



**Department  
of Health**

**Evidence-Based Public Health:  
Supporting the New York State  
Prevention Agenda**

**MODULE 9:  
EVALUATING THE PROGRAM OR POLICY**

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## Learning Objectives

- Define program evaluation and understand how it relates to public health activities (public health surveillance, policy making, program implementation)
- Understand basic components of an evaluation of a public health program or evaluation
- Understand the types of data collection that can be incorporated into an evaluation and factors to consider when selecting an evaluation design and methods
- Understand how to develop an evaluation plan for a public health program or policy

## The Role of Evaluation in Evidence-Based Public Health

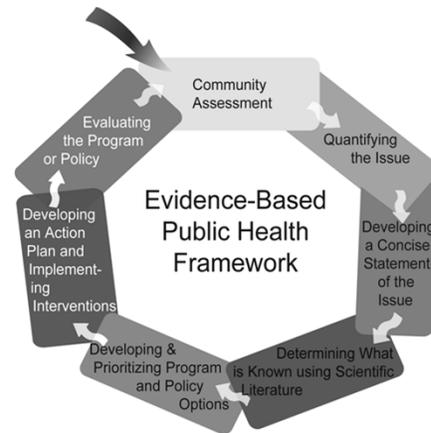
Provides feedback to support mid-course corrections in implementation (short-term);

Can reinforce program or policy efforts (short-term);

Aids decision making about scaling up or changing program; (intermediate);

Can support sustainability and community/decision maker education (intermediate);

Can provide feedback and provide practice-based evidence to the field (intermediate);



## What is program evaluation?

“...a process that attempts to determine as systematically and objectively as possible the relevance, effectiveness, and impact of activities in light of their objectives.”

A Dictionary of Epidemiology, 2008

“Systematic collection of data to understand and investigate the merit, worth or significance of an organized public health action.”

Adapted from CDC, 1999. Framework for Program Evaluation in Public Health, MMWR

## Research in Public Health

Systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalized knowledge.

Adapted from CDC, Office of Public Health Research (OPHR).

## Program Evaluation in Public Health Versus Public Health Research

Emphasis on describing, understanding and improving a specific public health program not contributing to generalized knowledge.

Evaluation results **must** have direct implications for public health programs or policies.

Program “merit, worth or significance” are more relative concepts than the probabilistic absolutes that are often the goal of scientific research

## Why evaluate?

- Improve existing programs
- Measure effectiveness
- Demonstrate accountability
- Share effective strategies and lessons learned
- Ensure funding and sustainability

**Evaluation is a practice that can measure and contribute to the success of a program or policy.**

## Basic Types of Evaluation

Type	Purpose
Formative	Data collection to evaluate the appropriateness of a proposed program or policy; Examples: Health Impact Assessment; Literature Review; Focus Groups/Key Informant Interviews;
Process	Data collection to document the implementation of program or policy including: costs, partners involved, locations, achievement of program or milestones, assessment of population reached.
Outcome	Data collection to document the association between the policy/program and changes in health-relevant indicators (environment, attitudinal, behavioral, health).

How does program evaluation differ from other types of data collection used in public health, namely public health surveillance and performance measurement?

## Public Health Surveillance

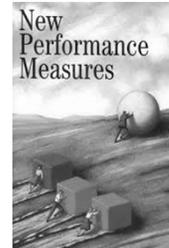
Ongoing systematic collection, analysis, interpretation and dissemination of data on health-related events in the population **for use in** the planning and the **evaluation of public health programs.**

based on CDC MMWR "Guidelines for Evaluating Public Health Surveillance"

## Performance Measurement

Ongoing monitoring and reporting of program accomplishments, against identified standards to measure progress towards pre-established milestones.

Action (things you do)	Accomplishment/Milestone	
Activity 1	Status Measure:	Standards:
Activity 2	Defines where you are now	Define what you expect to accomplish
Activity 3		



## Performance Measurement

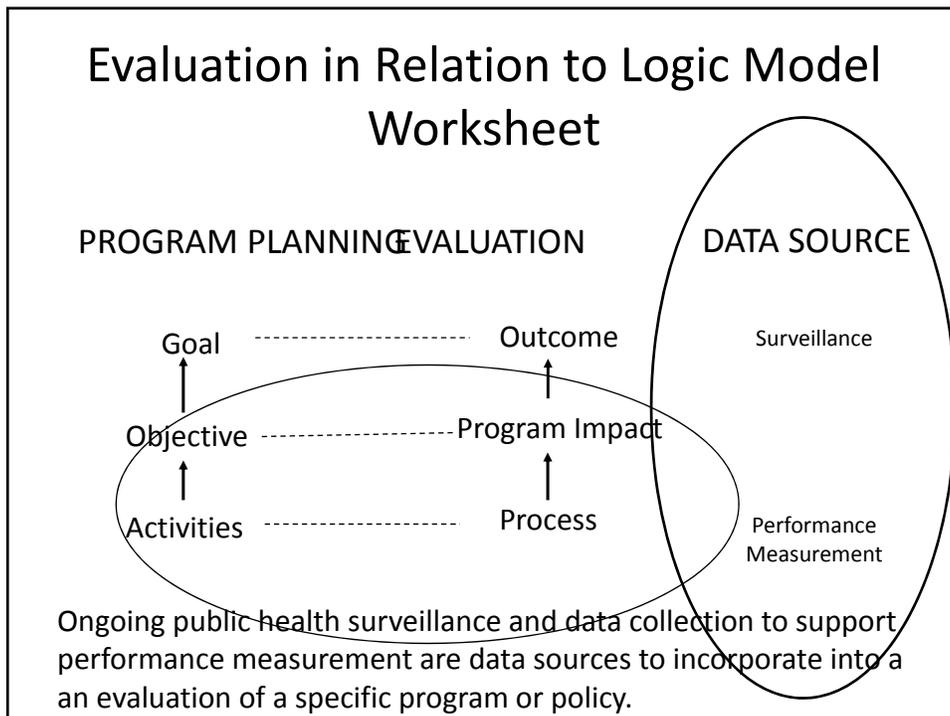
Engage in community mobilization and decision maker education to support adoption of food procurement policies within school district X.

