Tobacco Control Policy Impact Evaluation

Steps to Evaluating the Impact of a Flavored Product Restriction Policy in Massachusetts

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Outline

• Background and Rationale for Evaluation

• 5 Steps to Policy Evaluation with MA Flavor Restriction Policy as Case Study

① Develop Research Question and Hypotheses
② Identify Specific and Measurable Process and Outcomes Indicators
③ Identify Feasible Means of Gathering Reliable Data
④ Develop an Appropriate Study Design
⑤ Consider Potential Sources of Bias and Confounding
Background

Find the tobacco products.
In 2014, Massachusetts applied for and was awarded a CDC Competitive grant, which supports designing, implementing and evaluating innovative and/or promising practices.

Massachusetts proposed to evaluate the impact of a flavored tobacco restriction policy that removed the sale of these youth-oriented products from youth accessible retail settings into adult-only establishments.
Rationale for Evaluation

• **Precedence**
  ✓ In late 2014, New York City, Providence, RI, and 9 municipalities in Massachusetts had already adopted a flavor restriction policy

• **Lack of Evidence**
  ✓ To our knowledge, at the time, no prior publication on the impact of the policy had been released.

• **Massachusetts Municipal and Retailer Surveillance Infrastructure**
  ✓ Each of the 351 Municipal Board of Health have authority to pass its own regulations.
  ✓ Tobacco permitting enabled regular monitoring and enforcement of retail establishments
  ✓ Retail surveillance (inspections, compliance checks, surveying, FDA, Synar) infrastructure allowed for primary data collection in retail setting to monitor policy compliance and environmental impact over time.
5 Steps to Policy Evaluation

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Step 1: Develop Research Question & Hypothesis

Questions to Consider:

1. How would we know if the policy was successfully implemented?

2. What is the expected impact of the policy – both short-term and longer term outcomes?

3. On what levels do we expect to see change?
   * Individuals?
   * Retail environment?
   * Community-wide?
   * County-wide?
   * State-wide?

4. What are moderating factors that may influence the impact of the policy?
Develop Research Question & Hypothesis

Helpful to develop conceptual framework of policy impact

Point of Sale Policy

- Reduce number, location, density and types of retailers
- Restrict where and when advertisements can be placed
- Increasing cost of tobacco products
- Restricting placement and display of products
- Restricting access to and availability of types of products

Exposure to Tobacco

Ease of Access

Purchasing Behavior

- Purchased Amount or Frequency
- Purchased Types of Tobacco
- Purchased Location

Initiation

Consumption

Cessation
Develop Research Question & Hypothesis

Conceptual Framework for Impact of Flavor Restriction

Restrict Sale of Flavored Tobacco Products in Youth-accessible Retail Outlets

Change in Retail Environment
- Reduction in Number of Products Stocked
- Reduction in Types of Products Stocked
- Reduction in Product Advertisement

Change in Youth Behavior
- Reduced Exposure to Product and Ads
- Reduced Perception of Ease of Access
- Reduced Access of Products
- Consumption

Other Points of Exposure and Access
- Demographic Characteristics
- Tobacco Use Characteristics

Other Influencing Factors
- Other POS policies
- Enforcement and Compliance
5 Steps to Policy Evaluation

1. Develop Research Question and Hypotheses
2. Identify Specific and Measurable Process and Outcomes Indicators
3. Identify Feasible Means of Gathering Reliable Data
4. Develop an Appropriate Study Design
5. Account for Potential Sources of Bias and Confounding
Step 2: Identify Specific and Measurable Process and Outcome Indicators

Factors Contributing to Policy Success (Moderators)
- % of retailers receiving education and other training before policy
- % of retailers who complied with previously passed policies and associated barriers to compliance

Policy is Successfully Implemented (Process Measures)
- Reduction in % of retailers no longer carrying flavored tobacco products after policy
- Reduction in average number of products and types of products sold after policy
- Reduction in flavored product advertising outside/inside store

