Monitoring and Assessing the Impact of Tax and Price Policies on US Tobacco Use

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SCTC Steering Committee, February 8, 2013
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Aim 1: Policy Surveillance
Specific Aims

Aim 1: Compile a historical data set of codified law (statutes, regulations, and case law) and policies affecting retail tobacco product prices

- cigarette & other tobacco product excise taxes, tax stamps
- Minimum pricing/markup policies
- policies addressing direct purchases/sales
- tribal compacts and other policies targeting reservation sales
- policies limiting price promotions
- policies strengthening tax and MSA administration and enforcement
Policy Collection Process

• Initial Research
  • Relevant statutes and regulations identified in Lexis
  • 8 Pilot states: CA, MA, NY, OK, OR, PA, VA, WA

• Verification
  • Sources: Westlaw, State Case Law, Attorney General Opinions, Law Reviews, State Websites, SCLD, STATE

• Develop Coding Scheme

Coding Parameters: 2001-2015
  • Year One - Laws in effect as of January 1, 2012
Progress – Broad View

**Tier 1:** Coding Scheme Completed/Year One Coding Initiated
- Cigarette Tax
- Minimum Markup

**Tier 2:** Coding Scheme and Law Verification in Progress
- OTP Tax
- Tribal Taxation

**Tier 3:** Law Collection and Verification in Initial Stages
- Direct Sales
- MSA
Cigarette Tax

State laws related to the use of tax stamps, meter impressions, or other indicia to indicate payment of state and local taxes on cigarettes.

Status:
• Coding scheme developed
• Testing scheme against pilot states
• Final adjustments being made to coding scheme as necessary
• Decision Rules document being formed to guide future coding
Cigarette Tax: Scope

All 51 states tax cigarettes, and 48 of them utilize tax stamps.
• 3 of the 51 states use recordkeeping in lieu of tax stamps.
Cigarette Tax: Areas of Interest

**Stamps:**
- Encryption/Anti-Counterfeit Technology

**Taxation:**
- Border Zone Tax Rates
- Enabling/Preemption Laws

**Penalties:**
- Broad view of cigarette tax-related penalties
  *Note: Due to a wide variance of penalties across all states, this category has been simplified to reflect the presence of general enforcement mechanisms in regards to both 1st offenses and graduated penalties. (e.g. Fines, Imprisonment, License Revocation/Suspension)*

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Minimum Markup

State laws promoting fair competition through the creation of minimum pricing schemes for cigarettes and OTP.

Status:
• Coding scheme complete
• Relevant laws collected and verified
• Illustrative PATH charts being developed for all 32 states
Minimum Markup: Scope

32 of the 51 states utilize some form of minimum markup laws.

Minimum Pricing (Non-Tobacco Specific)

Minimum Pricing (Tobacco Specific)

Minimum Markup

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Minimum Markup: Types

Minimum Markup
Require adding a specific retail or wholesale markup percentage to the basic (or invoice) cost of cigarettes and OTP.
  - 26 States: AK, AR, CT, DE, DC, IN, IA, KY, LA, MA, ME, MD, MN, MS, MT, NE, NJ, NY, OH, OK, PA, RI, SD, TN, WV, WI

Minimum Pricing (Tobacco Specific)
Prohibit selling cigarettes below retail or wholesale cost. No corresponding markup percentage is applied.
  - 3 States: ID, NV, WA

Minimum Pricing (Non-Tobacco Specific)
Prohibit sales below cost, but do not specifically mention tobacco. Included here because these states’ courts have applied these general minimum pricing laws to cigarettes. No corresponding markup percentage is applied.
  - 3 States: CA, CO, HI
Minimum Markup: Illustrations

Minimum Pricing

STATE: Washington

SELLER:

WHOLESALER

Min. Pricing

MINIMUM PRICE

RETAILER

Actual Price Paid For Cigarettes

Actual Price Paid For Cigarettes

1 Minimum Pricing

2 Actual Price Paid For Cigarettes

SOURCES:
ARCW § 19.91.300 (2011)
ARCW §2.24.510 (2011)
Minimum Markup: Illustrations

STATE: Pennsylvania

BASIC COST OF CIGARETTES = MANUFACTURER’S LIST PRICE + includes Fed taxes + freight/handling charges.

STATE TAXES¹

MINIMUM WHOLESALE² PRICE

BASIC COST OF CIGARETTES + AGENT Markup: ¹.7% x Basic

WHOLESALEER Markup: 4% x Basic

TRADE DISCOUNTS⁵

MINIMUM RETAIL PRICE³

BASIC COST OF CIGARETTES + AGENT Markup: ¹.7% x Basic

WHOLESALEER Markup: 4% x Basic

RETAILER Markup: 6% x Basic

TRADE DISCOUNTS

SOURCES:
61 Pa. Code §§ 71.4, 76.1–76.3 (2011)
Minimum Markup: Illustrations
Minimum Markup: Areas of Interest

- OTP Application
  - Only **three** states apply their minimum pricing laws to OTP:
    - Oklahoma, Rhode Island, Wisconsin

- Complexity of pricing formulas

- Trade Discounts:
  - Who may use them?
  - Where are they located within the pricing formula?