Action (things you do)	Accomplishment/Milestone	
Engage School Committee	Status	Standard
Review existing food procurement standards		Adoption of food procurement policies that align with dietary recommendations regarding fat, sugar and sodium
Engage Local Wellness Committee		
Engage key officials in school (Superintendent, Food Service Director, Nutritionist)		

**Logic Model (Analytic Framework) Worksheet: Evidence-Based Public Health**  
 Program Title: \_\_\_\_\_

Goal:	Outcome
Long-Term Objective:	↕
What are the evidence-based determinants?	Impact
Intermediate Objective (Individual Level):	↕
Intermediate Objective (Social Level):	↕
Intermediate Objective (Govt/Org Level):	↕
Intermediate Objective (Environmental Level):	↕
Based on an evidence review, what activities will address these determinants? What do you do? How long will it take?	Evaluation
Activities:	↕
Inputs? What resources are available to support the program? What other resources are needed?	Process
Inputs:	↕

*Instructions:* First discuss your target population. Using data, evidence-based recommendations (the Community Guide or others), your own knowledge, and group discussion, develop a program strategy for your issue of focus. Define the goal, objectives, activities, and costs; and enter them in this sample logic model worksheet.

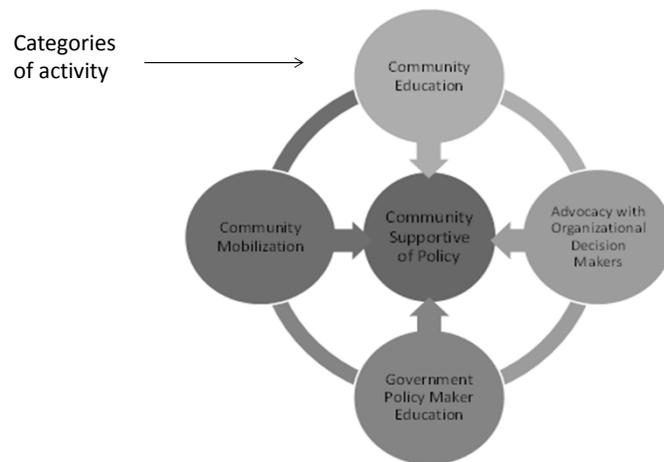


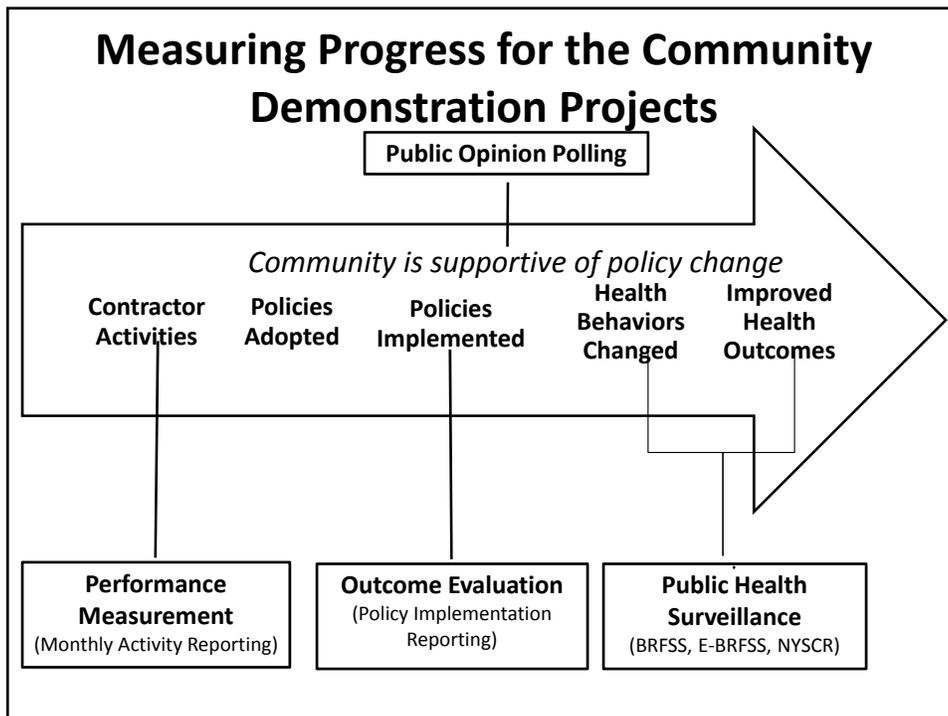
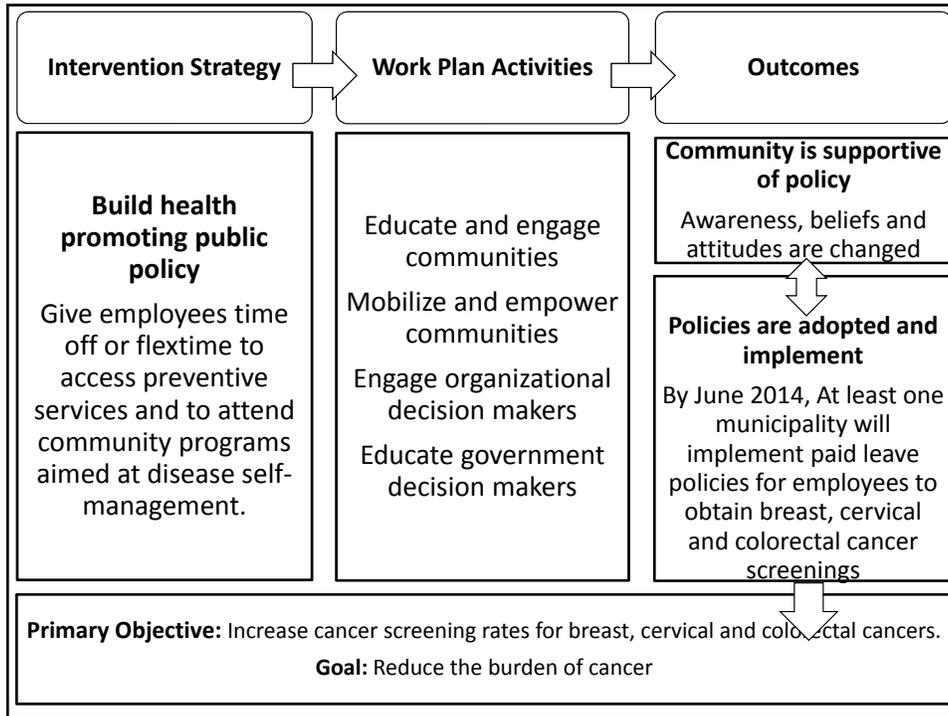
## Evaluation in Action

Evaluating a Program to Promote Adoption of Paid Leave Policies for Breast, Cervical and Colorectal Cancer

Used with Permission from Gina O'Sullivan

## Community Transformation Framework



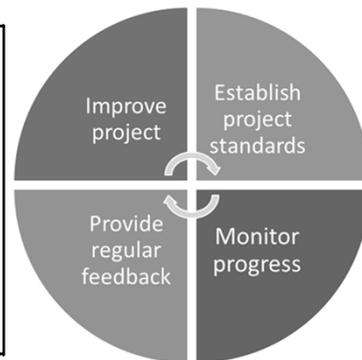


## Performance Measurement

- Communities recorded information on program implementation measures linked to work plan activities