Policy Had Impact (Outcome Measures)
- Reduction in % of youth who believe it’s easy to obtain flavored tobacco products
- Reduction in % of youth who obtained flavored tobacco products directly from store
- Reduction in 30 day use of any flavored tobacco products and number of products
5 Steps to Policy Evaluation

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Step 3: Feasible & Reliable Data Collection

- Is there primary and/or secondary data sources already available?
- What additional data is needed? At what time points? Will budget allow for this data to be collected?
- How do we collect the additional data?
  - Sampling Frame
  - Execution of data collection
  - Where and how data is stored
  - Data privacy and confidentiality standards
- What survey instruments are needed?
Feasible & Reliable Data Collection: Retailer Survey

Retailer Flavored Product Survey

Community: ATTLEBORO

Stage of Survey: BASELINE

Date of Visit:

Survey Start Time: ____________________ Survey End Time: ____________________

A. Flavored Product Advertising (Check all that apply)
   □ No ads anywhere
   □ Ads outside
   □ Ads inside

B. Inventory Assessment
   □ Store does not sell flavored products
   1. Did store previously sell flavored products?
      □ YES
      □ NO
      □ DON’T KNOW
   2. If YES, how did the retailer eliminate existing flavored products?
      □ Sold down stock (please indicate # of Days ________)
      □ Returned to Distributor/Transferred to another store
      □ Don’t Know

Establishment:

Employee Name:

Employee Title:  □ Owner  □ Manager
                □ Supervisor  □ Clerk

Unable to Complete:  □ Out of Business
                    □ Closed
                    □ Refused
                    □ Not Selling Tobacco
                    □ Other __________________

C. How Many Activities Done PRIOR to this Visit?
   □ # of Letters Sent  □ # of Educational Visits
   □ # of Written Warnings  □ # of Fines
   □ # of Retailer handouts  □ # of FPL distributed
E. General Activities Completed During Visit
(Check all that apply)
- Gave copy of regulation and provided explanation
- Gave copy of retailer handout and FPL
- Answered questions from retailers
- Showed retailer product(s) in violation
- Took photos of product(s) in violation/suspected
- Purchased suspected flavored products not on FPL
- None of the above
- Others ____________________________

F. Barriers You Experienced During Visit
(Check all that apply)
- Retailer did not speak English
- Retailer/clerk not knowledgeable of products
- Retailer/clerk unwilling to sell me products
- Manager/Owner Unavailable
- None
- Others ____________________________
### MAHB Guidance Flavored Product List:

*Updated as of 1/5/16*

<table>
<thead>
<tr>
<th>PRODUCT TYPE</th>
<th>BRAND</th>
<th>NAME</th>
<th>DATE ADDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>1839</td>
<td>BLACKBERRY</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>1839</td>
<td>CHERRY</td>
<td>10/1/2015</td>
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<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>1839</td>
<td>VANILLA</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
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<td>BOURBON</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
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<td>10/1/2015</td>
</tr>
<tr>
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<td>10/1/2015</td>
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<tr>
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<td>38 SPECIAL</td>
<td>CHERRY</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>38 SPECIAL</td>
<td>GRAPE</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>38 SPECIAL</td>
<td>PEACH</td>
<td>10/1/2015</td>
</tr>
<tr>
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<td>PINEAPPLE</td>
<td>1/5/2016</td>
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<tr>
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<td>VANILLA</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>4 KINGS</td>
<td>MANGO</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>ACID</td>
<td>GREEN</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>ACID</td>
<td>RED</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AL CAPONE</td>
<td>COGNAC</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AL CAPONE</td>
<td>JAMAICAN BLAZE</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AL CAPONE</td>
<td>RUM</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AMERICAN MADE</td>
<td>BLACK CHERRY</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AMERICAN MADE</td>
<td>SWEET PEACH</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
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<td>TROPICAL COCONUT</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>AMERICAN MADE</td>
<td>VANILLA</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>ANTONIO Y CLEOPATRA</td>
<td>GRENADE</td>
<td>10/1/2015</td>
</tr>
<tr>
<td>Cigar/Cigarillo/Blunt Wrap</td>
<td>ANTONIO Y CLEOPATRA</td>
<td>HONEY</td>
<td>10/1/2015</td>
</tr>
</tbody>
</table>
### The 84 Survey