- Coupons, Rebates, and Concessions
OTP Tax

State laws related to the distribution and application of tax stamps, meter impressions, or other indicia used to indicate payment of state excise taxes on OTP.

Status:
• Laws collected
• Verification in progress
• Coding scheme in initial stages.

Areas of Interest:
• Differential treatment of OTP types
• Emerging products (e.g. e-cigarettes, dissolvables, etc.)
• Roll-Your-Own machines
OTP Tax: Scope

50 of the 51 states tax OTP; only 7 states use tax stamps.

OTP Taxation
(No tax stamps utilized)

OTP Tax Stamps:
AL, DE, GA, LA, NH, OK, TN

No OTP Taxation
(Pennsylvania)
Tribal Taxation

State and tribal laws related to the taxation of cigarette and OTP on tribal lands.

Status:
• State laws collected
• Verification of state laws in progress
• Tribes targeted for internal law collection; some internal tribal laws collected.
• Coding scheme in initial stages

Scope: 22 of the 51 states have laws related to tribal tobacco taxation
• AK, AZ, CA, FL, ID, IA, KS, MI, MN, MT, ND, NE, NM, NV, NY, OK, OR, SD, UT, WA, WI, WY

Areas of Interest:
• State’s jurisdiction over tribal sales
• State laws touching on state-tribe relationship
• Internal tribal laws governing taxation of cigarettes and OTP.
Direct Sales/MSA

**Direct Sales**
State laws either prohibit or restrict the sale of cigarettes through the mail, by phone, online, or through other non-face-to-face means. Most are in conjunction with the PACT Act, a federal law enacted in 2010 to curb widespread state cig tax evasion.

- **Scope:** 41 of the 51 states have Direct Sales laws.
  - States without direct sales laws: CO, DC, GA, IA, KY, MS, NE, NH, NC, SC

**MSA**
State laws requiring compliance with the Master Settlement Agreement’s reporting and monetary requirements. Distinguishes between “participating” or “non-participating” manufacturers.

- **Scope:** All 51 states have MSA laws.

**Status:** Laws for both categories have been collected and are awaiting verification.
Aim 2: Tobacco Pricing & Promotion
Specific Aims

Aim 2: Assess the impact of price-related policies on retail prices and price-reducing promotions for tobacco products

• Combines policy data from Aim 1 with data from:
  • BTG-COMP observational data collections
  • Self-reported data on prices and price promotions from multiple surveys
  • Store-based scanner data on prices and price promotions
Point of Sale Observations

• Engaged in analyzing retail outlet observational data in 150+ nationwide communities per year
  • 1999-2003 (available for comparative trend analysis)
  • 2010-2012 (n=154,157,161 communities)

• Several descriptive analyses underway

• POS Data will be merged with tobacco policies to:
  • Assess the impact of price-related policies on retail prices and price-reducing promotions (Aim 2)
  • Assess the impact of tobacco product prices, price reducing promotions, and related policies on tobacco product purchasing behaviors (Aim 3)
  • Examine the impact of tobacco product prices, price-reducing promotions, and related policies on tobacco use behaviors from MTF and expanded ITC survey (Aim 5)
BTG-COMP 2012 Tobacco Instrument

- **Product Availability and Placement**
  - Traditional products, including loose/rolling tobacco and moist snuff
  - New products: snus, e-cigarettes, dissolvable products by brand
  - Flavored and unflavored cigar products

- **Product Pricing and Promotion**
  - Marlboro, Camel, Newport, Cheapest cigs
  - Marlboro and Camel snus
  - Cheapest pipe tobacco (no promotion data)

- **Interior Marketing**
  - Presence of cigs, snus, moist snuff, dissolvable product ads
  - Type and characteristics of tobacco ads, including health content

- **Exterior Marketing on Building Exterior and Property**
  - Counts of cigs, snus, moist snuff, dissolvable product ads

- **OTC NRT Availability and Store Exterior Characteristics**
BTG-COMP Tobacco Instrument Reliability Analysis (preliminary)

- Convenience sample in 120 food stores in 50-mile buffer around Chicago MSA conducted in January, 2010
- Two raters coding independently in each store

<table>
<thead>
<tr>
<th>Item Category</th>
<th># Items with calculated Kappa or ICC</th>
<th>% with substantial agreement (Kappa or ICC .61 – 1.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Availability</td>
<td>15</td>
<td>87%</td>
</tr>
<tr>
<td>Product Pricing</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Product Promotions</td>
<td>13</td>
<td>31%</td>
</tr>
<tr>
<td>Interior Marketing</td>
<td>23</td>
<td>78%</td>
</tr>
<tr>
<td>Exterior Marketing</td>
<td>13</td>
<td>38%</td>
</tr>
</tbody>
</table>
**BTG-COMP Tobacco Outlets (preliminary, 2012)**