- Regular collection and reporting of this data documents progress

Example project implementation measures for the community demonstration projects :

- ✓ Number of community education events
- ✓ Number of visits with organizational decision makers
- ✓ Number of legislative visits
- ✓ Amount of earned media generated
- ✓ Number of sites where partnerships have been formed



## Evaluation



*How much progress has been made towards desired policy change?*

- ✓ Number of sites where a partner relationship has been formed
- ✓ Number of sites where a key decision maker has committed to policy change
- ✓ Number of sites where policies have been adopted and implemented

*How many individuals have the potential to be reached by the policy or systems changes?*

- ✓ Number of individuals employed by the municipality

## How many people have the potential to be affected by the cancer screening leave policy in Broome County?

- Existing cancer screening leave policy for Broome County employees was amended to add 4 hours of paid leave to obtain colorectal cancer screening
- Total number of employees: **2,300**
- About 70% of employees (~**1,610 employees**) are greater than 50 years old

CANCER SCREENING LEAVE POLICY\*\*\*\*  
 APPROVED BY THE COUNTY LEGISLATURE- OCTOBER 17, 2013  
 Resolution # 2013-412

POLICY  
 IT IS THE POLICY OF BROOME COUNTY TO GRANT EMPLOYEES UP TO A MAXIMUM OF FOUR (4) HOURS OF PAID LEAVE TIME, PER SCREENING, ANNUALLY FOR COLON, BREAST AND/ OR PROSTATE SCREENING.

PROCEDURE  
 EMPLOYEES TAKING ADVANTAGE OF THIS LEAVE TIME MUST INFORM THEIR SUPERVISOR AND/ OR DEPARTMENT HEAD IN ADVANCE OF THE APPOINTMENT AND SHALL PROVIDE A WRITTEN STATEMENT SIGNED BY THE EMPLOYEE'S HEALTHCARE PROVIDER INDICATING THAT THE EMPLOYEE HAS COMPLETED THE SCREENING. THIS LEAVE TIME SHOULD NOT BE CHARGED TO ANY OTHER ACCRUED LEAVE TIME BALANCES.