**Please answer ALL questions #1—19**

1. What is your current age?
   - A. 13 or younger
   - B. 14
   - C. 15
   - D. 16
   - E. 17
   - F. 18
   - G. 19 or older

2. What grade are you in?
   - A. 8th
   - B. 9th
   - C. 10th
   - D. 11th
   - E. 12th

3. What is your sex?
   - A. Male
   - B. Female
   - C. Other: _____________

4. Do you consider yourself to be transgender?
   - A. Yes
   - B. No
   - C. Don’t Know
   - D. Not Sure

5. What is your race? (Circle ALL that apply)
   - A. American Indian or Alaska Native
   - B. Asian
   - C. Black or African American
   - D. Native Hawaiian or Pacific Islander
   - E. White

6. Are you Hispanic or Latino?
   - A. Yes
   - B. No

7. What Boston neighborhood do you live in (i.e. Dorchester, Roxbury)?

8. Which of the following best describes you?
   - A. Heterosexual (straight)
   - B. Gay or lesbian
   - C. Bisexual
   - D. Not Sure
   - E. Other: _____________

9. Does anyone you live with currently use tobacco (for example, cigarettes, cigars, e-cigarettes, chew, dip, snus, pipe tobacco, etc.)?
   - A. Yes
   - B. No
   - C. Don’t know
Feasible & Reliable Data Collection: Youth Survey

10. For each **NON-FLAVORED** tobacco product below, please check ✓ if you have used it at least once. Please also check ✓ if you have used it in the last 30 days. (If you have never used the product, please check “Never used before”)

<table>
<thead>
<tr>
<th>(Non-flavors include: plain, tobacco, regular, menthol and mint)</th>
<th>Used at least once before</th>
<th>Used in last 30 days</th>
<th>Never used before</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-flavored cigarette</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-flavored cigar or cigarillo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-flavored e-cigarette, e-hookah, e-pen or vape pen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-flavored blunt or blunt wraps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-flavored smokeless tobacco that is chewed, sniffed, or held in the mouth</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. For each **FLAVORED** tobacco product below, please check ✓ if you have used it at least once. Please also check ✓ if you have used it in the last 30 days. (If you have never used the product, please check “Never used before”)

<table>
<thead>
<tr>
<th>(Flavors include: grape, cherry, watermelon, berry, vanilla, rum, red, tropical crush, caramel, honey, banana, etc.)</th>
<th>Used at least once before</th>
<th>Used in last 30 days</th>
<th>Never used before</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavored cigarette</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flavored cigar or cigarillo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flavored e-cigarette, e-hookah, e-pen or vape pen</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Feasible & Reliable Data Collection: Youth Survey

12. In the past thirty days, have you used any **mint or menthol** tobacco products?
   - A. Yes
   - B. No
   - C. Don’t Know

13. Which tobacco product (including e-cigarettes) did you try **FIRST**, if any?
   - A. I have never tried any tobacco products
   - B. Cigarette
   - C. Cigar or cigarillo
   - D. E-cigarette, e-hookah, e-pen or vape pen
   - E. Blunt or blunt wraps
   - F. Smokeless tobacco that is chewed, sniffed or held in the mouth

14. Was the first tobacco product (including e-cigarettes) you tried **FLAVORED**?
   - A. I have never tried any tobacco products
   - B. Yes
   - C. No

15. How likely is it that you will smoke a cigarette in the next year?
   - A. Very likely
   - B. Somewhat likely
   - C. Somewhat unlikely
   - D. Very unlikely

16. How often do you visit convenience, corner or mini-mart stores?
   - A. Every day
   - B. A few times per week
   - C. A few times per month
   - D. Never / Rarely