**Food Stores with Tobacco Sales (n=2,429)**
- Supermarket (n=274)
- Grocery (n=132)
- Limited Service (n=2023)
  - Convenience
  - Gas
  - Pharmacy
  - Small Discount Store (e.g., Dollar General, 99cent Store)
  - Liquor store if sells drinks and snacks and 5 or more food items

**Tobacco Stores (n=215)**
- Primarily engaged in retail sales of cigarettes, cigars, tobacco and other smokers’ supplies. At least 50% of its merchandise is tobacco or smoking-related.
- Not a food store, cigar/tobacco/hookah club or lounge

*bridging the gap*
Availability of Emerging Tobacco Products, % Retail Stores with Tobacco Products, 2010 and 2011 (weighted)

- **Snus**: 61% in 2010, 56% in 2011
- **Disolvable Lozenges**: 5% in 2010, 6% in 2011
- **E-Cigarettes**: 3% in 2010, 6% in 2011

*p < .0001
Percentage of Stores Which Sell Flavored and Unflavored Cigarillos / Little Cigars
By African American and White Quartiles, 2011

Notes: The following comparisons are significantly different at p < 0.05
African American Quartiles: flavored cigarillos / little cigars: Overall and Low vs. High
White Quartiles: no significant difference
Figure 1: Average Price of Cigarette Packs
By African American and Latino Quartiles, 2011

Notes: The following comparisons are significantly different at p < 0.05:
African American Quartiles: Newport: Low vs. High
Latinos Quartiles: Newport and Marlboro: Low vs. High
Presence of In-Store Promotions, % Retail Stores with Tobacco Products, 2010 and 2011 (weighted)

*\( p < .001 \)
Presence of Interior Cigarette Advertising
% Retail Stores that Sell Tobacco Products, 2010 and 2011 (weighted)

- Stores Free From Cigarette Ads/Logos: 9% (2010), 8% (2011)
- Stores with One or More Text-Only Ads for Cigarettes*: 45% (2010), 34% (2011)
- Stores with One or More Cigarette Ads ≤3.5 ft from the Ground: 12% (2010), 13% (2011)

*p < .0001
Presence of Interior Snus Advertising
% Retail Stores that Sell Tobacco Products, 2010 and 2011 (weighted)

- Stores Free From Snus Ads/Logos*: 42% (2010), 56% (2011)
- Stores with One or More Text-Only Ads for Snus*: 17% (2010), 29% (2011)
- Stores with One or More Snus Ads ≤3.5 ft from the Ground*: 4% (2010), 2% (2011)

*p < .001
Presence of Exterior Advertising
% Retail Stores that Advertise Cigarette and Snus Products, 2010 and 2011 (weighted)

<table>
<thead>
<tr>
<th></th>
<th>Cigarette Ads on Building Exterior*</th>
<th>Cigarette Ads on Property*</th>
<th>Snus Ads on Building Exterior*</th>
<th>Snus Ads on Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2.55</td>
<td>3.02</td>
<td>0.13</td>
<td>0.01</td>
</tr>
<tr>
<td>2011</td>
<td>3.17</td>
<td>3.62</td>
<td>0.07</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*p < .001

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Aim 3: Purchase Behaviors
Specific Aims

Aim 3: Assess the impact of tobacco product prices, price reducing promotions, and related policies on tobacco product purchasing behaviors

• Combines policy data from Aim 1 and price data from Aim 2 with various survey data on:
  • tobacco product and brand choices (substitution, switching-down, etc.)
  • purchase type and location (single pack vs. carton; discount outlets; reservations and cross-border; etc.)
  • use of price-reducing promotions (e.g. multi-pack offers, coupons)
  • differences by age, gender, SES, race/ethnicity, tobacco use
Adult Tobacco Survey

• The adult tobacco survey is currently being conducted with a target accrual of approximately 1,400 adult tobacco users in the US.

• The goal is to improve our understanding of the impact of tobacco tax and price policies on tobacco use, purchase behavior, tax avoidance and related outcomes.