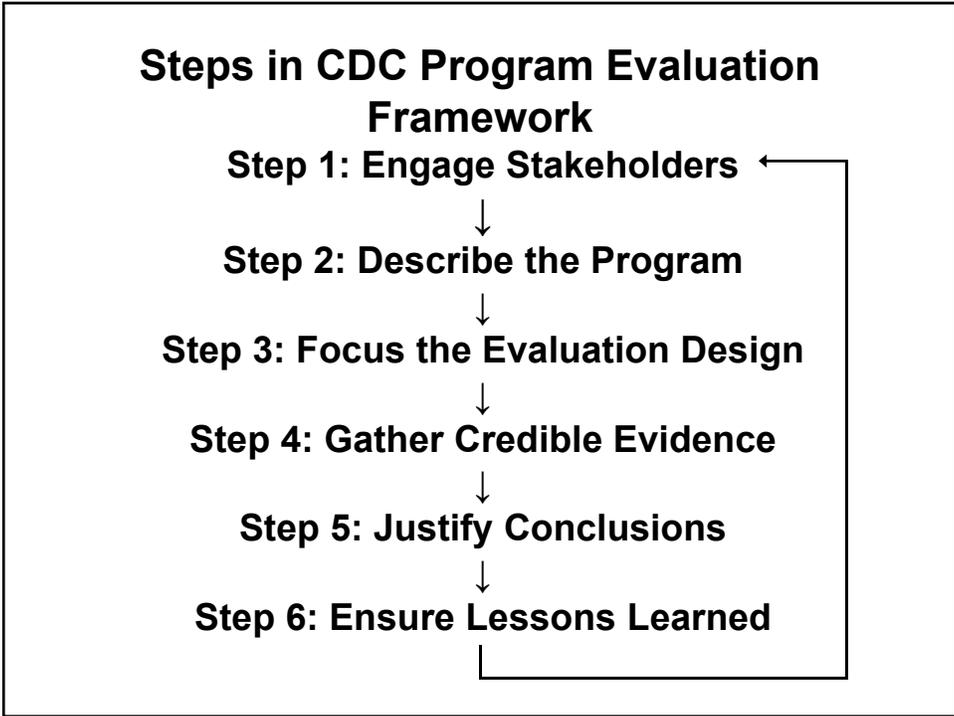
\*\*\*\* EARLY DETECTION IS CRITICAL TO TREATMENT, REDUCTION OF MEDICAL COSTS AND SURVIVAL FROM MANY TYPES OF CANCERS AND IN 2007, NEW YORK STATE ENACTED LEGISLATION REQUIRING EMPLOYERS TO PROVIDE EMPLOYEES PAID LEAVE TIME FOR BREAST AND PROSTATE CANCER SCREENING. BROOME COUNTY IS NOW ADDING COLON CANCER SCREENING TO THE PREVIOUSLY APPROVED SCREENINGS.

## Outcome Evaluation

*Has the adopted policy resulted in a health behavior change? How many employees utilize the time-off benefit to obtain cancer screenings?*

- ✓ Number of employees utilizing the time-off benefits to obtain cancer screenings





### Consolidating Steps 3 & 4: Evaluation Plan

Question	Indicator	Data Source	Who is responsible	Timeline
1	2	3	4	5

- 1) A specific question about a program or its attribute
- 2) A concrete measure that will be used to reflect that attribute
- 3) Source of information on that attribute...plan for collecting or accessing that source
- 4) List of individuals responsible for the specific data source
- 5) Expectation about when the information from the source will be available

## Evaluation Planning: Developing Good Evaluation Questions

- Good evaluation questions are empirical questions that can be answered through planned data collection (**s**pecific, **m**easurable, and **a**nswerable)
- Good evaluation questions about a program reflect its current stage of development (they are **r**elevant and **t**ime bound)
- Good evaluation questions are sensitive to the timing between a program/policy and when expected milestones should occur and changes in outcomes are observed

## Exercise 1: Developing Evaluation Questions and Potential Data Sources

## **Evaluation Designs**

**Did a program or policy contribute or cause to a specific outcome?**

**Designs differ in the extent to which they:**

- **establish a link between an initiative & outcome**
- **rule out alternative explanations**

**This is referred to as a design's internal validity**

## **Evaluation Designs**

### **Design Notation**

- **“X” is used to denote an intervention**  
distribution of a media campaign  
initiation of a policy  
start of a program activity
- **“O” is used to denote observations**  
measurement of outcomes
- **Time is expressed from left to right**

## Evaluation Designs

**Goal:**

**Evaluate the impact of a public health policy.**

## Evaluation Designs

### Post-Test Only Design

**O = observation**

**X = intervention**

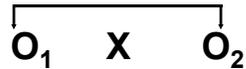
**X    O<sub>1</sub>**  
.....

