



Impact of Smoke-Free Workplace Law on Heart Attack Deaths

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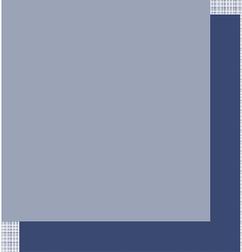
Public Health Council
November 12, 2008



Massachusetts Department of Public Health, Tobacco Control Program

Overview

- Massachusetts implements Smoke-Free Law in July 2004
- Significant drop in heart attack deaths (AMI) post law
- Decline in heart attacks deaths is linked to implementation of the Workplace Law
- Anticipate healthcare cost savings



Workplace Laws



Smoke-Free Workplace Law

- Massachusetts Smoke-Free Workplace Law
 - Implemented July 5, 2004
 - Enforcement primarily by local boards of health
- 94% compliance with the law
 - Report available at www.mass.gov/dph/mtcp
- Goal: Reduce negative health effects of secondhand smoke

Massachusetts: A Public Health Laboratory

- Home rule for 351 cities & towns
- Prior to 2002, towns passed a variety of local regulations
 - Only 9 towns had comprehensive laws similar in strength to current state law.

Efforts Leading to Statewide Law

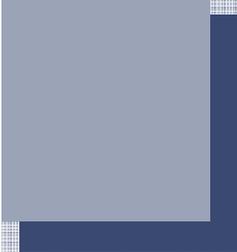
- Clean Air Works
 - Regional coalition led by Boston Public Health Commission and Cambridge Public Health Commission
- Boston implemented comprehensive law May 2003
- Massachusetts Smoke-Free Workplace Law
 - passed June 2004
 - implemented July 2004

Definitions

- Strong Law – comprehensive
 - All worksites private and public
 - Bars & Restaurants
 - Municipal Buildings
 - Minor exceptions allowed – private clubs, cigar bars
- Weak Law – partial restrictions