• We are administering telephone surveys to assess associations between tobacco product pricing/marketing and adult tobacco use.
Methods

- Probability sampling methods are used to generate a pool of phone numbers from which Computer-Assisted Telephone Interviewing (CATI) staff call.
- The interviewer asks screening questions regarding the size of household, and asks to speak to the adult whose birthday is coming up next.
- The interviewer conducts a short tobacco use screening survey to determine whether the selected adult has used any tobacco products in the past 12 months.
Methods

• The interviewer indicates that, to thank the respondent for his/her time, we will send a check for $20.
• The survey takes approximately 45 minutes.
• Survey questions include:
  ➢ Tobacco product use history and current tobacco product use
  ➢ Beliefs about tobacco use, for example, beliefs about the health effects of smoking
  ➢ Warning labels: salience, perceptions of effectiveness, and reports of respondent’s reactions to the labels
  ➢ Price of tobacco products and location/frequency of product purchases
Preliminary Results

- A preliminary analysis of the data was done after 225 surveys were completed. Some initial results from that analysis are presented in the following slides. They include:
  - Data on use of the different tobacco products
  - Data on reasons for use of tobacco products other than cigarettes.
Preliminary Results
(among 225 completes interviews as of 12/10/12)

Percent of current or recent former users of any product (n=191) who report using each product in the past 12 months

- Cigarettes: 58.1%
- E-cigarettes: 3.7%
- Cigar: 12%
- Cigarillo: 8.4%
- Little Filtered Cigar: 4.7%
- Pipe: 2.6%
- Hookah: 2.1%
- Snus: 1.6%
- Smokeless: 3.1%
- Disolvable: 0%

Current user
Former User - Recent (<=12 months ago)
## Preliminary Results

(among 225 completes interviews as of 12/10/12)

### Reasons for Use - Percent who responded 'Important to me':

<table>
<thead>
<tr>
<th></th>
<th>N*</th>
<th>Cost less</th>
<th>People in media</th>
<th>Can use where smoking not allowed</th>
<th>Less harmful</th>
<th>Come in appealing flavors</th>
<th>Help quit</th>
<th>Don't smell</th>
<th>Feels like smoking</th>
<th>More acceptable to non-smokers</th>
<th>People important to me use it</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-Cigarettes</strong></td>
<td>38</td>
<td>52.6</td>
<td>2.6</td>
<td>55.3</td>
<td>68.4</td>
<td>34.2</td>
<td>73.7</td>
<td>73.7</td>
<td>73.7</td>
<td>57.9</td>
<td>23.7</td>
</tr>
<tr>
<td><strong>Regular cigars</strong></td>
<td>36</td>
<td>5.6</td>
<td>0.0</td>
<td>-</td>
<td>19.4</td>
<td>27.8</td>
<td>16.7</td>
<td>8.3</td>
<td>8.3</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Cigarillos</strong></td>
<td>39</td>
<td>30.8</td>
<td>7.7</td>
<td>-</td>
<td>28.2</td>
<td>38.5</td>
<td>20.5</td>
<td>20.5</td>
<td>17.9</td>
<td>7.7</td>
<td>12.8</td>
</tr>
<tr>
<td><strong>Little Filtered Cigars</strong></td>
<td>21</td>
<td>42.9</td>
<td>9.5</td>
<td>-</td>
<td>14.2</td>
<td>28.6</td>
<td>23.8</td>
<td>14.3</td>
<td>33.3</td>
<td>9.5</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Pipes</strong></td>
<td>15</td>
<td>13.3</td>
<td>0.0</td>
<td>-</td>
<td>13.3</td>
<td>26.7</td>
<td>20.0</td>
<td>13.3</td>
<td>-</td>
<td>6.7</td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Hookah</strong></td>
<td>22</td>
<td>0.0</td>
<td>0.0</td>
<td>9.1</td>
<td>22.7</td>
<td>40.9</td>
<td>9.1</td>
<td>18.2</td>
<td>-</td>
<td>27.3</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Snus</strong></td>
<td>15</td>
<td>13.3</td>
<td>0.0</td>
<td>33.3</td>
<td>20.0</td>
<td>26.7</td>
<td>20.0</td>
<td>26.7</td>
<td>-</td>
<td>20.0</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Smokeless</strong></td>
<td>43</td>
<td>25.6</td>
<td>4.7</td>
<td>23.3</td>
<td>20.9</td>
<td>16.3</td>
<td>16.3</td>
<td>23.3</td>
<td>-</td>
<td>7.0</td>
<td>18.6</td>
</tr>
<tr>
<td><strong>Disolvable</strong></td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>-</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Note: questions were asked among current users, try users, and recent (12-month) former users of each product*
Current Status

- As of February 5, 2013, 995 surveys have been conducted.
- We expect to complete data collection by early April, 2013.
- Data analysis will begin by June 1, 2013.
Aim 4: Tax Avoidance & Evasion
Specific Aims

Aim 4: Estimate the extent of and determinants of tax avoidance and tax evasion

- uses multiple methods including:
  - littered cigarette pack collections
  - individual self-reports
  - archival data
  - econometric modeling

- identifies key individual and policy influences on tax avoidance and evasion and differential impact on key subpopulations
Using littered cigarette packs to detect tax avoidance and evasion

Methodology:
• Data collection teams used a strict protocol to collect littered cigarette packs at each BTG-COMP data collection site
• Packs were returned to UIC and about 15 items of information relating to each pack were coded
• Most important items were
  • Location found
  • Brand
  • Whether cellophane was present and
  • Type of tax stamp found, if any
Overview

- Total number of packs: 3,840
- Number of catchment area: 139
- Number of states: 36
- % of packs with cellophane: 55.5%
Tax Compliance

• Among all packs with cellophane:

<table>
<thead>
<tr>
<th>Pack with:</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A state tax stamp</td>
<td>92.12%</td>
<td>26.95%</td>
</tr>
<tr>
<td>the state tax stamp matches the state in which pack was found</td>
<td>81.89%</td>
<td></td>
</tr>
</tbody>
</table>
Local Cigarette Tax

State and local governments issue joint stamps reflect two layers of tax rate on one stamp.

