Preventing CO poisoning: Tracking the impact of legislative and regulatory changes in New York City

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  - New York Statewide Planning and Research Cooperative System (SPARCS)
  - Fire Department of NYC (FDNY)

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Background
Public Health Burden of CO in NYC

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Visible toll of CO in recent years

- Summer 2003: Blackout-related deaths
- Winter 2003-2004: Heating-related deaths
- 2003-2004: Rise in the frequency of underground fires (can generate high levels of CO) and mass evacuations of NYC residents

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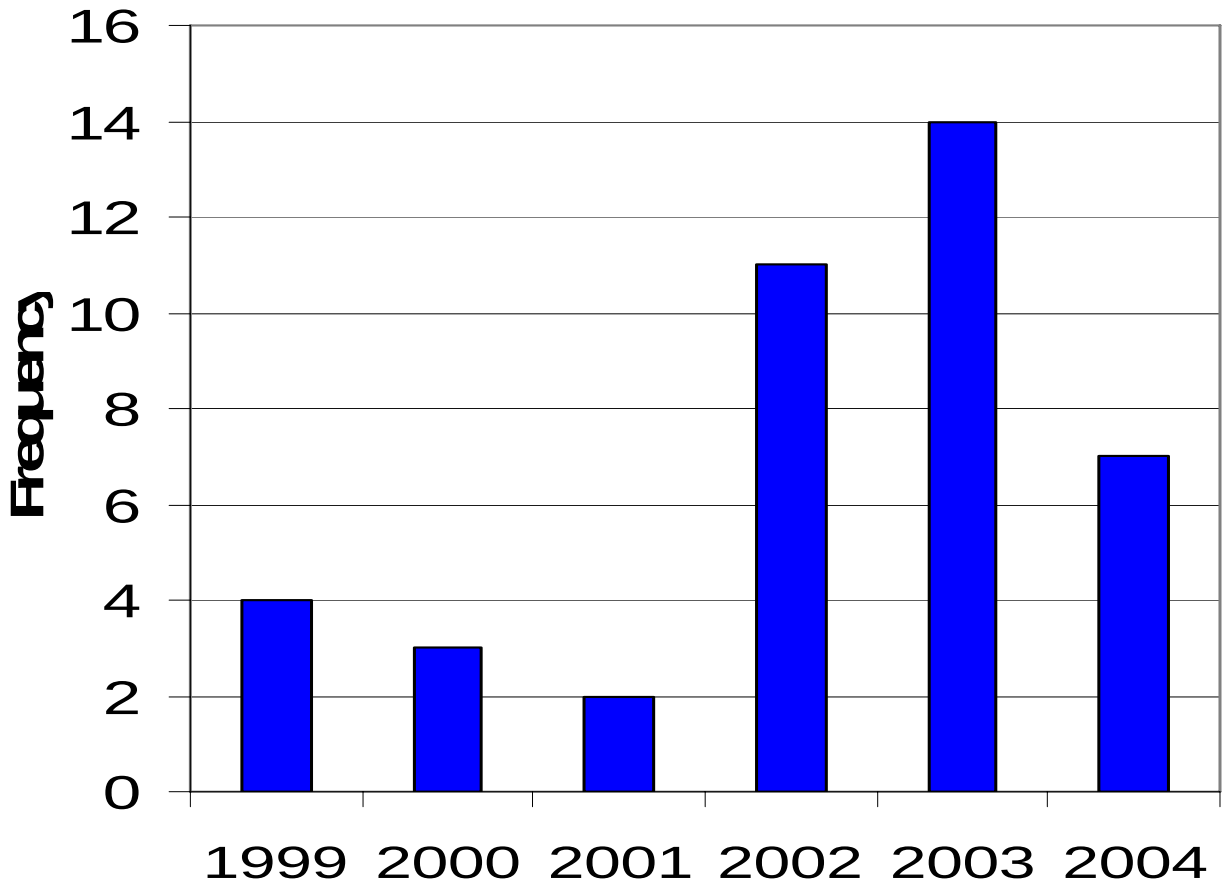
CO Poisoning Surveillance: Unintentional deaths

Annual deaths of NYC residents due to accidental exposure to other gases/vapors including CO (ICD10 Code X-47)