Status of Laws

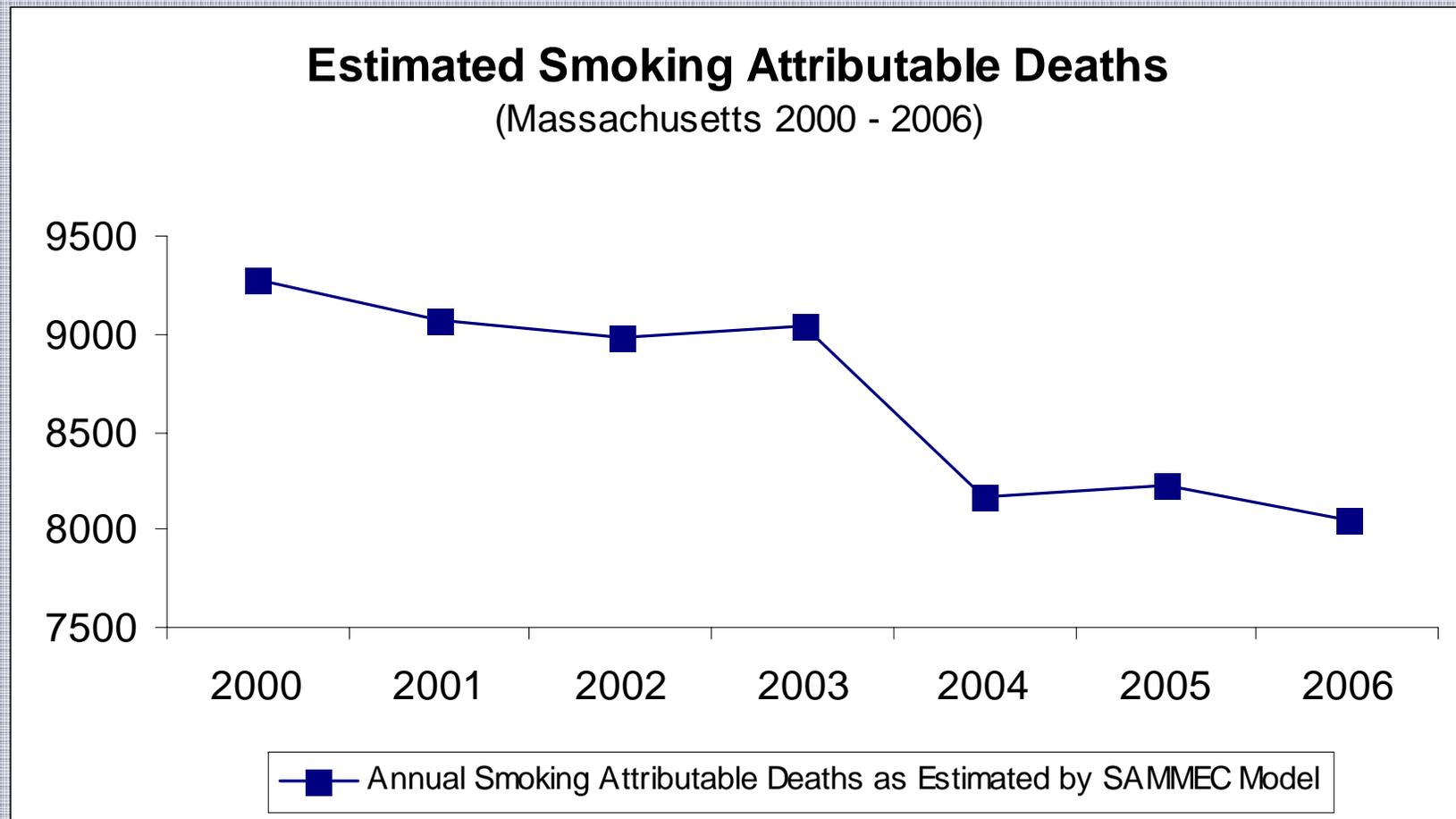
- Prior to July 5, 2004
 - Strong Laws (54 communities)
 - Weaker Laws (193 communities)
 - No Prior Law (100 communities)
 - Unknown (4 communities – law could not be located)