### Joint Stamp

<table>
<thead>
<tr>
<th>State</th>
<th># of Packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York (with NYC)</td>
<td>50</td>
</tr>
<tr>
<td>Missouri (with St. Louis)</td>
<td>18</td>
</tr>
<tr>
<td>Maryland (locality unknown)</td>
<td>1</td>
</tr>
<tr>
<td>Kansas (locality unknown)</td>
<td>1</td>
</tr>
<tr>
<td>Virginia (with 17 municipalities)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>71</strong></td>
</tr>
</tbody>
</table>
Local Cigarette Tax

There are cigarette tax stamps issued by county/municipal governments in addition to state stamps

**County/City Stamp**

<table>
<thead>
<tr>
<th>County/City</th>
<th># of Packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson County, AL</td>
<td>23</td>
</tr>
<tr>
<td>Cook County, IL</td>
<td>5</td>
</tr>
<tr>
<td>Kansas City, MO</td>
<td>5</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>2</td>
</tr>
<tr>
<td>Alabama County, AL</td>
<td>2</td>
</tr>
<tr>
<td>Cannot identify</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>51</strong></td>
</tr>
</tbody>
</table>
## Statistics by Catchment

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td># of packs</td>
<td>65.13</td>
<td>42.75</td>
<td>0</td>
<td>172</td>
</tr>
<tr>
<td># of packs with cellophane</td>
<td>35.41</td>
<td>21.97</td>
<td>0</td>
<td>82</td>
</tr>
<tr>
<td># of packs with tax stamps</td>
<td>32.66</td>
<td>20.28</td>
<td>0</td>
<td>71</td>
</tr>
<tr>
<td># of packs with tax stamps that match the state in which they were found</td>
<td>29.51</td>
<td>19.42</td>
<td>0</td>
<td>71</td>
</tr>
</tbody>
</table>
Compliance with FDA Ban on Flavors

<table>
<thead>
<tr>
<th>Flavor</th>
<th># of Packs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Flavor</td>
<td>3,073</td>
<td>80.03%</td>
</tr>
<tr>
<td>Menthol</td>
<td>755</td>
<td>19.66%</td>
</tr>
<tr>
<td>Fruity (illegal)</td>
<td>6</td>
<td>0.16%</td>
</tr>
</tbody>
</table>
Key Preliminary Findings

- We found 9 or more packs with cellophane (so stamp can be identified) in 50% of catchment areas. For these catchment areas we can estimate “population” compliance with reasonable statistical confidence.

- 25% of catchment areas had perfect (100%) compliance

- 15% of catchment areas had compliance of less than 50%
Next Steps

• Clean and benchmark the data
  • Check for data anomalies/miscoding
  • Compare brand distribution in our data to expected brand distribution

• Map the geographical variation in tax compliance and provide more descriptive statistics

• Investigate determinants of cigarette tax avoidance
  • Rate of tax
  • Availability of alternative supplies
  • Economic and demographic characteristics of community

• Compare our results with other measures/predictions
Aim 5: Tobacco Use
Specific Aims

Aim 5: Examine the impact of tobacco product prices, price-reducing promotions, and related policies on tobacco use behaviors

• extends Aims 3 and 4 by estimating impact on:
  • prevalence, frequency, and intensity of tobacco use
  • substitution among tobacco products
  • uptake and cessation

• assesses differential impact by age, gender, SES, race/ethnicity, and tobacco use

• identify non-linearities in the impact of price on tobacco use
2009 Federal Tax Increases

- 2008 & 2009 Monitoring the Future Surveys
  - compare within 2009
  - compare same schools 2008-2009
  - alternative cut points
  - cigarette smoking & smokeless tobacco use
  - control for variety of individual, school, state factors
  - alternative estimation strategies
Results

Figure 3. Percent of 8th, 10th and 12th Graders Who Reported Smoked Cigarettes in the Past 30 Days

 bridging the gap
Results

Figure 4. Percent of 8th, 10th, and 12th Graders Who Reported Using Smokeless Tobacco in the Past 30 Days