**3-months**

**Does not establish a link between intervention or product and outcome.**

## Evaluation Designs

### One Group Pre-Post Design



**Improves upon post-test only because you can establish change.**

**History:** something other than intervention may be responsible for changes from pre to post

**Testing:** the effect of being surveyed/observed may alter subsequent observations

## Control Group Designs

### Non-Equivalent Control Group Design



- Control group addresses history & testing
- Control group comparison tests intervention
- Can't be sure groups were equivalent to start

## Control Group Designs

### Randomized Control Group Design

Group 1	R	X	O <sub>1</sub>	}
Group 2	R		O <sub>1</sub>	

Randomizing (R) can ensure equivalent groups

- Everyone received the intervention
- Can't control who receives a product

## Design Options:

### Adding Observations – Interrupted Time Series

	Time				
Group 1	O <sub>1</sub>	X	O <sub>1</sub>	O <sub>2</sub>	O <sub>3</sub>

- Can address threats due to history & maturation
- Ensuring follow up can be a challenge

**1) In identifying goals, is it important to:**

- establish change?
- rule out alternative explanations?

**2) Choose most practical design to meet goals**

**3) Recognize limitations of your design**

## **Design Issues to Consider**

**Is important to document a change in the outcome you are tracking?**

**What is your “control” or comparison group?  
What are alternative explanations?**

**The timing of assessments**

**Follow-up and selection bias**

## Evaluating Comprehensive Smoke-Free Air Laws

Used With Permission From Harlan R. Juster

### Clean Indoor Air Laws

- New York State: Pop = 19M (10M 35+)
  - July 24, 2003
  - Incremental process beginning in 1985
    - Weak - Worksites with non-smoking areas, municipal buildings only
    - Weak - Restaurants with separate smoking/non-smoking areas
    - Moderate - All workplaces are smoke free indoors (exception for hospitality venues)
    - Comprehensive – All workplaces are smoke free including hospitality venues

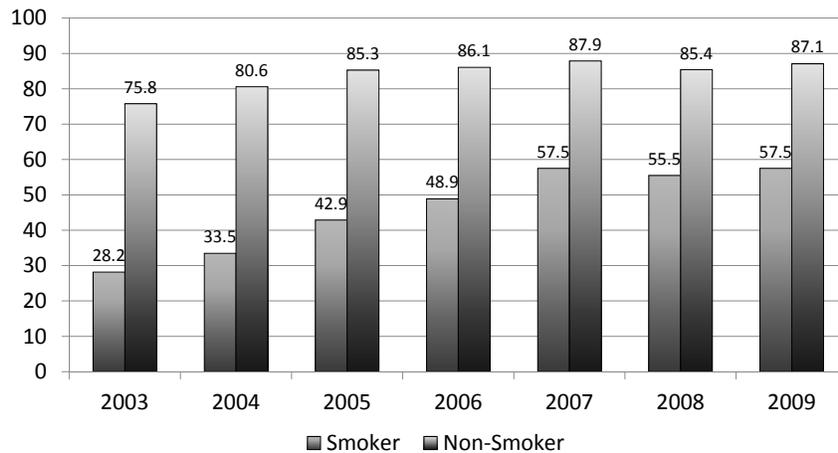
## Evaluating Public Health Policy

- Awareness
- Support
- Compliance
- Short-term Impact - Exposure
- Intermediate/LT Impact - Health Outcomes
- Economic Impact

## Support

- Support
  - Adult Tobacco Survey (ATS)
  - Smokers and Non-smokers
  - ATS Question: Are you personally in favor, opposed to, or indifferent to the New York State law prohibiting smoking in all public and work places, including bars and restaurants?
    - 1 FAVOR
    - 2 OPPOSE
    - 3 INDIFFERENT
    - 4 NOT FAMILIAR WITH LAW

## Adults in Favor of New York's Clean Indoor Air Act (CIAA)



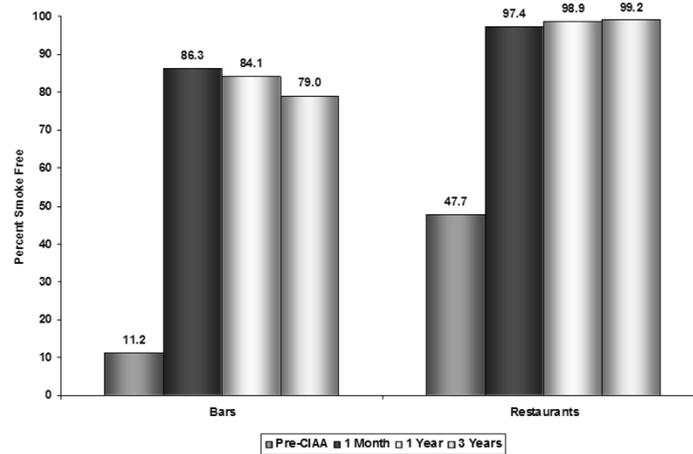
Source: NYS Adult Tobacco Survey, 2003-2009.

## Compliance

- Observed Random Sample of Restaurants and Bars
- All 62 counties in NYS
- 2 restaurants, 2 or 3 bars per county
- Pre-CIAA, 1, 12, 36 Months Post-CIAA
- Standardized observation tool/training
- Presence of smoking and related indicators