The Massachusetts Study



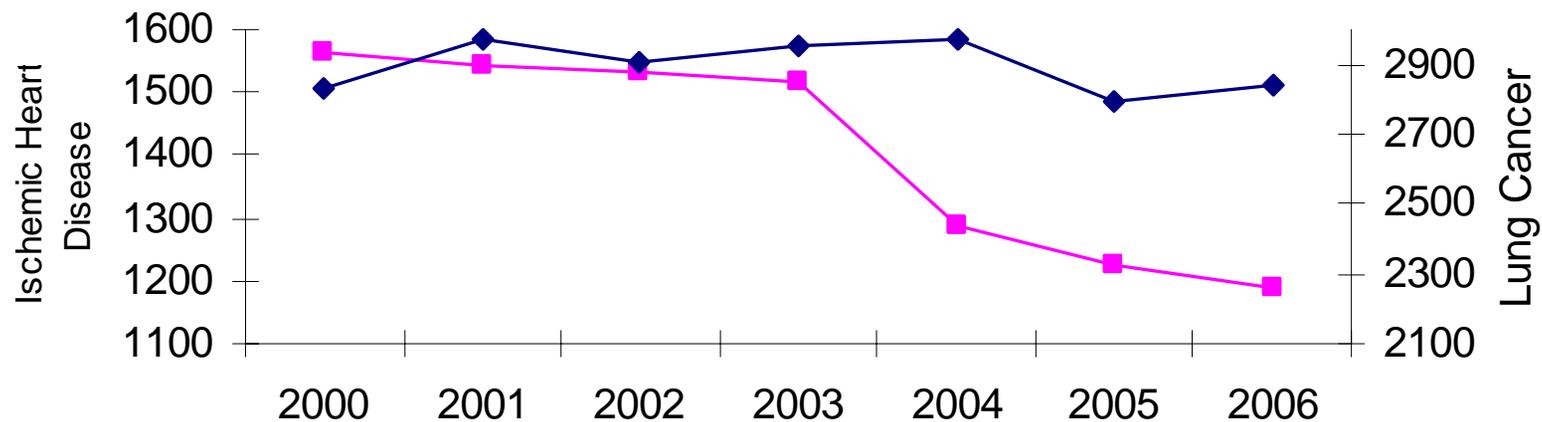
Smoking Attributable Deaths



Sources: Death records obtained from Massachusetts Registry of Vital Records and Statistics;
Death estimates obtained from CDC's Model - Smoking Attributable