- Feb. 2009
- Mar. 2009
- Apr. 2009
- May. 2009

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### Results - Summary

<table>
<thead>
<tr>
<th>Cigarette Smoking (Pre-tax: before April 1, 2009; Post-tax: on or after May 1, 2009)</th>
<th>2009 MTF Model 2</th>
<th>2008 and 2009 MTF Model 2</th>
<th>DD Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Tax Increase Mean (%)</td>
<td>13.4%</td>
<td>12.8%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Estimated Percentage Point Decrease after Tax Increase</td>
<td>-1.3</td>
<td>-1.4</td>
<td>-1.7</td>
</tr>
<tr>
<td>Estimated Percent Decrease in Smoking after Tax Increase</td>
<td>-9.7%</td>
<td>-11.0%</td>
<td>-13.3%</td>
</tr>
<tr>
<td>Estimated Price Elasticity</td>
<td>-0.44</td>
<td>-0.50</td>
<td>-0.60</td>
</tr>
<tr>
<td>Number of FEWER Students (age 14 - 18) Smoking in the Past 30 Days Due to the Tax Increase (in 1,000)</td>
<td>220</td>
<td>237</td>
<td>287</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Smokeless Tobacco (Pre-tax: before April 1, 2009; Post-tax: on or after May 1, 2009)</th>
<th>2009 MTF Model 2</th>
<th>2008 and 2009 MTF Model 2</th>
<th>DD Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Tax Increase Mean (%)</td>
<td>6.1%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Estimated Percentage Point Decrease after Tax Increase</td>
<td>-1.2&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-1.2</td>
<td>-0.8&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Estimated Percent Decrease in Use of Smokeless Tobacco after Tax Increase</td>
<td>-19.8%</td>
<td>-24.0%</td>
<td>-16.0%</td>
</tr>
<tr>
<td>Estimated Price Elasticity&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-1.46</td>
<td>-1.84</td>
<td>-1.23</td>
</tr>
<tr>
<td>Number of FEWER Students (age 14 - 18) Using Smokeless Tobacco in the Past 30 Days Due to the Tax Increase (in 1,000)</td>
<td>203</td>
<td>203</td>
<td>135</td>
</tr>
</tbody>
</table>

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Total Cigarette Sales – Food, Drug, and Mass Stores (FDM)

The Trend of Total Cigarettes Sales in FDM (2007 - 2011)
Sales Volume by Type: Regular, Low Tar, Low Nicotine Total US Market – FDM Stores Low Tar and Regular
Smokeless Tobacco Products: Sales Volume

Moist Snuff: (in millions of ounces)

Snus: (in millions of pieces)

Dry Snuff: (in millions of ounces)

Loose leaf: (in millions of ounces)
Sales Volume - Electronic Cigarette Products
US Market

![Graph showing sales volume of electronic cigarette products in the US market from Q1 2010 to Q4 2011. The graph compares sales volumes of different types of electronic cigarettes, including e-cig automizers, e-cig cartomizers, and e-cig cartridges.](image-url)

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Sales Volume – Dissolvable Tobacco Products
US Market

[Line chart showing sales volume for different types of dissolvable tobacco products (Sticks, Strips, Orbs) across quarters Q1 to Q4 in 2010 and 2011.]

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**Sales Volume – Dissolvable Lozenge**
**US Market**

---

**bridging the gap**
### Own Price Elasticity — FDM Stores

*(Aggregated quarterly sales volume in each market)* Preliminary and unchecked

<table>
<thead>
<tr>
<th>Product</th>
<th>Cigarette</th>
<th>Cigar</th>
<th>Cigarillo</th>
<th>Little Cigar</th>
<th>Pipe Tobacco</th>
<th>Loose Tobacco</th>
<th>Chewing Looseleaf</th>
<th>Dry Snuff</th>
<th>Moist Snuff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model with Market, Year, and Quarter Dummies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticity</td>
<td>-1.626***</td>
<td>-1.035***</td>
<td>-0.572**</td>
<td>-1.637***</td>
<td>-1.813***</td>
<td>-1.766***</td>
<td>-0.863***</td>
<td>-0.550</td>
<td>-0.844***</td>
</tr>
<tr>
<td></td>
<td>(0.0682)</td>
<td>(0.0559)</td>
<td>(0.290)</td>
<td>(0.0979)</td>
<td>(0.123)</td>
<td>(0.118)</td>
<td>(0.191)</td>
<td>(0.352)</td>
<td>(0.130)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.971</td>
<td>0.946</td>
<td>0.893</td>
<td>0.965</td>
<td>0.948</td>
<td>0.923</td>
<td>0.984</td>
<td>0.957</td>
<td>0.979</td>
</tr>
<tr>
<td><strong>Model with Market Level SFA Policy and Demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticity</td>
<td>-1.543***</td>
<td>-0.831***</td>
<td>0.0911</td>
<td>-1.959***</td>
<td>-3.160***</td>
<td>-2.566***</td>
<td>-2.776***</td>
<td>-1.422***</td>
<td>-2.049***</td>
</tr>
<tr>
<td></td>
<td>(0.0767)</td>
<td>(0.124)</td>
<td>(0.370)</td>
<td>(0.120)</td>
<td>(0.159)</td>
<td>(0.139)</td>
<td>(0.274)</td>
<td>(0.371)</td>
<td>(0.235)</td>
</tr>
<tr>
<td>SFA Index</td>
<td>-0.00618</td>
<td>-0.0299***</td>
<td>0.000690</td>
<td>0.0109</td>
<td>-0.0297***</td>
<td>0.0310***</td>
<td>-0.0209**</td>
<td>-0.0509**</td>
<td>0.00365</td>
</tr>
<tr>
<td></td>
<td>(0.00500)</td>
<td>(0.00971)</td>
<td>(0.0105)</td>
<td>(0.00943)</td>
<td>(0.00957)</td>
<td>(0.0102)</td>
<td>(0.0102)</td>
<td>(0.0207)</td>
<td>(0.0114)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.677</td>
<td>0.434</td>
<td>0.356</td>
<td>0.709</td>
<td>0.607</td>
<td>0.597</td>
<td>0.813</td>
<td>0.741</td>
<td>0.711</td>
</tr>
<tr>
<td>Observations</td>
<td>1,024</td>
<td>1,040</td>
<td>1,037</td>
<td>1,040</td>
<td>1,040</td>
<td>1,038</td>
<td>1,025</td>
<td>792</td>
<td>1,033</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