Data Source: NYC Office of Vital Statistics

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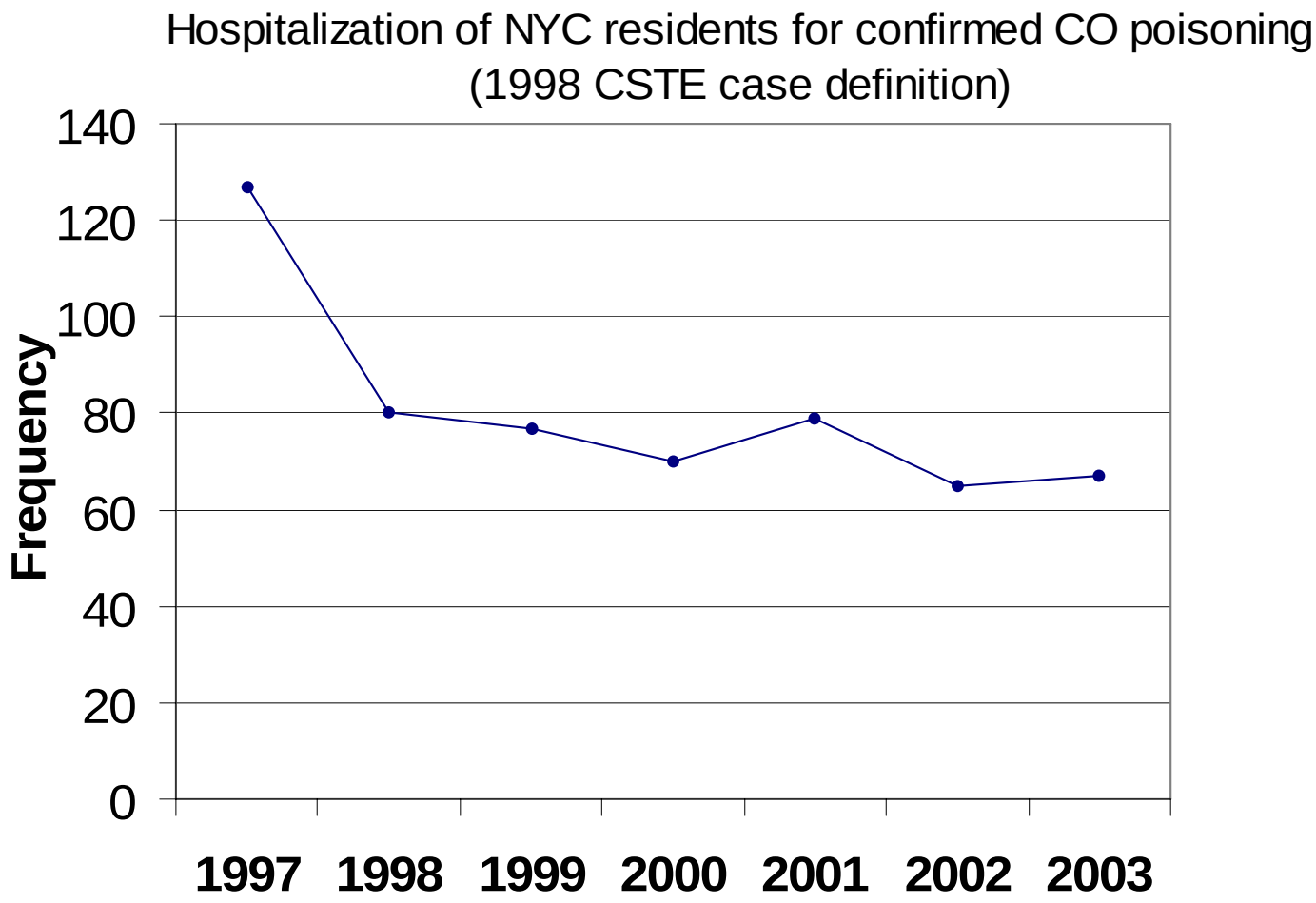
CO Poisoning Surveillance: Unintentional hospitalizations



Data Source: NYSPARCS (Inpatient admissions)

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CO Poisoning Surveillance: Unintentional ED Visits

- NYSPARCS outpatient data to be available late 2006

- DOHMH conducted chart reviews at a sample of Emergency Departments (EDs)
  - Week-long quarterly data abstraction, 6 total quarters (mid-2003 through end of 2004)
  - 23/70 NYC EDs sampled
  - Cases identified on basis of chief complaint
  - Total of 14 unintentional cases identified
    - Crude estimation of annual total throughout NYC = 315 cases

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CO Poisoning Surveillance: Characteristics of morbidity

	Hospitalizations 1997-2003 N=552	ED visits (from *sample*) 2003-04 N=12*
Gender		
Male	316 (57%)	7 (58%)
Female	235 (43%)	5 (42%)
Age		
Under 18	81 (15%)	2 (17%)
18 + Years	471 (85%)	10 (83%)

*Limited sample size, estimated proportions may not be reliable.

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CO Poisoning Surveillance: Characteristics of morbidity

	Hospitalizations 1997-2003 N=552	ED visits (*from sample*) 2003-04 N=12*
Place		
Home	435 (78%)	5 (42%)
Workplace	N/A**	4 (33%)
Other	88 (16%)	0
Unspec/Missing	29 (5%)	3 (25%)
Workers comp	52 (9%)	N/A

*Limited sample size, estimated proportions may not be reliable.

**Not directly captured, however “industrial” category = 18 cases (3%)

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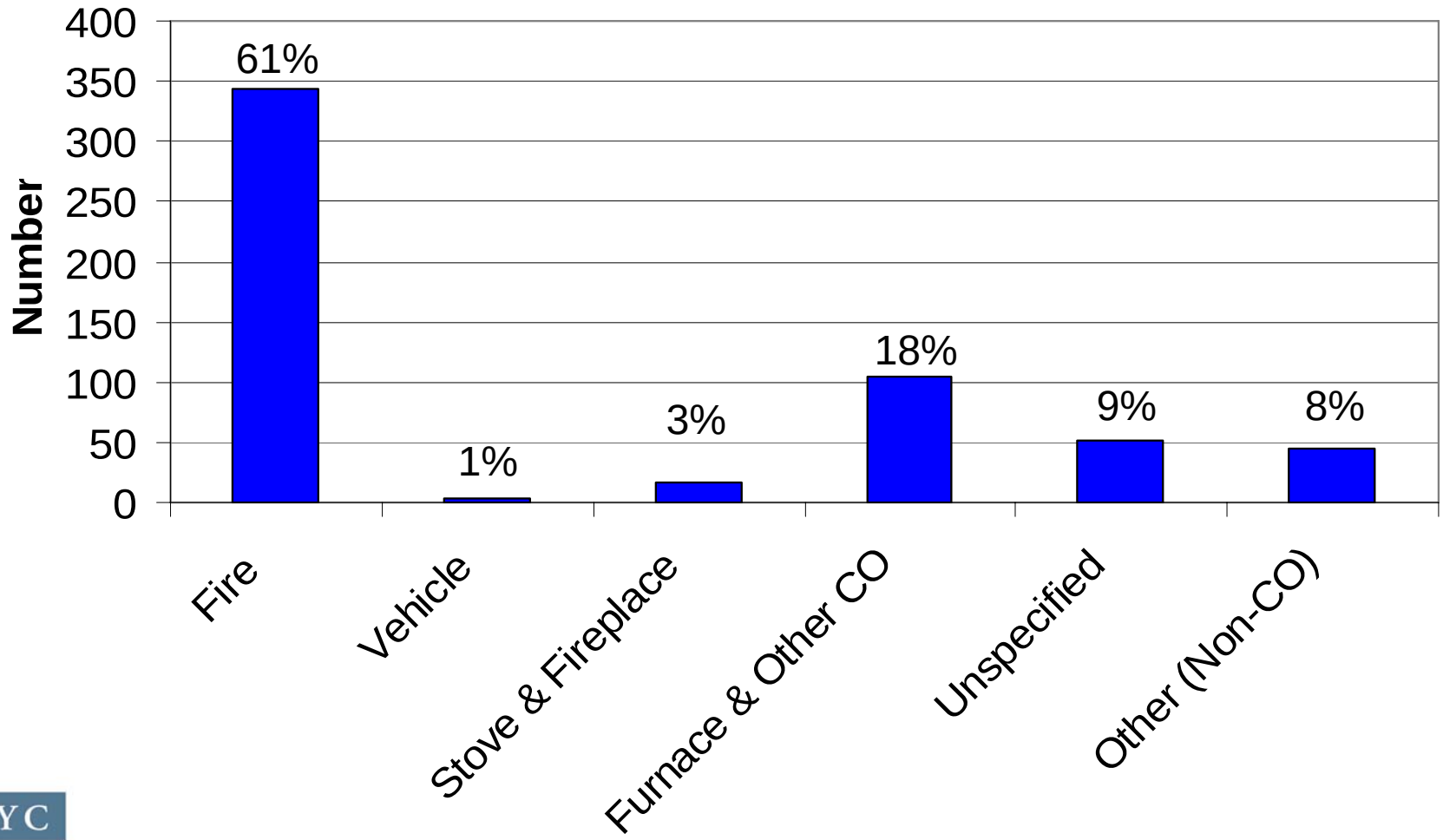
Source of accidental exposure:

Evidence from hospitalizations



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CO Poisoning Surveillance: Exposure and Event Data

- CO Tracking program includes surveillance of exposure reports to the NYC Poison Control Center and Fire Department investigations of CO events
  - Evaluation follows trends in these indicators

- Burden of long term health impacts of acute poisoning and potential effects of chronic sub-acute exposure largely unknown
  - Comprehensive surveillance of poisoning cases and events may provide an opportunity to explore

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Evaluation of impact of legislative and regulatory initiatives

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NYC's CO Detector Law

November 1, 2004

City Council passed, and Mayor signed Local Law 7 of 2004, requiring:

- Building owners required to install CO detectors
  - At least 1 w/in 15 feet of any bedroom entrance
- Includes homes, hotels, schools, libraries, hospitals, and nursing homes
- Exemptions for buildings w/o or non-adjacent:
  - Fossil fuel burning furnaces, boilers, water heaters
  - Fireplaces
  - Enclosed parking spaces
  - Commercial gas ranges

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NYC Health Code Update
November 20, 2004

- Purpose: relay sentinel cases
- NYC Board of Health approved Health Code amendments (Section 11.03, subsections a, c)
  - Updated definition includes all COHb >10%
  - Requires *immediate* referral
    - Healthcare providers (HCPs) to Poison Control Center (PCC)
    - PCC relays information to Fire Department (FDNY) for investigation

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Objectives of evaluation

Assess impact of recent policies on:

1. Reporting of CO poisoning cases
2. Provision of address by providers
3. Detection of potentially hazardous and hazardous CO events

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Methods

Data sources

- NYC-PCC January 2000-April 2005
  - Calls placed by healthcare provider or facility
  - CO-related calls abstracted by PCC
  - Cases coded by PCC specialist as “exposure”
  - Compared proportion of reports made by healthcare providers in months of Nov-April
- FDNY January 2004-December 2005
  - CO incident investigations data

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1. CO Exposure Reporting

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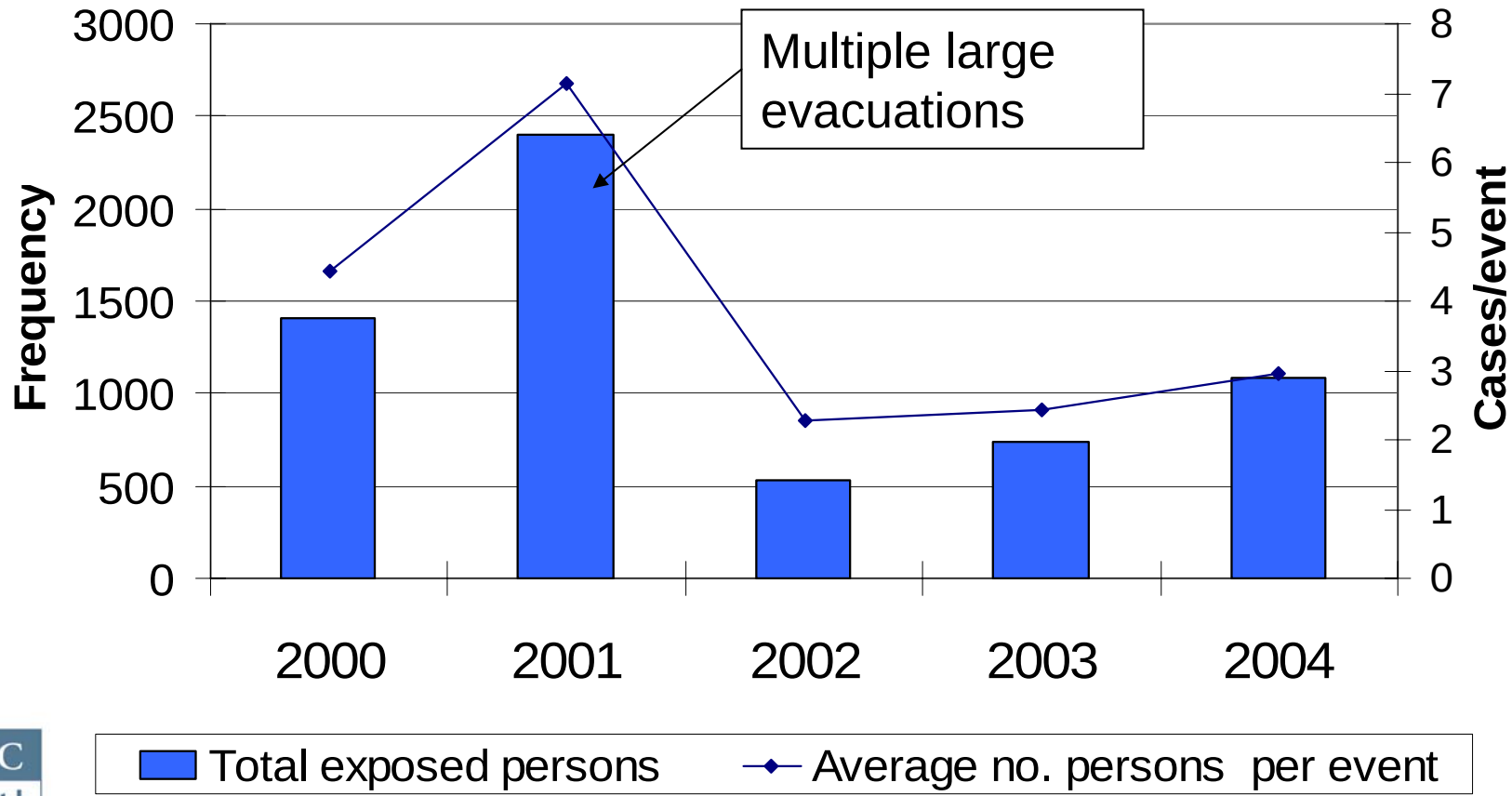
500-2500 annual exposure reports annually in NYC
(Average of 4 cases per event)