Mortality, Morbidity, and Economic Costs (SAMMEC)
<http://apps.nccd.cdc.gov/sammec/>

Drop in Deaths by Category

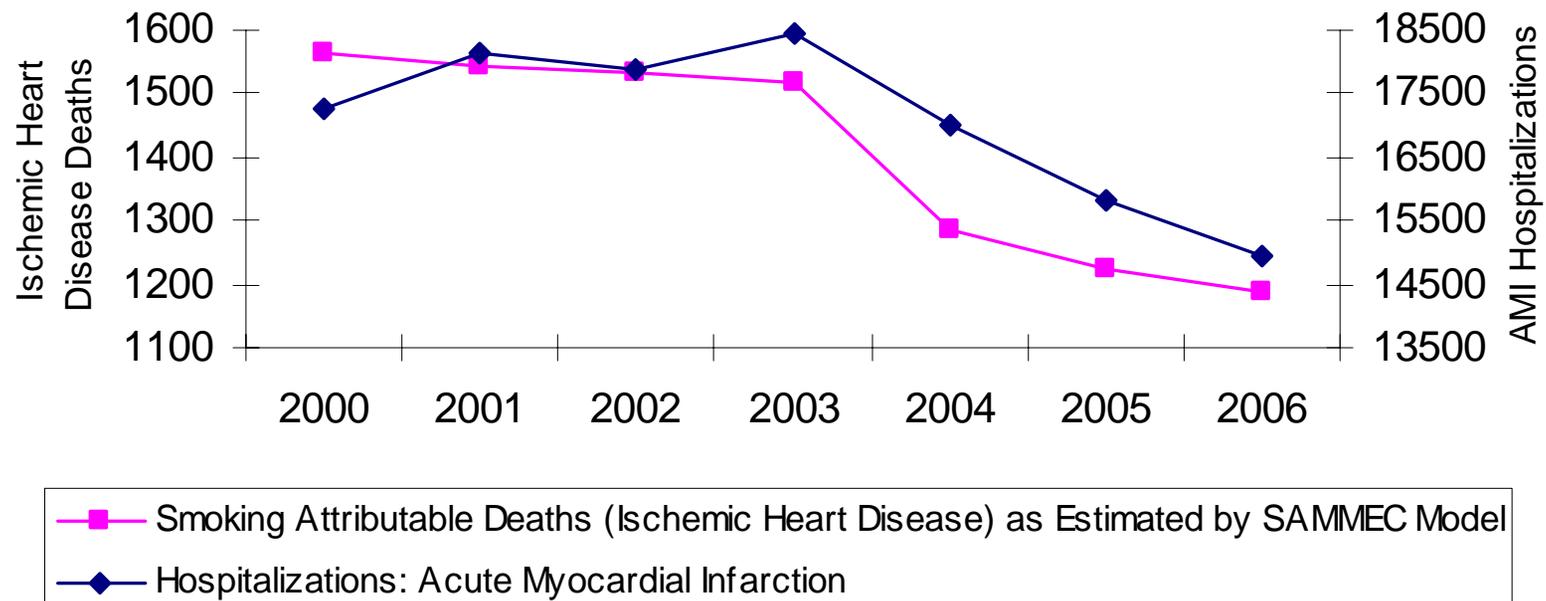
Smoking Attributable Deaths:
Ischemic Heart Disease vs. Lung Cancer
(Massachusetts 2000 - 2006)



