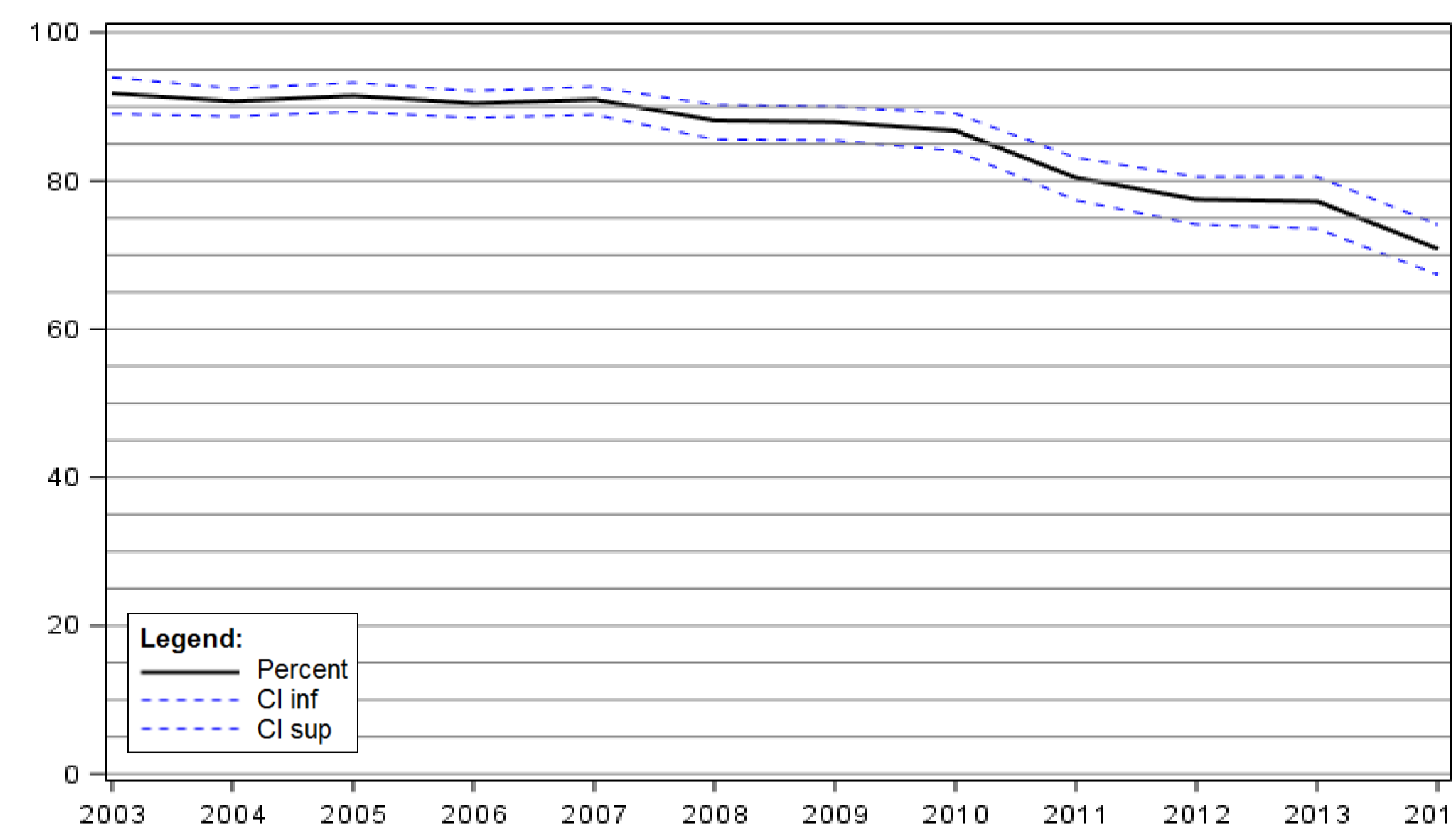
- Participation is anonymous but each participant is assigned a unique identifier that allows identifying repeaters.
- All procedures were approved by the ethics committee at the Centre hospitalier affilié universitaire de Québec.