17. How easy do you think it is to get **FLAVORED** tobacco products?
   - A. Very easy
   - B. Somewhat easy
   - C. Somewhat difficult
   - D. Very difficult

18. Please explain your answer in Question 17:

19. Which **ONE** (1) statement below BEST describes you?
   - A. I have **never tried** any tobacco products (tobacco products include e-cigarettes, e-hookah, cigars, cigarettes, etc).
   - B. Even if I go very long without using tobacco products, I **do not** have any desire to use a product.
   - C. If I go too long without using tobacco products the first thing I will notice is a mild desire to use a product that I **CAN** ignore.
   - D. If I go too long without using tobacco products, the desire to use a product becomes so strong that it is hard to ignore and it interrupts my thinking.
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 20. In the last 30 days, on how many days did you use FLAVORED tobacco products? (Fill in a value 1 through 30) | A. I like the flavor C. It is easy to buy E. Other: ____________
|                                                                         | B. It is cheap D. My friends use them                      |
| 21. What is the ONE main reason you currently use FLAVORED tobacco products? |                                                           |
|                                                                         | A. I like the flavor C. It is easy to buy E. Other: ____________
|                                                                         | B. It is cheap D. My friends use them                      |
| ONLY ANSWER IF YOU GOT THEM FROM FRIEND(S) OR USED A FRIEND'S           |                                                           |
| 22. In the last 30 days, how did you get your FLAVORED tobacco products?  | A. I bought them from a store (convenience store, gas station, etc.)
|                                                                         | B. I gave someone money to buy them for me
|                                                                         | C. I got them from a family member
|                                                                         | D. I got them from friend(s)/I used a friend's
|                                                                         | E. Other: ____________                                    |
|                                                                         |                                                           |
| 23. How old was your friend? (Select all that apply if you got them from more than 1 friend) | Under 18 18 or older Not sure |
|                                                                         |                                                           |
| 24. In the last 30 days, what Boston neighborhood(s) (for ex: Dorchester, Roxbury) did you get your FLAVORED products from? | Neighborhoods: ____________
|                                                                         |                                                           |
| 25. If tobacco products were NOT available in flavors, would you still use them? | A. Yes B. No C. Not sure |
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Step 4: Appropriate Study Design

• How the study is set up is critical to the validity of study findings

• Goal: Minimize bias and confounding to accurately isolate the effect of the policy

• Important Considerations:
  • Time points at which data is collected
  • Selection of Appropriate Comparison Group(s)
  • Sample size and representativeness of sample
We utilized a quasi-experimental study design:
* Pre-post policy measurements taken
* At least one “comparison” community selected via matching method