- Smoking Attributable Deaths (Ischemic Heart Disease) as Estimated by SAMMEC Model
- ◆ Smoking Attributable Deaths (Lung Cancer) as Estimated by SAMMEC Model

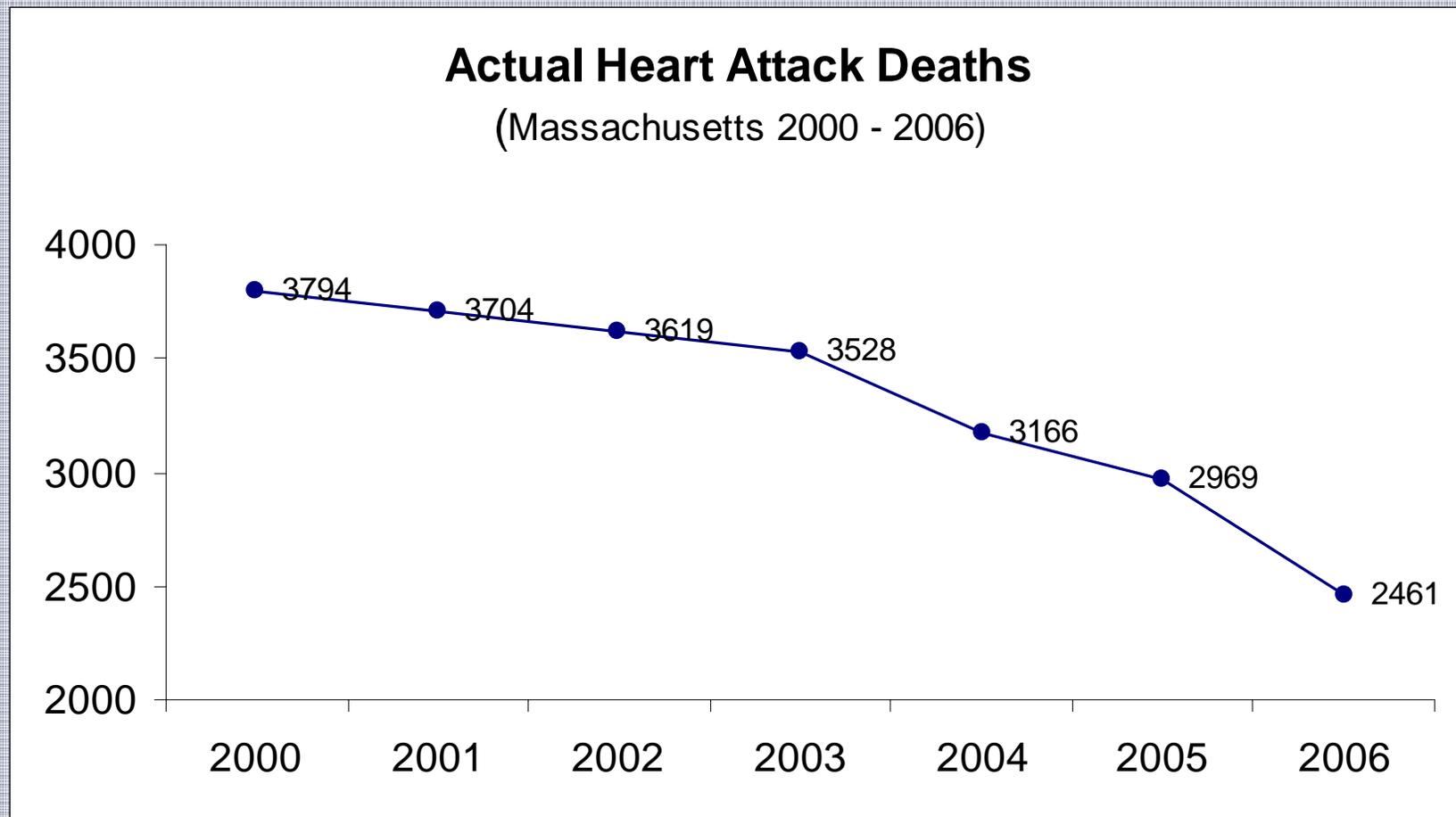
Hospitalizations: A Similar Pattern

Heart Related Deaths and Hospitalizations:
Ischemic Heart Disease & AMI
(Massachusetts 2000 - 2006)