## Observational Compliance Data

Pre-CIAA to Three Year Post



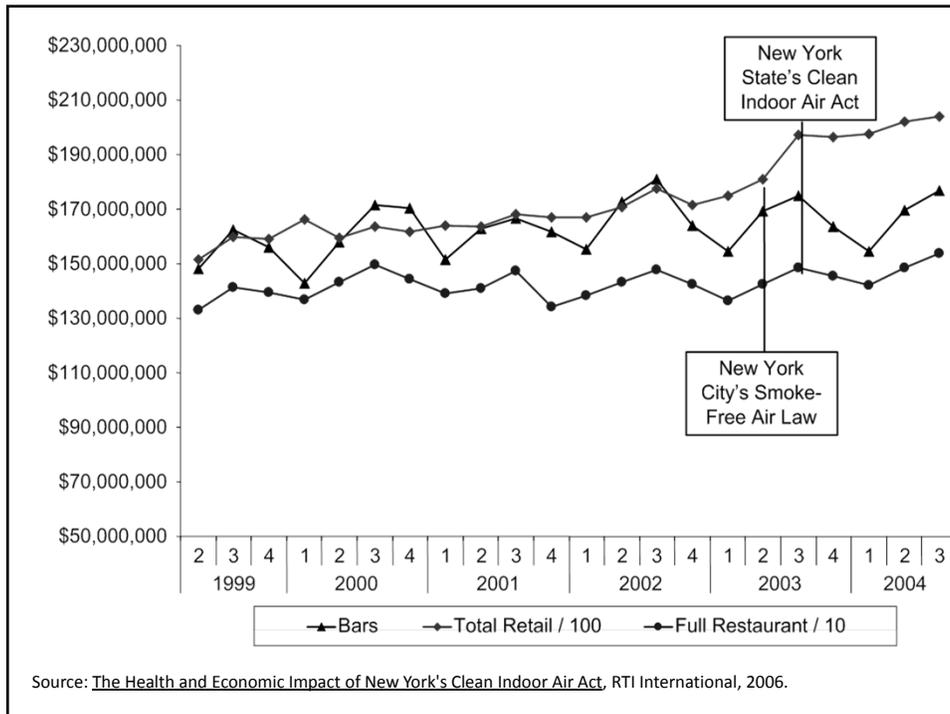
Source: [Addendum - Compliance with New York State's Clean Indoor Air Act: Three Year Follow-up Statewide Observational Study](#), NYS Department of Health, 2006.

Table 1. Other indicators of smoking or tobacco promotion before and after implementation of CIAA. Observational Study in New York State Bars and Restaurants 2003-2006.

	Baseline	Year 1	Year 3
<b>Bars</b>			
Ashtrays	86.2	9.1	13.8
Visibility	75.9	14.8	18.6
Odor	82.8	25.0	29.3
Promotional Items	20.7	9.1	7.8
Signs	6.9	31.8	56.3
<b>Restaurants</b>			
Ashtrays	60.2	1.1	0.0
Visibility	48.4	1.1	1.2
Odor	53.9	1.1	4.2
Promotional Items	8.6	5.3	0.8
Signs	34.4	38.3	63.0

## Economic Impact

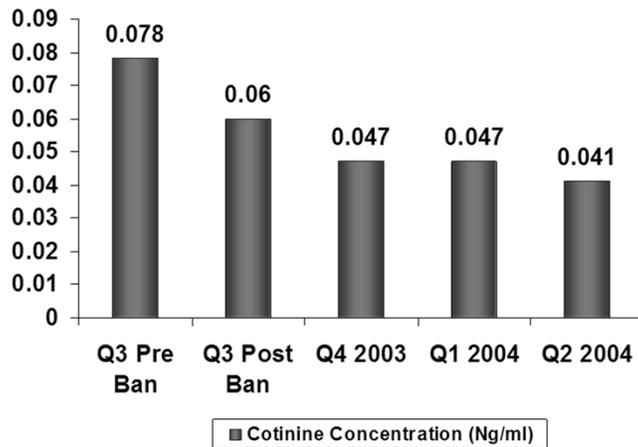
- Taxes Generated
- Bars and Restaurants
- Before and After the CIAA



### Short-term Impact

- Reductions in Exposure to Secondhand Smoke
  - Salivary Cotinine
  - Non-smokers in the general public
  - Self-selected sample from Adult Tobacco Survey

### Cotinine Concentration Before and After New York's CIAA



Source: Bauer, U, Hyland A, Farrelly, M, Engelen, M, Weitzenkamp, D, Repace, J, Babb, S, Juster H. Reduced Secondhand Smoke Exposure After Implementation of a Comprehensive Statewide Smoking Ban – New York, June 26, 2003-June 30, 2004. *MMWR*, 2007; 56: 705-708.

## Method: Data Sources

- Statewide Hospital Discharge Database (SPARCS)
- US Census Data
- Americans for Nonsmokers' Rights Foundation (ANRF) Local Tobacco Control Ordinance Database

## Interrupted Time Series Analysis

### Dependent (Criterion) Variable

- Hospitalization Rates for AMI/100,000\*
  - County level; Monthly; NY, OR
  - County level; Quarterly; FL