**Outcome Measure**
(% of youth using flavored tobacco in past 30 days)

**Community with Policy**
- **Baseline (Time 0)**: A
- **Follow-up (6 month)**: B

**Comparison Community**
- **Baseline (Time 0)**: A’
- **Follow-up (6 month)**: B’

**Effect of Policy**
\[ \text{Effect of Policy} = (B - A) - (B' - A') \]
### Control Community Selection

#### Selection of a “Comparison” Community similar to the Target Community

<table>
<thead>
<tr>
<th>Funded Community Greater than 15K City/Town</th>
<th>Town ID</th>
<th>Tot pop</th>
<th>pct_male</th>
<th>white_pct</th>
<th>pct_youth</th>
<th>smoking</th>
<th>Median_income</th>
<th>pct_below_poverty</th>
<th>Overall Retail Density</th>
<th>Illegal sales to minors</th>
<th>pct retailers that carry flavor</th>
<th>single cigar price</th>
<th>pct independent stores</th>
<th>Cigar reg</th>
<th>Pharmac y ban</th>
<th>Under 21</th>
<th>NDP to minors</th>
<th>Ban flavors</th>
<th>Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easthampton</td>
<td>87</td>
<td>16053</td>
<td>47.5</td>
<td>93.6</td>
<td>18.0%</td>
<td>0.199</td>
<td>54657</td>
<td>6.2</td>
<td>1</td>
<td>0</td>
<td>75</td>
<td>2.58</td>
<td>68.4</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Falmouth</td>
<td>96</td>
<td>31531</td>
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<td>91.9</td>
<td>17.3%</td>
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<td>1.14</td>
<td>100</td>
<td>67</td>
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<td>No</td>
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<tr>
<td>Fitchburg</td>
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<td>40318</td>
<td>48.6</td>
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<td>0.245</td>
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<td>19.4</td>
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<td>2.55</td>
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<tr>
<td>Gloucester</td>
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<td>28789</td>
<td>48.1</td>
<td>95.7</td>
<td>18.6%</td>
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<td>1.08</td>
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<td>1.22</td>
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<td>19.7%</td>
<td>0.189</td>
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<td>1.04</td>
<td>8</td>
<td>76</td>
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<td>85.9</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Newburyport</td>
<td>206</td>
<td>17416</td>
<td>46.5</td>
<td>96.4</td>
<td>20.8%</td>
<td>0.158</td>
<td>76300</td>
<td>5.8</td>
<td>0.8</td>
<td>21.4</td>
<td>33</td>
<td>3.57</td>
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<tr>
<td>Northampton</td>
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<td>Pittsfield</td>
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<td>21.2%</td>
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<td>43188</td>
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<td>0.198</td>
<td>74767</td>
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Timeline of Study Design

**March**: MA awarded Competitive grant

**April - October**: Development of evaluation plan, study design, survey instruments and survey methodology

**Fall**: Development of Enforcement protocol, materials including flavored product list

**Sept**: Attleboro selected as target; Gloucester and Salem as controls

**Nov**: Baseline retailer surveys administered in 3 communities

**Dec**: Baseline youth surveys administered in 3 communities

**Jan 1**: Attleboro policy took effect

**Jan - Feb**: Baseline retailer surveys in Boston

**Feb 15**: Boston policy took effect

**Mar - April**: Youth intercept surveys in Boston

**March**: Attleboro 3 month retailer surveys

**June**: 6 month retailer and youth surveys in Attleboro, Gloucester, Salem

**Aug - Sept**: Baseline in Lowell and Malden

**Late Fall**: Expected follow-up in Boston

**October 1**: Lowell policy takes effect

**Early spring**: 6 month followup in Lowell and Malden

**March**: End of 2 year Competitive Grant

**On going Data analysis and publication**
5 Steps to Policy Evaluation

1. Develop Research Question and Hypotheses
2. Identify Specific and Measurable Process and Outcomes Indicators
3. Identify Feasible Means of Gathering Reliable Data
4. Develop an Appropriate Study Design
5. Account for Potential Sources of Bias and Confounding
Step 5: Consider What Else Could Explain What Was Observed?

- Consideration of potential sources of bias and confounding should be incorporated into each of the 5 evaluation steps:
  - Are there other policies passed concurrently that may have increased or decreased the observed impact?
  - Are there natural changes over time not associated with the policy?
    - Modifiers on change in retail environment
    - Modifiers on change in tobacco access
    - Modifiers on change in tobacco use
  - Are there limitations to the study design, sampling method or data collection process that undermines our ability to accurately measure the effect of the policy?
Tobacco Policy Evaluation Resources

• Overview of Tobacco Control Policies
  Many resources developed by the Public Health Law Center for many tobacco control policies
  • http://publichealthlawcenter.org/topics/tobacco-control

• “Methods for Evaluating Tobacco Control Policies”, IARC Handbooks of Cancer Prevention, Volume 12

• Policy Evaluation Conducted by Other States and Researchers
  • Flavored Tobacco Restriction (New York City):
    http://tobaccocontrol.bmj.com/content/early/2016/02/12/tobaccocontrol-2015-052418.abstract

• Evaluation Tools and Instruments
  • CounterTobacco.org http://countertobacco.org/store-assessment-tools
Questions?

Make smoking history.