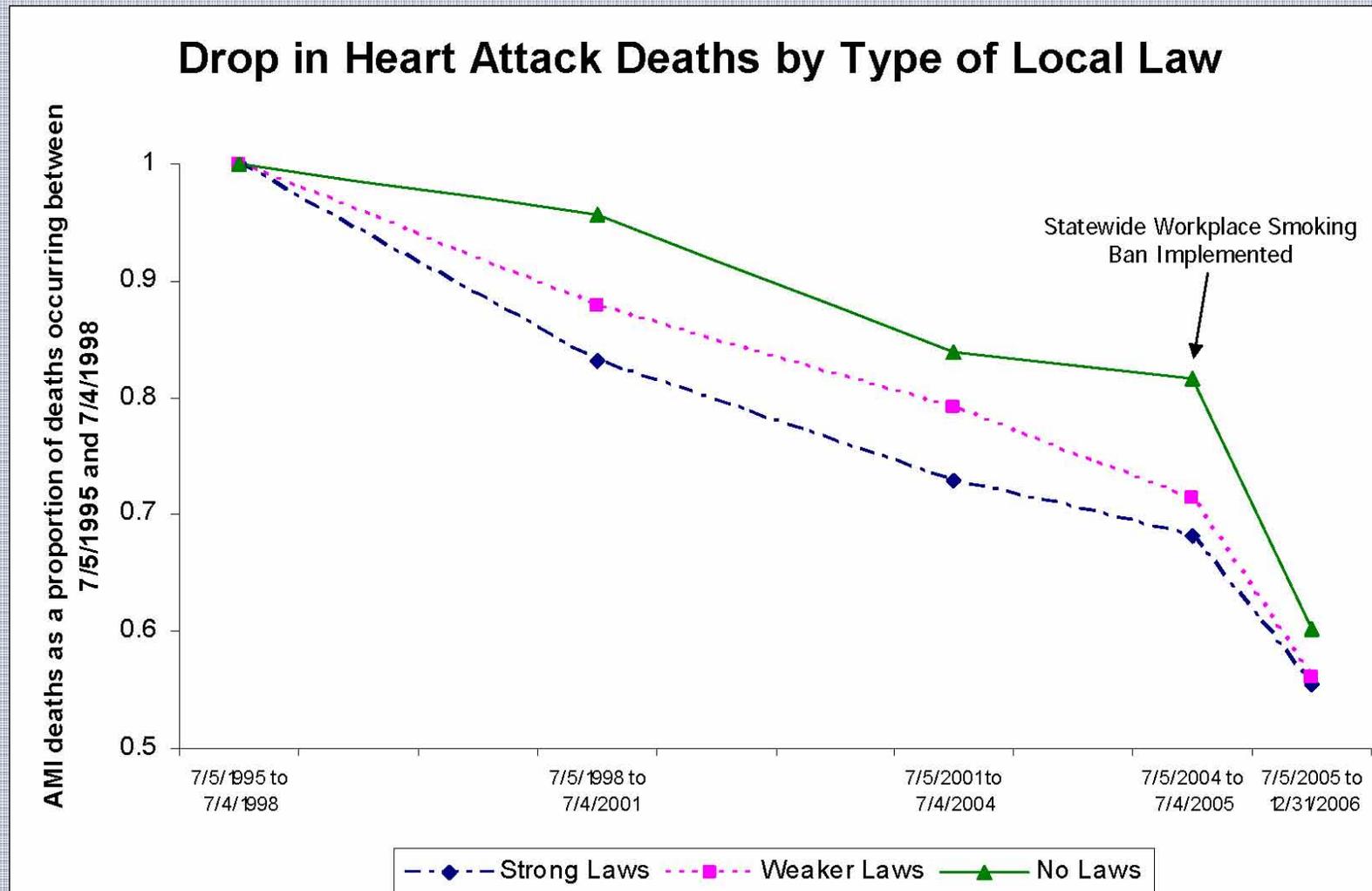


Sources: Hospitalizations obtained from Universal Hospital Discharge Data System (UHDDS);
Death estimates obtained from CDC's Model - Smoking Attributable Mortality, Morbidity, and Economic Costs (SAMMEC)

Actual Heart Attack Deaths



Heart Attack Deaths by Type of Local Law



Source: Death records obtained from Massachusetts Registry of Vital Records and Statistics

Recent Studies

- Helena, MT; Pueblo, CO; Bowling Green, OH; Rome, Italy; Scotland and England, etc.
- Two-thirds of decrease in heart attacks among non-smokers (Pell, et. al, 2008)
- Even brief exposure to secondhand smoke can lead to heart attacks (Barnoya & Glantz, 2005)
- Meta-analysis of 8 studies shows a 19% drop in heart attack hospitalizations post law (Glantz, et. al. 2008)

The Massachusetts Study

- Massachusetts study
 - Patterned after the Italian study (Cesaroni, 2008)
 - Looks at heart attack deaths (AMI) instead of hospitalizations