---

[bridging the gap](www.bridgingthegapresearch.org)
## Own Price Elasticity – FDM Stores

(Aggregated quarterly sales volume in each market) Preliminary and unchecked

<table>
<thead>
<tr>
<th>Product</th>
<th>Snus</th>
<th>Lozenge</th>
<th>Tablet</th>
<th>NRT Gum</th>
<th>NRT Patch</th>
<th>E-Cig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model with Market, Year, and Quarter Dummies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticity</td>
<td>-0.359</td>
<td>-1.434***</td>
<td>-0.598**</td>
<td>-1.578***</td>
<td>-0.974***</td>
<td>-0.949*</td>
</tr>
<tr>
<td>(0.335)</td>
<td>(0.245)</td>
<td>(0.273)</td>
<td>(0.0959)</td>
<td>(0.174)</td>
<td>(0.514)</td>
<td></td>
</tr>
<tr>
<td>R-squared (Dummy)</td>
<td>0.636</td>
<td>0.960</td>
<td>0.645</td>
<td>0.978</td>
<td>0.977</td>
<td>0.787</td>
</tr>
<tr>
<td><strong>Model with Market Level SFA Policy and Demograg</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticity</td>
<td>-1.269***</td>
<td>-5.021***</td>
<td>-0.632***</td>
<td>-4.155***</td>
<td>-4.548***</td>
<td>-0.916**</td>
</tr>
<tr>
<td>(0.244)</td>
<td>(0.372)</td>
<td>(0.208)</td>
<td>(0.160)</td>
<td>(0.214)</td>
<td>(0.434)</td>
<td></td>
</tr>
<tr>
<td>SFA Index</td>
<td>0.0766***</td>
<td>-0.0277***</td>
<td>-0.0911***</td>
<td>-0.0301***</td>
<td>-0.0145*</td>
<td>-0.126</td>
</tr>
<tr>
<td>(0.0258)</td>
<td>(0.00952)</td>
<td>(0.0345)</td>
<td>(0.00857)</td>
<td>(0.00861)</td>
<td>(0.0817)</td>
<td></td>
</tr>
<tr>
<td>R-squared (Policy and Demographic)</td>
<td>0.440</td>
<td>0.647</td>
<td>0.502</td>
<td>0.735</td>
<td>0.693</td>
<td>0.481</td>
</tr>
<tr>
<td>Observations</td>
<td>557</td>
<td>1,040</td>
<td>306</td>
<td>1,040</td>
<td>1,040</td>
<td>108</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

---

*bridging the gap*
### Cross Price Elasticity – FDM Stores

(Between cigarettes and other selected tobacco products. Aggregated quarterly sales volume in each market) Preliminary and unchecked

<table>
<thead>
<tr>
<th>Product</th>
<th>Cross Price Elasticity between Cigarettes and Select Tobacco Products: FDM stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarillo</td>
<td>0.162***</td>
</tr>
<tr>
<td>Little Cigar</td>
<td>0.0735***</td>
</tr>
<tr>
<td>Loose Tobacco</td>
<td>-0.206***</td>
</tr>
<tr>
<td>Dry Snuff</td>
<td>-0.0846*</td>
</tr>
<tr>
<td>Moist Snuff</td>
<td>-0.288***</td>
</tr>
<tr>
<td>Lozenge</td>
<td>-0.232***</td>
</tr>
<tr>
<td>Tablet</td>
<td>-0.0723</td>
</tr>
<tr>
<td>NRT gum</td>
<td>0.0747***</td>
</tr>
<tr>
<td>NRT patch</td>
<td>0.210***</td>
</tr>
<tr>
<td>Ecig</td>
<td>0.104*</td>
</tr>
<tr>
<td></td>
<td>0.0301***</td>
</tr>
</tbody>
</table>