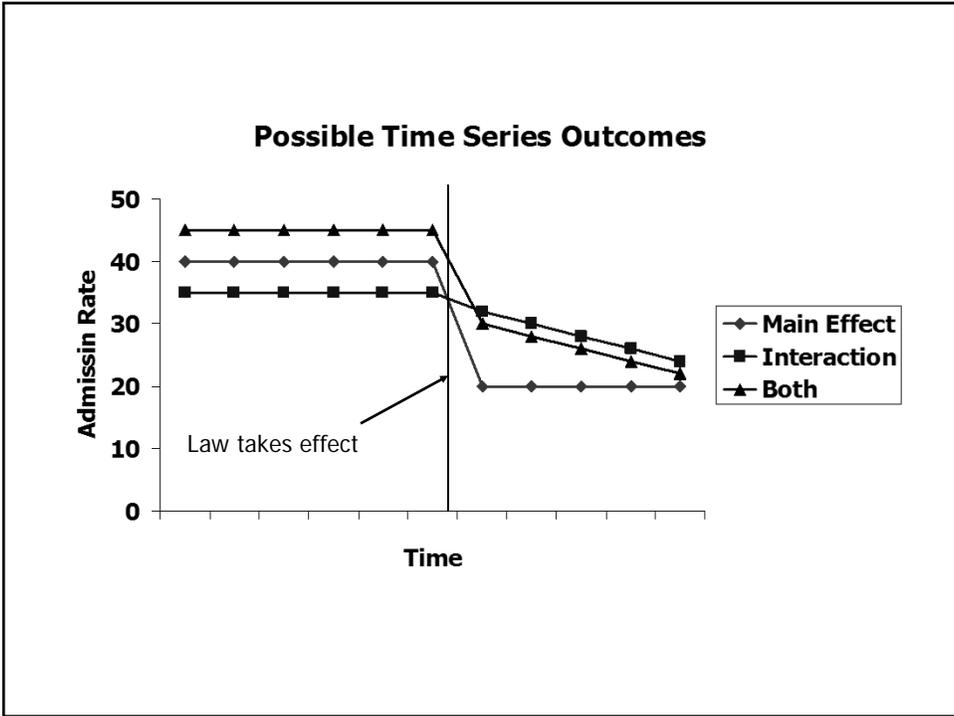
### Independent (Predictor) Variables

- Comprehensive Ban
  - Main Effect (ME): Sudden 1-time change in rate
  - Interaction (INT; Time X Law): Gradual, continuous change in rate
  - Both/Neither

### Controls

- Time trend, County, County X Time, Seasonality, Moderate Ban (ME + INT)

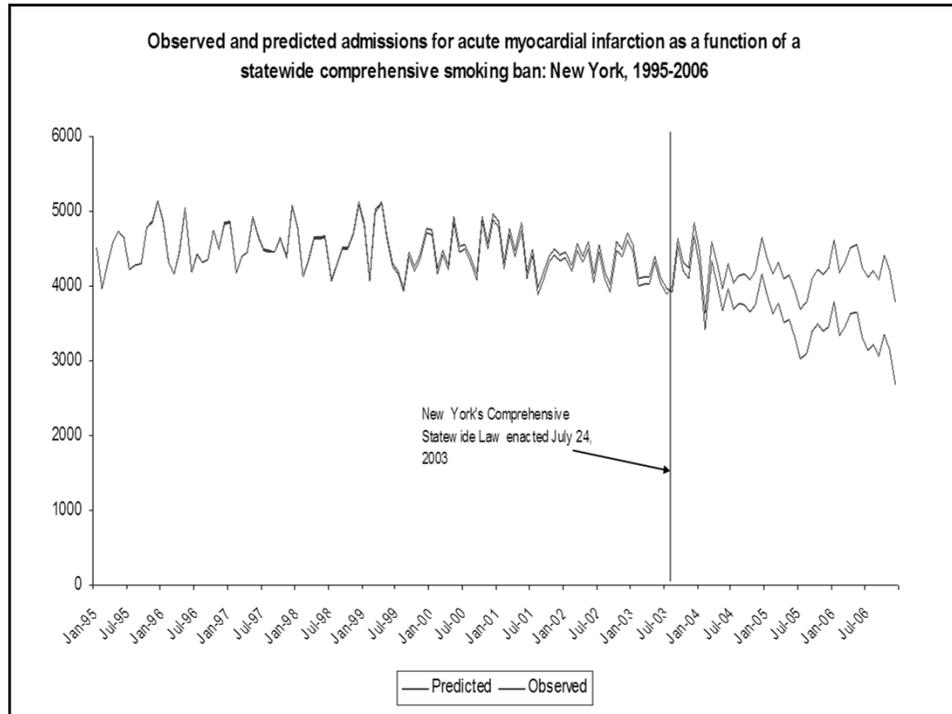
\*Age-adjusted to Year 2000 US Census, 35 years and older



Interrupted Time-Series Regression Analysis: New York 1995-2006

	<b>b</b> (95% CI)	<b>t (F)</b>	<b>p</b>
Overall F-test (138,8789)	R <sup>2</sup> = 0.3531	113.41	p<.001
NY Comp. Law Main Effect	-1.48 (-2.81, -0.16)	-2.20	p<.05
NY Comp. Law X Time Interaction	-0.25 (-.29, -.21)	-11.76	p<.001
NY County Moderate Law Main Effect	-0.88 (-2.0, .23)	-1.55	ns
NY County Mod. Law X Time Interaction	-0.12 (-.20, -.05)	-3.09	p<. 01

N.B. Model also includes indicator variables for time of year (11 variables), county (61 variables), and county X time interaction (61 variables). Source: Loomis, B. R., Juster, H. R. (2012). Association of indoor smoke-free air laws with hospital admissions for heart attack and stroke in three states. *Journal of Environmental Public Health*, Volume 2012, Article ID 589018, 5 pages, doi:10.1155/2012/589018.