## RESULTS

Table 1: Descriptive analyses

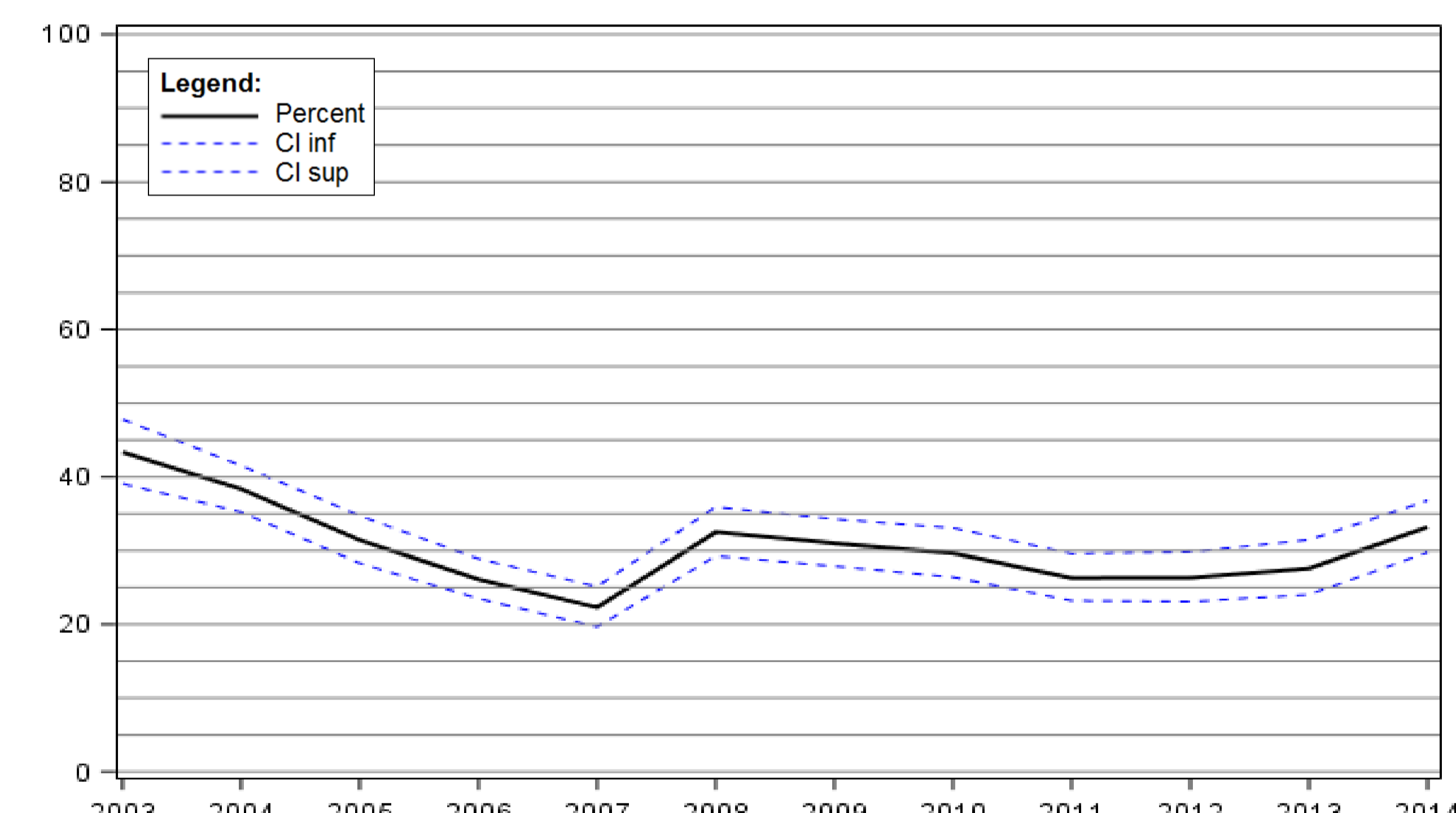
	Analysis 1	Analysis 2
Number of visits	9,382	2,801
Number of PWID	5,152	1,636
Male gender	76.4%	77.8%
Age (years) <sup>‡</sup>	36.0 (14.0-73.0)	37.0 (16.0-70.0)
Recruitment region		
-Montréal	58.1%	72.7%
-Québec city	20.2%	13.5%
-Semi-urban	21.7%	13.8%
<sup>‡</sup> Median (range)		