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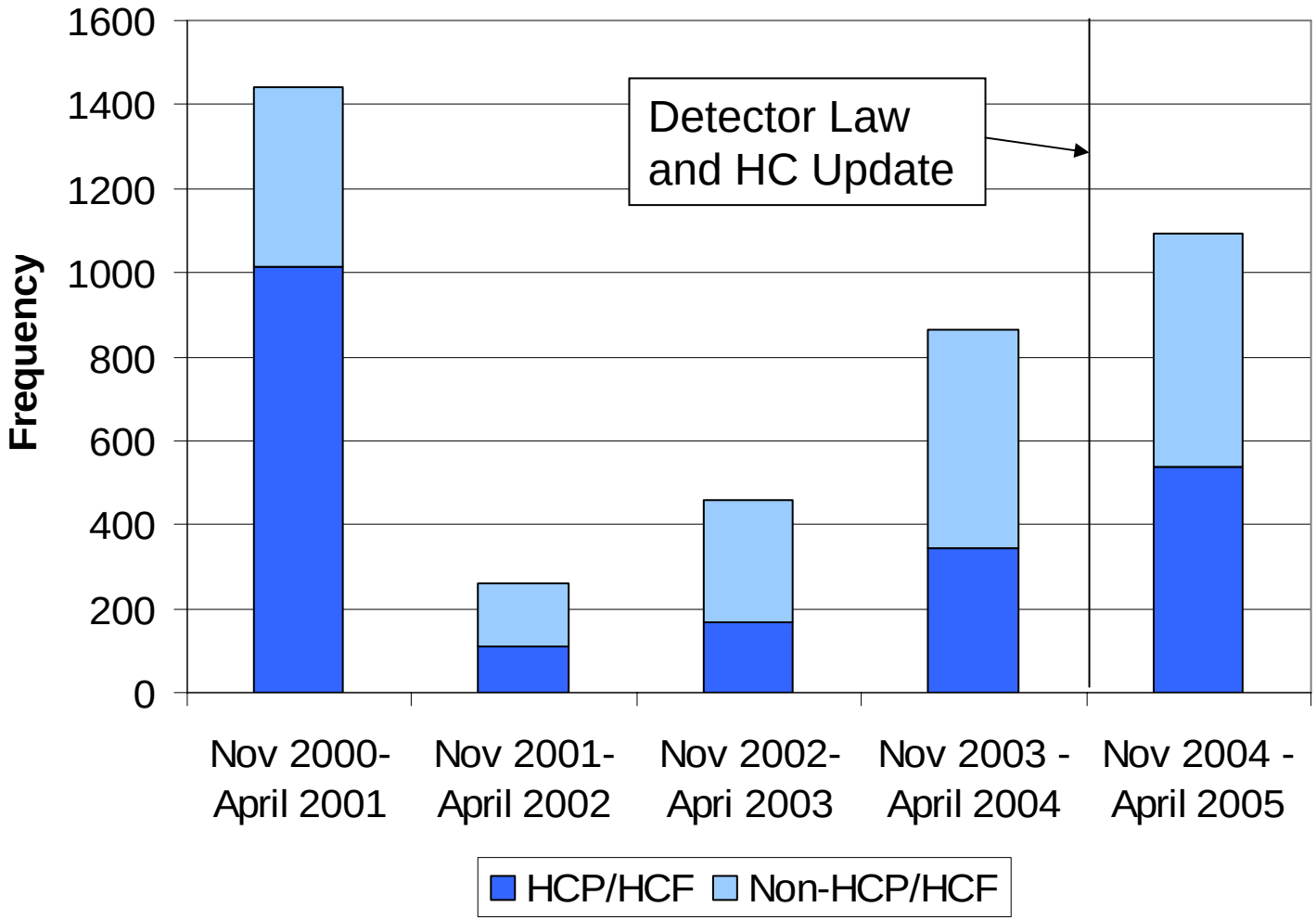
Reporting by public and Healthcare Providers before and after November 2004