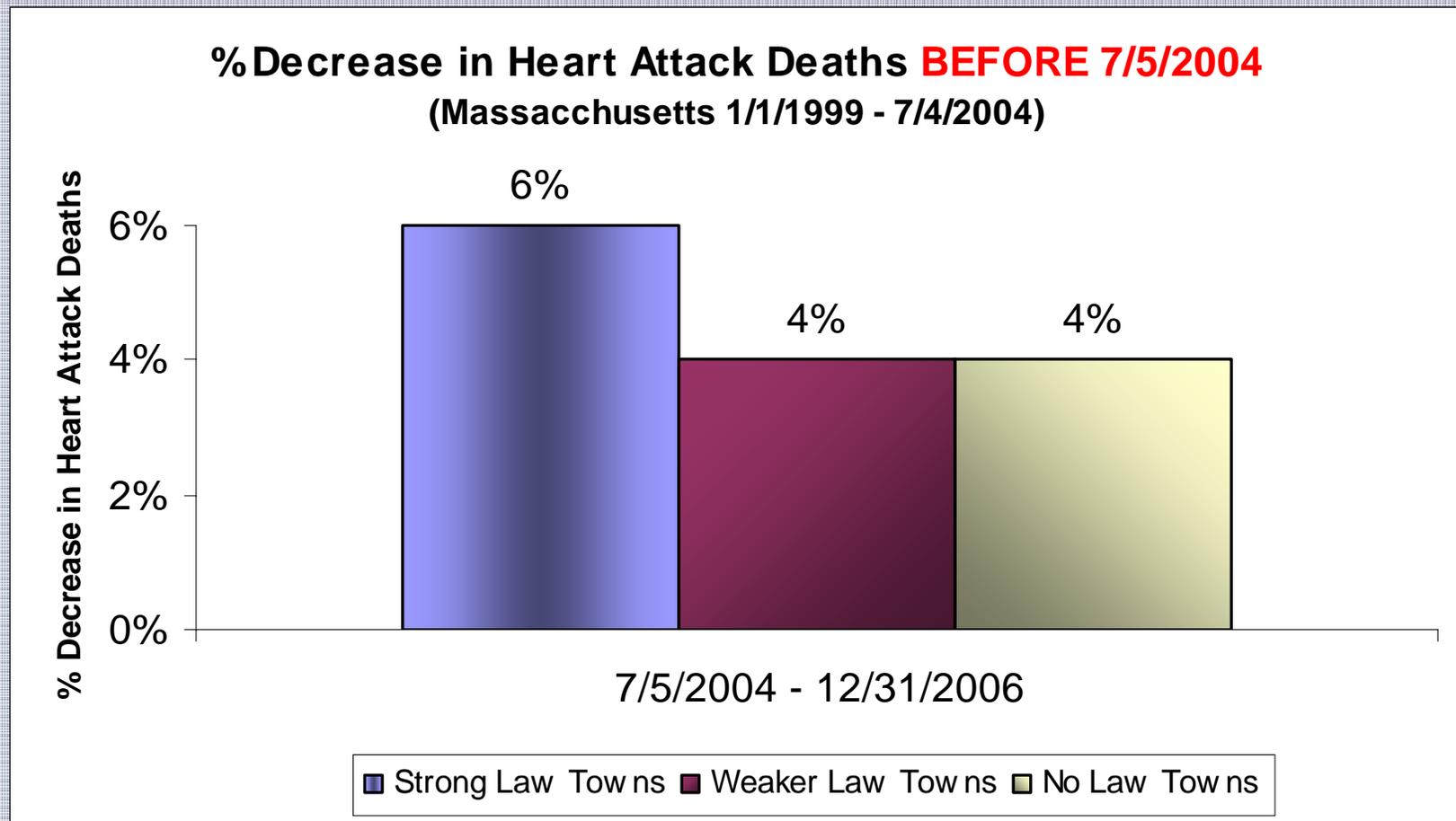
Other Potential Risk Factors

- Time trend (general downward trend in AMI deaths)
- Influenza outbreaks
 - Weekly Influenza Like Cases (ILI)
 - Division of Epidemiology and Immunization
- Seasonality
- Pollution
 - Daily PM2.5 readings from 14 sites statewide
 - Mass Dept of Environmental Protection
- Local smoking prevalence estimates
 - MTCP and UMass Medical School
- Other local data related to smoking prevalence
 - Age, income, % college educated, % living in poverty, etc.