Figure 1: Temporal trend of cocaine/crack injection



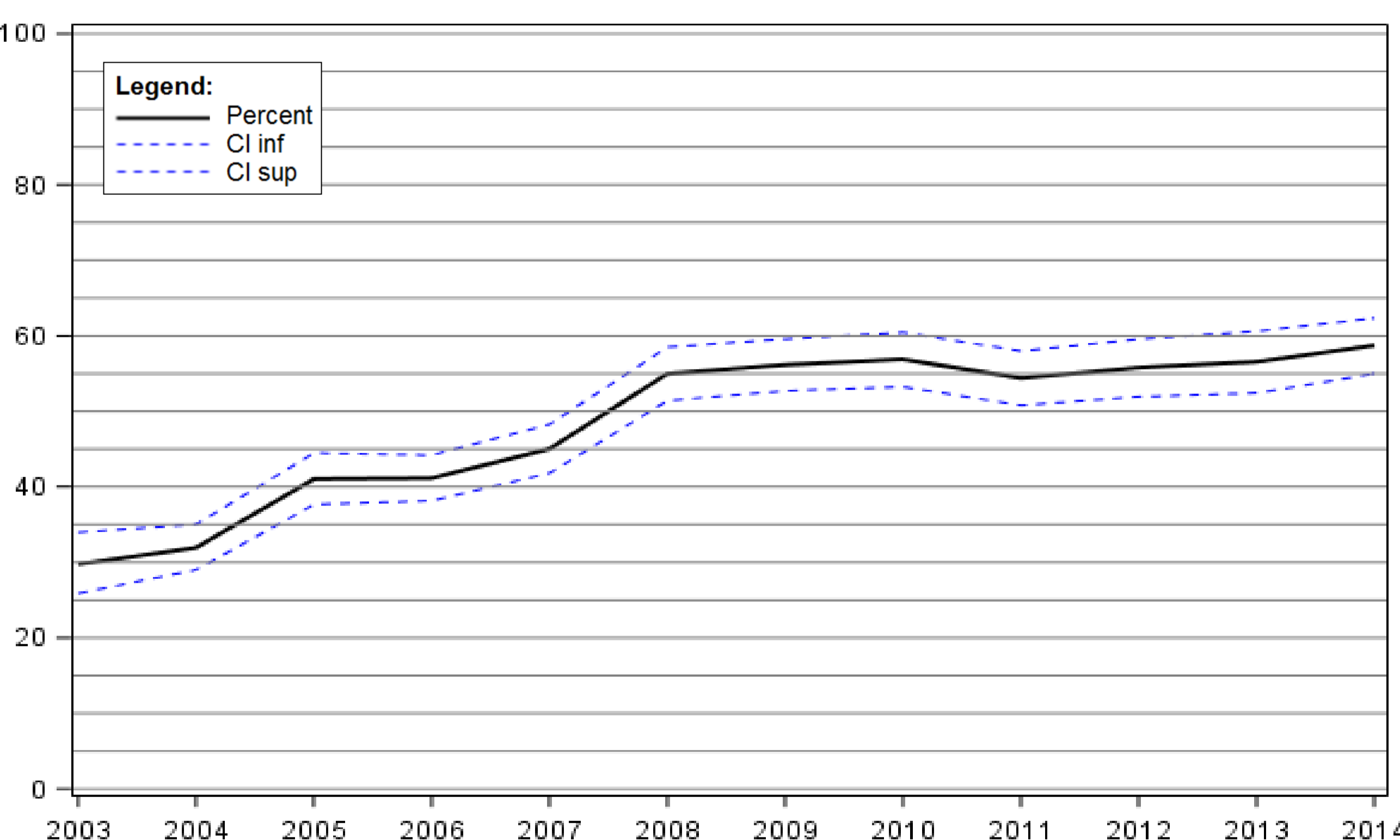
- Cocaine/crack injection significantly declined, with PR per year of 0.982 (95%CI: 0.979-0.985).