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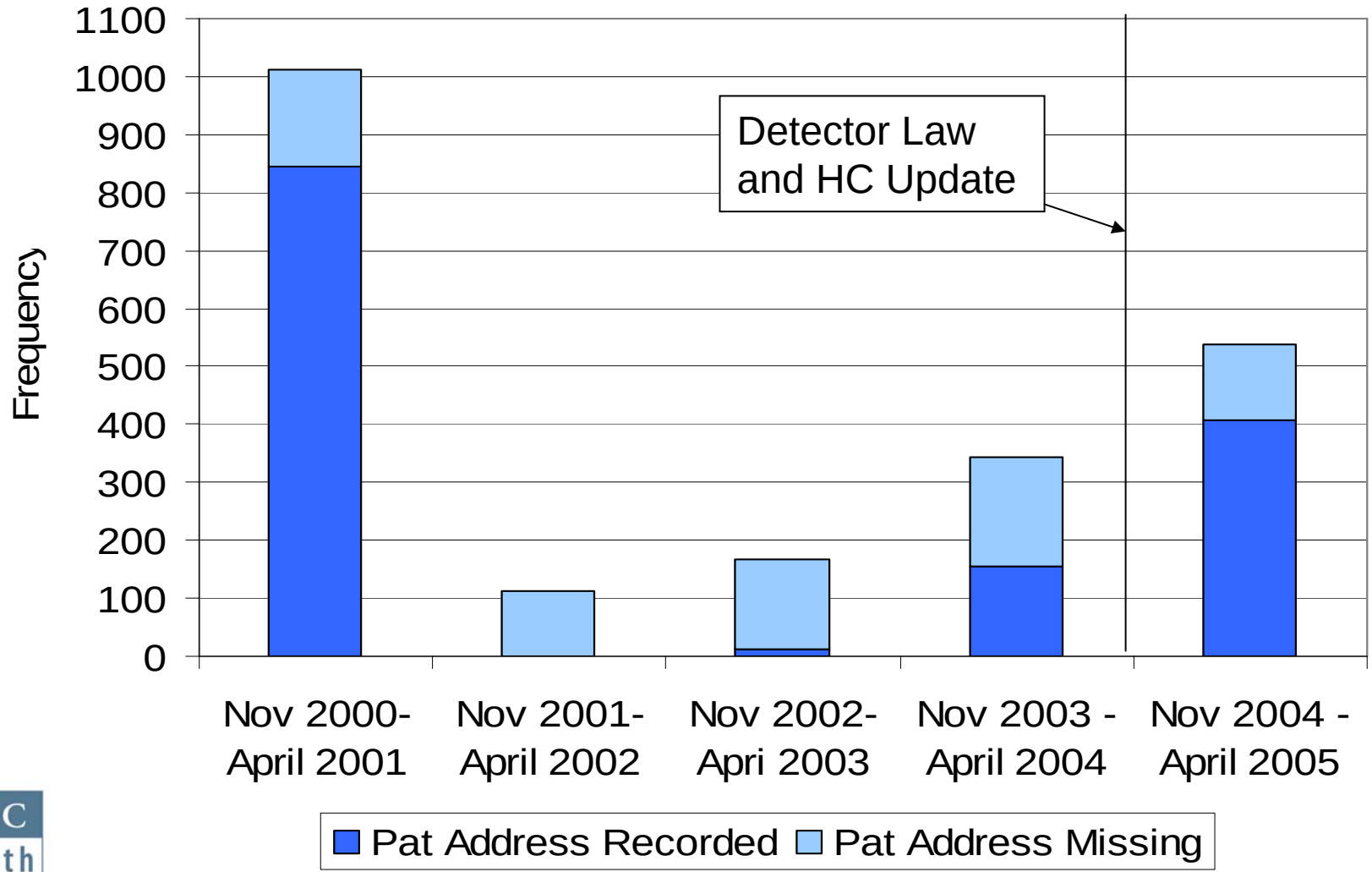
Provision of patient address by healthcare providers before and after November 2004



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Summary of CO Exposure Reporting

- Frequency of exposure reports and proportion made by providers variable over time
  - Influenced by mass evacuation events
  - No clear impact of health code or CO detector laws on number of exposures reported or occurring

- Suggestive evidence of an increase in providers supplying patient address after Health Code update in 2004

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2. CO Investigations

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Types of CO events investigated by FDNY

- Detector activated at scene
  - No CO found upon arrival
  - 1-9 PPM CO found upon arrival
  - >9 PPM CO found upon arrival

- No detector activated (absent or failed)
  - 1+ PPM CO found upon arrival

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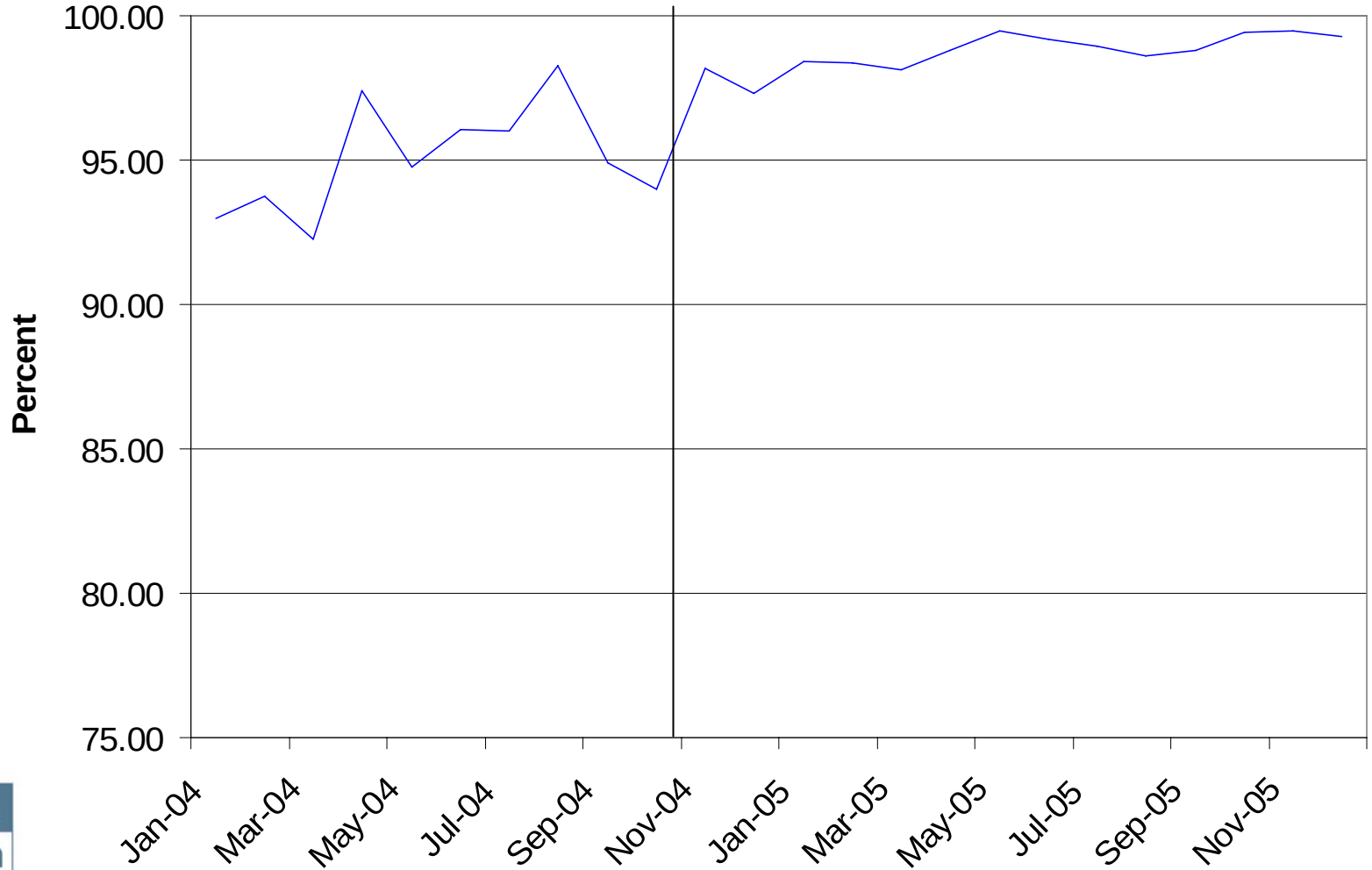
Percent of CO investigations where a detector activated, before and after November 2004