Impact of the Statewide Workplace Law

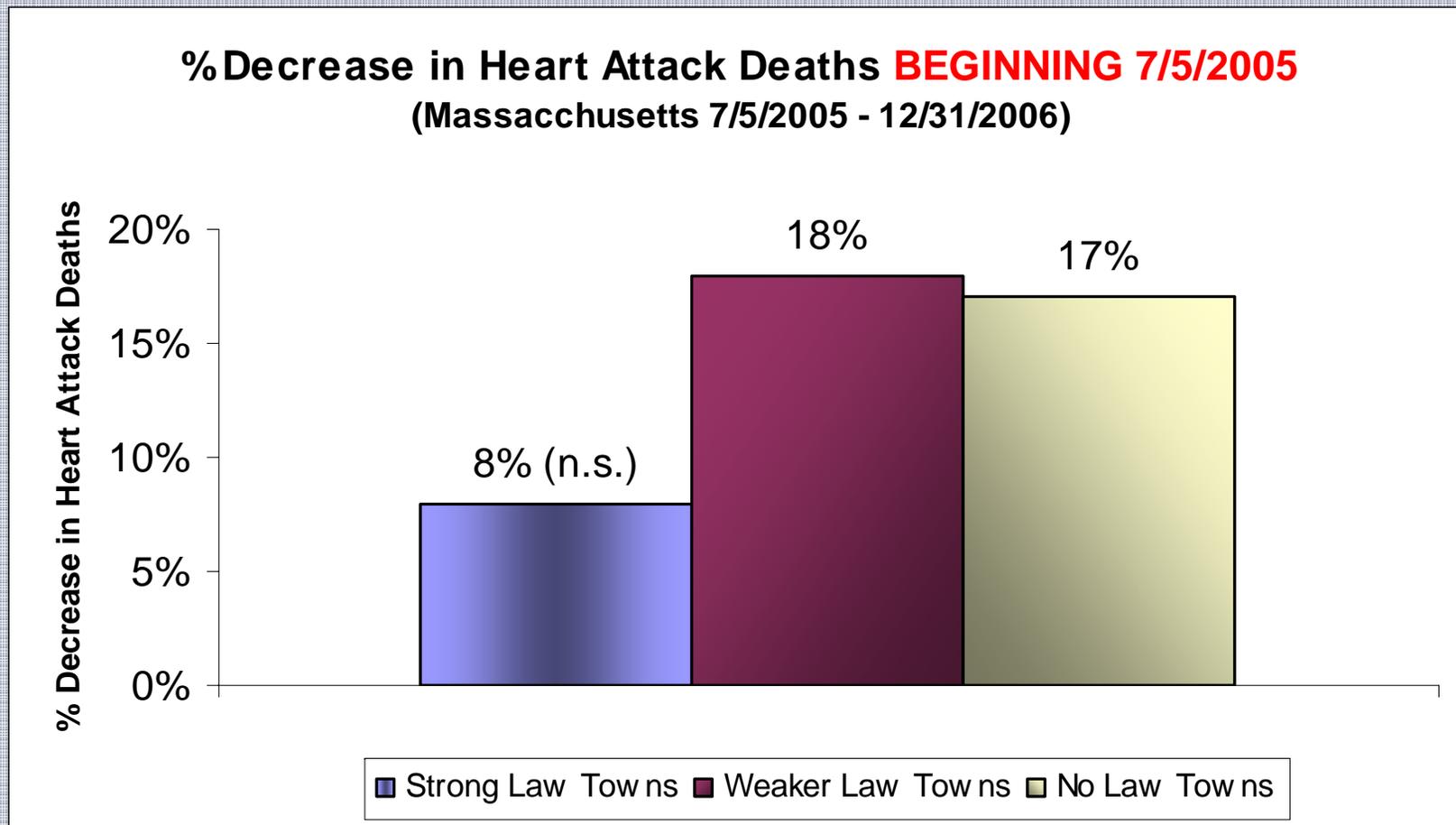
- Overall: 16% fewer heart attack deaths than expected In Massachusetts (95% C.I. 11% - 20%, $p < .001$)
- Lag Period: 12 months (enforcement rates)
- Separate analyses for Strong, Weak, and No Law towns
DECREASE AFTER STATE LAW
 - 18% drop in towns with Weak Local Laws (95% C.I. 13% - 23%, $p < .001$)
 - 17% drop in towns with No Local Laws (95% C.I. 1% - 31%, $p < .05$)
 - No significant change in deaths in towns with pre-existing Strong Local Laws (point estimate: 8%, 95% C.I. -3% - 18%, n.s.)

Drop in Heart Attack Deaths Before Statewide Law



Source: Death records obtained from Massachusetts Registry of Vital Records and Statistics

Drop in Heart Attack Deaths After Statewide Law



Source: Death records obtained from Massachusetts Registry of Vital Records and Statistics

Fewer AMI Deaths

- On average, 577 fewer heart attack deaths (AMI) than expected annually
- Lag period: 1 year after implementation of comprehensive workplace law
- 866 fewer heart attack deaths (AMI) between 7/5/2005 and 12/31/2006
- Full time period studied: 1/1/1999 through 12/31/2006.

Caveats

- Other initiatives
 - Heart Healthy Communities
 - New POE criteria for ST-elevated myocardial infarction (STEMI)
- No individual smoking histories
- Evaluating deaths by location of residence or location of death
- Unknown Factors

What's Next?

- Evaluate impact on other causes of death
- Evaluate different components of the law
- Determine cost savings
- Cost containment strategy



Make smoking history.



Massachusetts Department of Public Health, Tobacco Control Program