Figure 2: Temporal trend of heroin injection



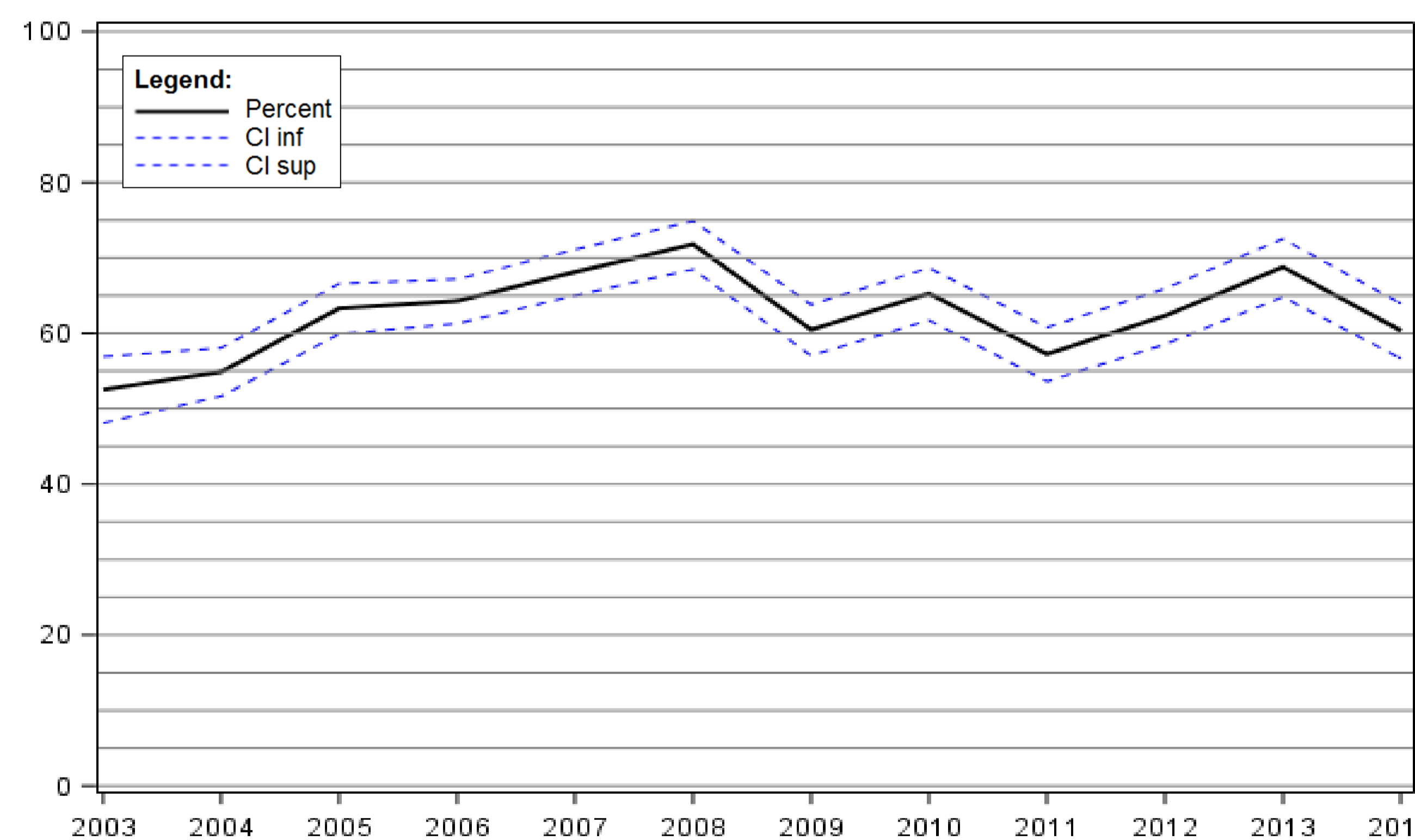
- Heroin injection significantly declined, with PR per year of 0.977 (95%CI: 0.967-0.988).