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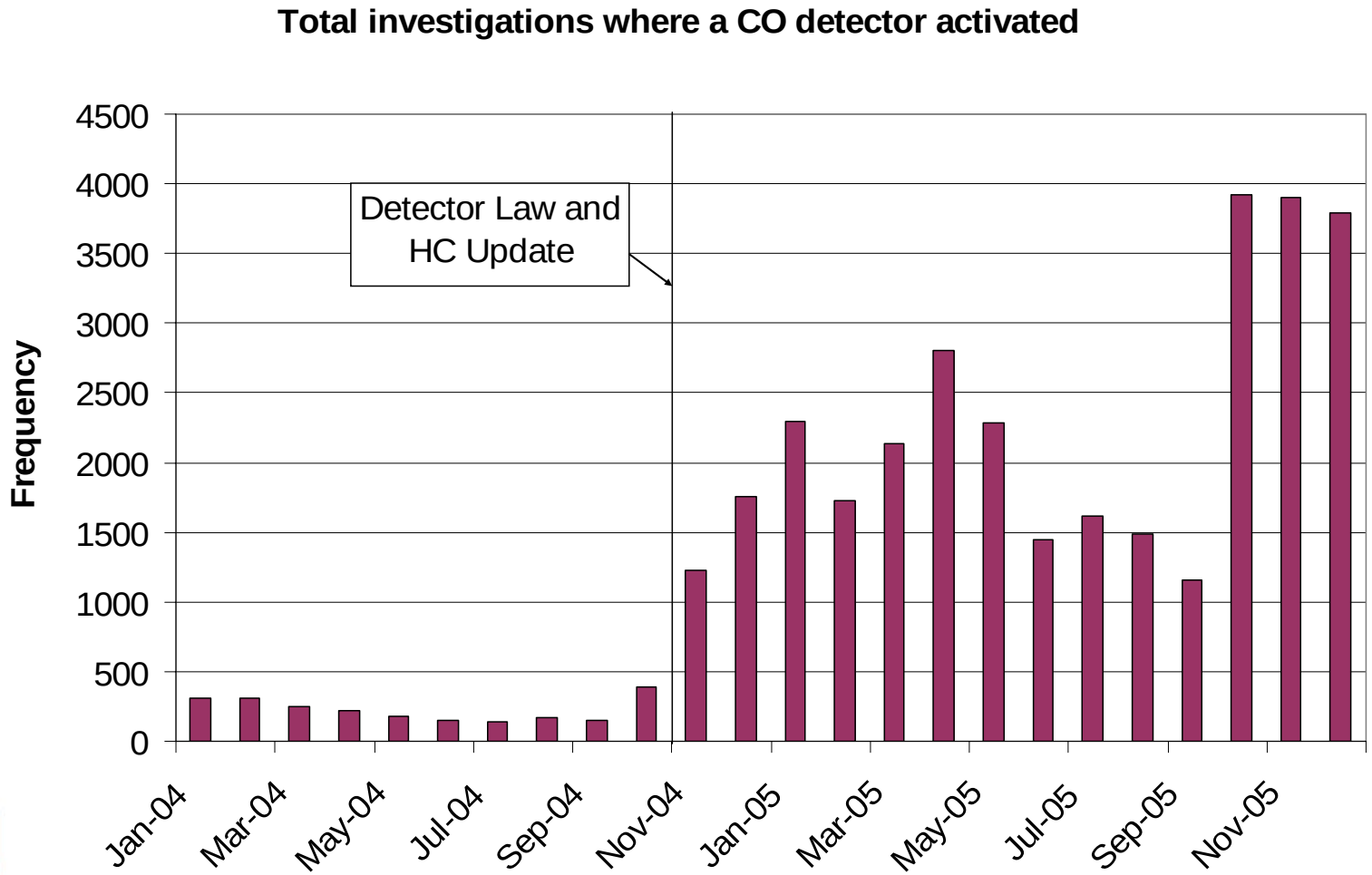
Number of investigations where a CO detector activated before and after November 2004