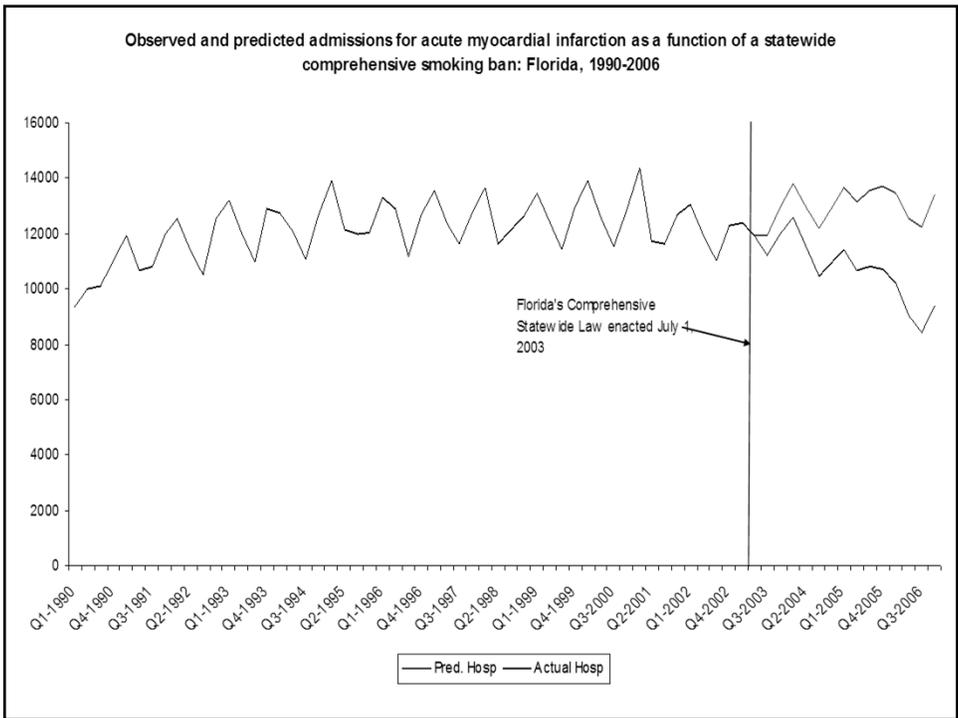
## Florida's CIAA

- Florida: Pop = 18M (10.2M 35+)
- July 1, 2003
- Banned smoking in all workplaces and restaurants
- Exemptions for free-standing bars

**Interrupted Time-Series Regression Analysis: Florida 1990-2006**

	<b>b</b> (95% CI)	<b>t (F)</b>	<b>p</b>
<b>Overall F-test</b> (138,4417)	<b>R<sup>2</sup> =</b> <b>0.4689</b>	<b>45.54</b>	<b>p&lt;.001</b>
<b>FL Comp. Law</b> <b>Main Effect</b>	<b>-4.24</b> (-8.58, 0.10)	<b>-1.91</b>	<b>p=.056</b>
<b>FL Comp. Law X</b> <b>Time Interaction</b>	<b>-2.53</b> (-2.97, -2.10)	<b>-11.45</b>	<b>p&lt;.001</b>
<b>Time (quarter)</b>	<b>-0.23</b> (-.41, -.04)	<b>-2.40</b>	<b>p&lt;.05</b>

N.B. Model also includes indicator variables for time of year (3 variables), county (66 variables), and county X time interaction (66 variables).



## Oregon's CIAA

- Oregon: Pop = 4M (2M 35+)
- 2001, OR passed a law that restricted smoking in workplaces
- Excluded hospitality venues
- New comprehensive law for Jan. 1, 2010

### Interrupted Time-Series Regression Analysis: Oregon 1998-2006

	b (95% CI)	t (F)	p
Overall F-test (86,3801)	R <sup>2</sup> = 0.1358	24.60	p<.001
Comp. Law Main Effect	4.74 (-5.86, 15.35)	0.88	ns
Comp. Law X Time Interaction	-0.11 (-0.45, 0.23)	-0.63	ns
Time (month)	-0.23 (-.41, -.04)	-2.40	p<.05

N.B. Model also includes indicator variables for time of year (11 variables), county (35 variables), and county X time interaction (35 variables).

## Summary

- Comprehensive smoking bans in NY and FL are associated with reductions in rates of hospitalization for AMI.
- The timing of those laws is not associated with any change in hospitalization rates in Oregon.

Disseminating Evaluation Results

## Preparing Evaluation Reports

- Reports should take into account stakeholder perspectives and expectations
- Reports should include:
  - A description of the program (e.g., logic model)
  - The evaluation questions (purpose of the evaluation)
  - A description of the evaluation methods used
  - Evaluation results and analyses to date ( + and -)
  - Limitations and lessons learned
  - Recommendations (relevance to practice)

DON'T WAIT UNTIL THE END OF THE PROGRAM

## Dissemination

- Timed to be useful
- Shared formally and informally
- Tailored for stakeholder audiences
- Presented in varied formats
  - Written: manuscripts, reports, newsletters, Internet
  - Oral: professional meetings, community forums, stakeholder meetings, media interviews