Figure 3: Temporal trend of PO injection



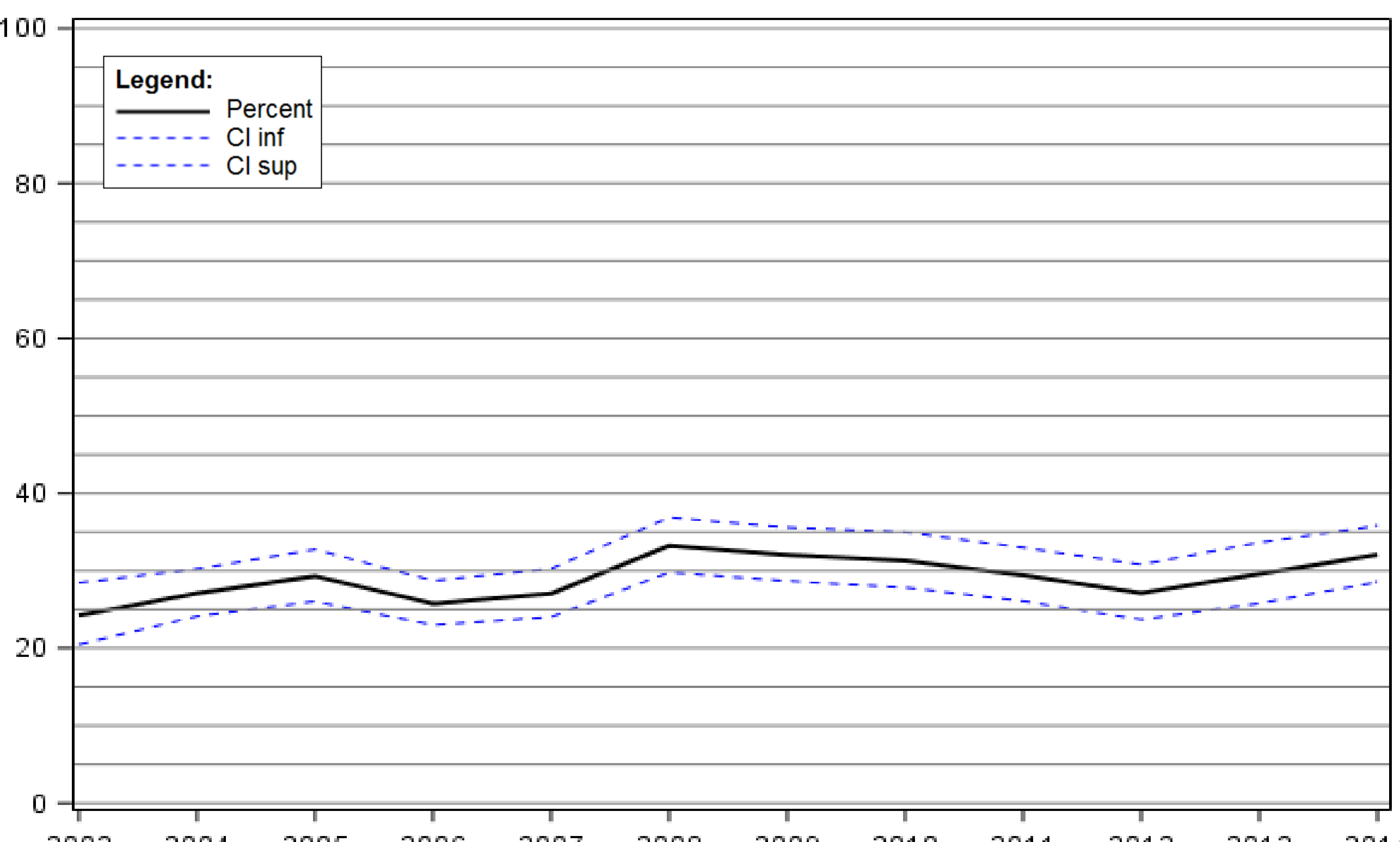
- PO injection significantly increased, with PR per year of 1.052 (95%CI: 1.045-1.059).

Figure 4: Temporal trend of crack smoking



- Crack smoking significantly slightly increased, with PR per year of 1.006 (95%CI: 1.001-1.012).

Figure 5: Temporal trend of frequent injection



- Frequent injection significantly slightly increased, with PR per year of 1.015 (95% CI: 1.004-1.026).

Table 2: Association between frequent injection and main drug injected

Main drug injected	N	PR crude	PR adjusted <sup>‡</sup>	95% C.I.
Cocaine/crack (ref)	1,401	1.00	1.00	
Heroin	262	1.53	1.45	1.12-1.87
PO	1,075	2.64	2.42	2.06- 2.86
Others drugs	63	1.32	1.22	0.75-1.99

<sup>‡</sup>adjusted for age, gender, homelessness, income and smoking crack

- Compared to PWID who injected mainly cocaine/crack, proportion of PWID reporting frequent injection was higher among those who injected mainly heroin and those injecting mainly POs, adjusting for age, gender, homelessness, income and smoking crack.

### Disclosure of interest

- This work was supported by the Public Health Agency of Canada and the Ministère de la santé et des services sociaux du Québec.
- None of the authors has commercial relationships that might pose a conflict of interest in connection with this work.

## CONCLUSIONS

- Changes in the drug market that have occurred since 2003 are reflected in PWID's practices. The high frequency of injection observed among PO injectors is of particular concern.
- Drug market variations are a challenge for health authorities responsible for harm reduction programs.

### Limitations

- Results not generalizable to all PWID.
- Recall and social desirability biases likely.

### Strengths

- High number of observations allowing high statistical power.
- Trends analyses covering a relatively long period (12 years).
- Geographic coverage including urban and semi-urban settings.

### Acknowledgements

- All recruitment sites and SurUDI staff.
- All participants.
- The funding agencies.
- Le Ministère de la santé et des services sociaux du Québec.
- The Canadian Public Health Agency.