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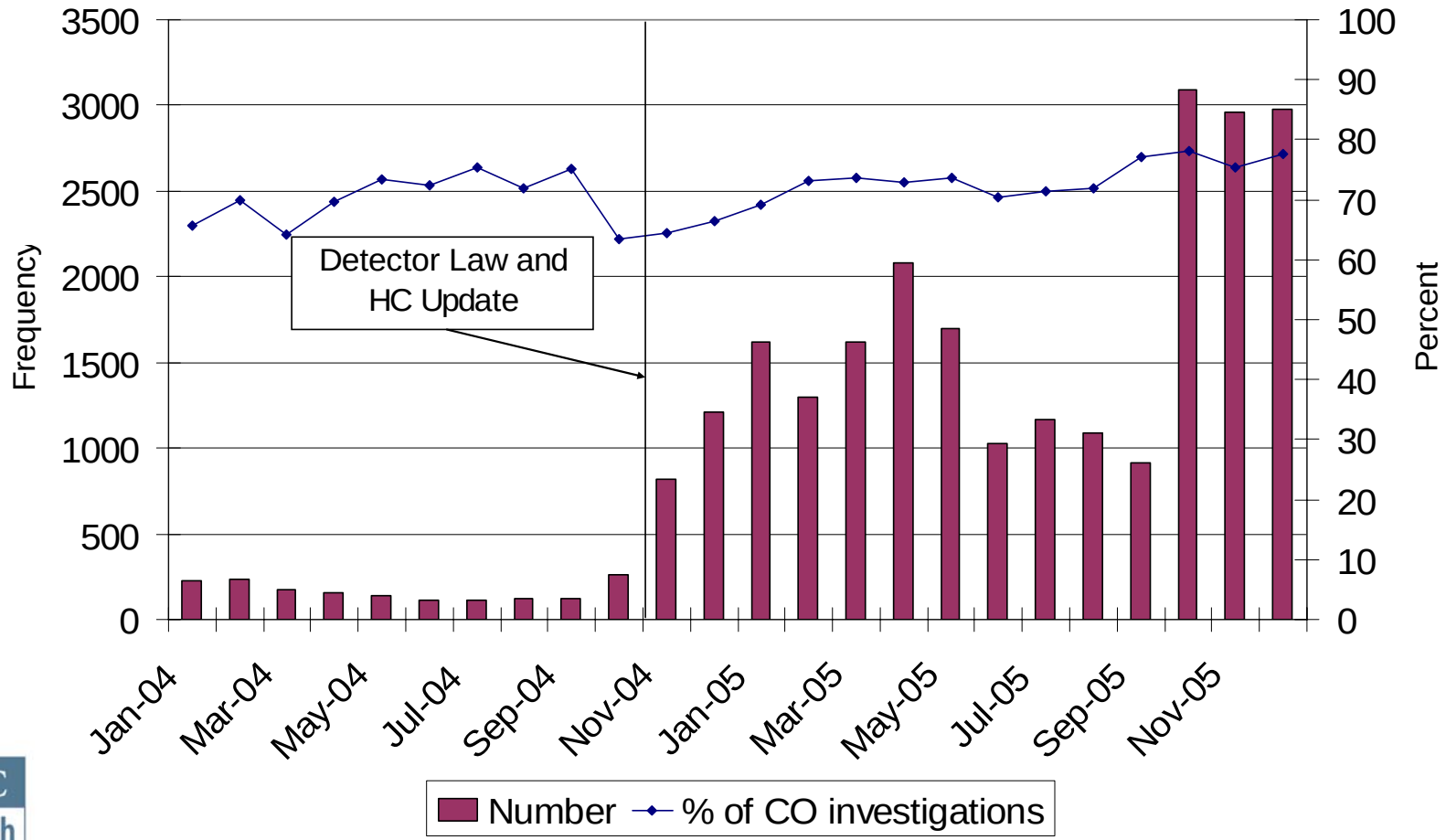
Investigations where detector activated, 0 PPM found on scene



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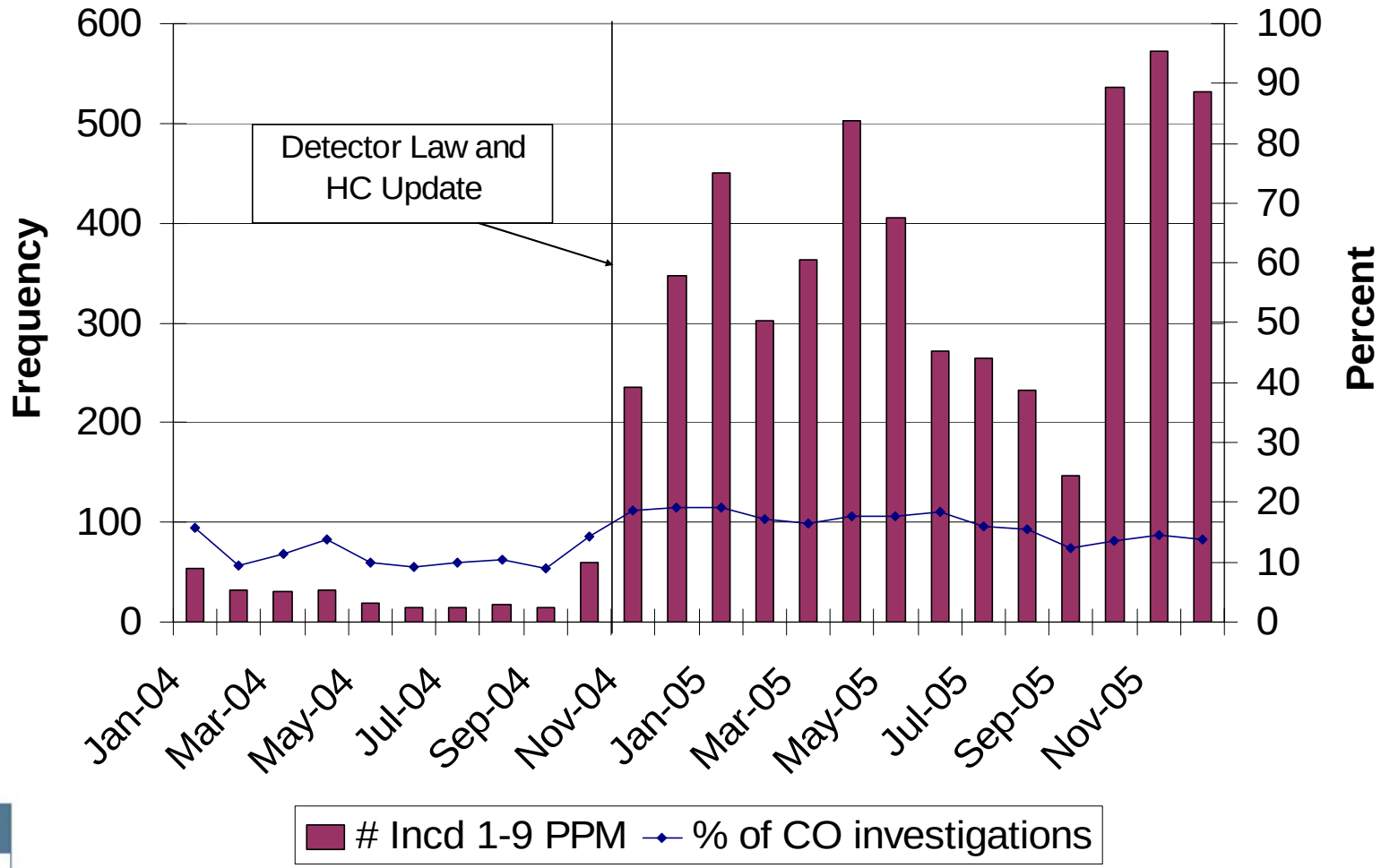
Investigations where detector activated, 1-9 PPM found on scene



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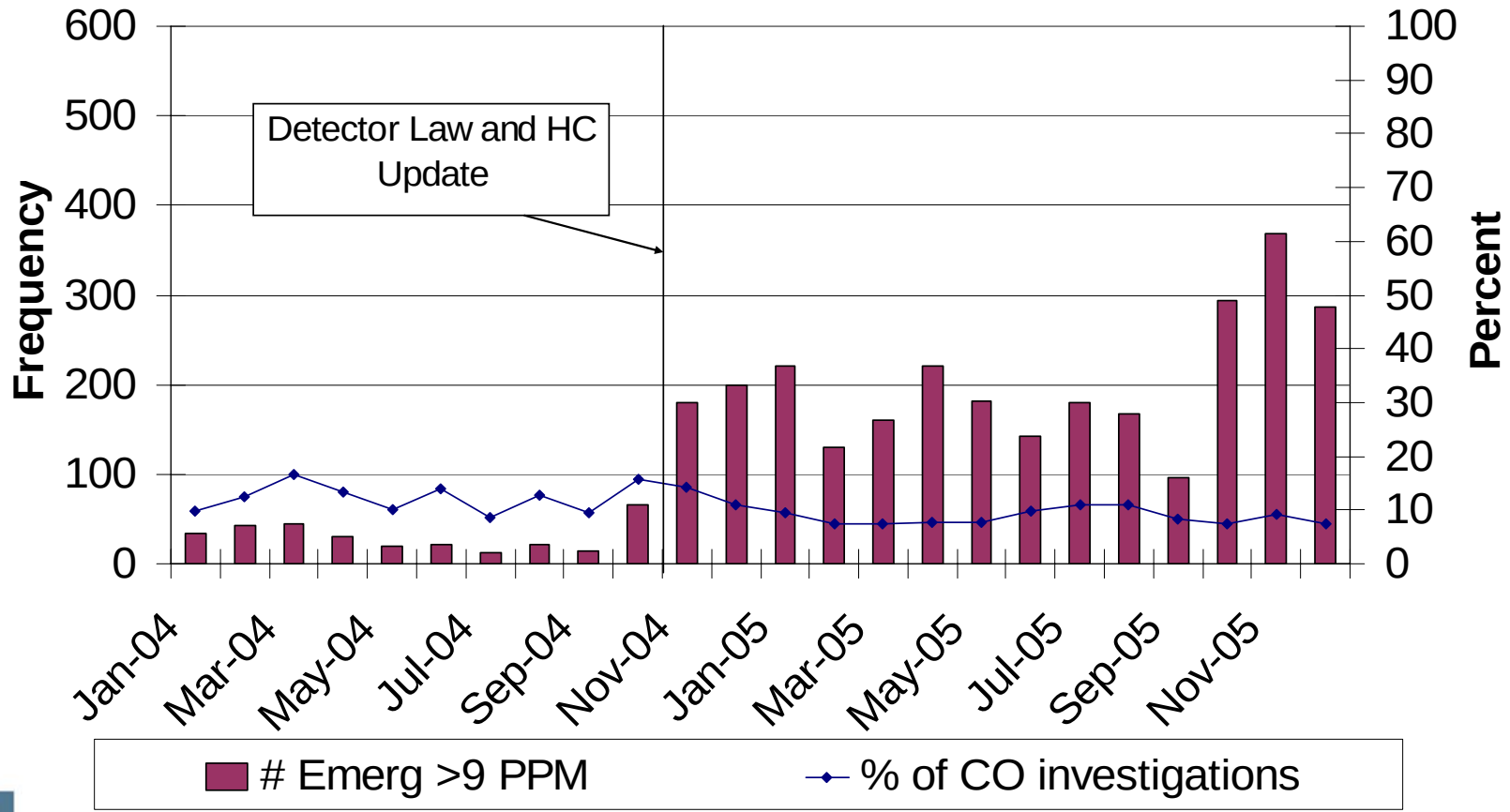
Investigations where detector activated, >9 PPM found on scene



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Summary of CO Investigations

- Evidence of increased use of CO detectors since Local Law 7 and Health Code Change
- Five-fold increase in number of investigations where CO detector activated
  - Total 2004 = 5,249
  - Total 2005 = 28,569
- Increase in the number of investigations is not explained by disproportionate increase in “false alarms”
  - No changes in proportion of types of events (0 ppm, 1-9, >9 ppm)

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