Model with Market, Year, and Quarter Dummies

<table>
<thead>
<tr>
<th>Cross Price Elasticity</th>
<th>0.162***</th>
<th>0.0735***</th>
<th>-0.206***</th>
<th>-0.0846*</th>
<th>-0.288***</th>
<th>-0.232***</th>
<th>-0.0723</th>
<th>0.0747***</th>
<th>0.210***</th>
<th>0.104*</th>
<th>0.0301***</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.971</td>
<td>0.971</td>
<td>0.971</td>
<td>0.970</td>
<td>0.969</td>
<td>0.971</td>
<td>0.971</td>
<td>0.971</td>
<td>0.972</td>
<td>0.971</td>
<td>0.998</td>
</tr>
</tbody>
</table>

Model with Market Level SFA Policy and Demographics

<table>
<thead>
<tr>
<th>Cross Price Elasticity</th>
<th>0.376***</th>
<th>-0.0144</th>
<th>-0.675***</th>
<th>-0.290***</th>
<th>-0.976***</th>
<th>-0.249***</th>
<th>-0.776***</th>
<th>0.0906*</th>
<th>-0.580***</th>
<th>-0.417***</th>
<th>0.126</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFA Index</td>
<td>-0.00884*</td>
<td>-0.00623</td>
<td>-0.0121**</td>
<td>-0.0144***</td>
<td>-0.00952*</td>
<td>-0.00764</td>
<td>-0.0465***</td>
<td>-0.00847*</td>
<td>-0.00613</td>
<td>-0.0107</td>
<td>0.126</td>
</tr>
</tbody>
</table>

| R-squared              | 0.681    | 0.677    | 0.701     | 0.689     | 0.733     | 0.685     | 0.690    | 0.848    | 0.698     | 0.682    | 0.729 |
| Observations           | 1,021    | 1,024    | 1,022     | 1,009     | 776       | 1,017     | 1,024    | 304      | 1,024     | 1,024    | 108  |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Aim 6: Household Spending
Specific Aims

Aim 6: Evaluate the impact of prices, price-reducing promotions, and related policies on other household spending

• builds on Aims 3, 4 and 5 to examine impact of spending on tobacco products on:
  • household spending on food, housing, clothing, health care, education, transportation, and other goods/services
  • focuses on impact of tax changes on low-income households
  • assess differential impact based on use of tobacco tax and other tobacco revenues to support programs targeting low-income populations

• planning to start in 2014
Aim 7: Communication & Dissemination
Aim 7: Disseminate and communicate findings widely

- target multiple audiences including policy makers, tobacco control advocates, public health professionals, researchers, and general public
- use multiple tools including peer-reviewed publications, special reports, policy and research briefs, press releases, websites

- Key activities to date:
  - developing new web-site “tobacconomics.org” that will feature products from this and other projects
  - developing social media presence (twitter, facebook)
Report Claims SCHIP Cut Smokers, Increased Revenues
Minnesota anti-tobacco group using findings to push for tax hike
CSP Daily News | May 10, 2012

CHICAGO -- A new study by researchers at the University of Illinois at Chicago claims that a large national tax increase “can influence youth tobacco use prevalence within a very short time period.”

One anti-tobacco group, the ClearWay Minnesota/Raise It for Health coalition, is already using the report to call for a tobacco price increase in Minnesota of $1.50 per pack.

Implemented on April 1, 2009, the State Children’s Health Insurance Program Reauthorization Act (SCHIP) increased the federal tax rate on cigarettes by 61.66 cents per pack (from 39 cents to $1.0066 per pack) and on moist snuff, the most common form of smokeless tobacco, by 92.5 cents per pound (from 58.5 cents to $1.51 per pound). It also increased taxes on other forms of smokeless tobacco.

SCHIP reduced the number of youth smokers by at least 220,000 and the number of youth smokeless tobacco users by at least 136,000 in the first two months, according to the report, published online by the National Bureau of Economic Research.

The study also found that federal tobacco tax revenues increased by 147% in the 12 months following the increase, it said—from $7.1 billion in the 12 months before to $17.5 billion in the 12 months after.

New Study Shows Higher Tobacco Taxes Greatly Reduce Youth Smoking
Health advocates today urged Illinois leaders to increase the cigarette tax by $1/pack following a new national study that confirms higher tobacco taxes are very effective at reducing smoking and other tobacco use, especially among kids.

Tax hike cuts tobacco consumption
By Dennis Cauchon, USA TODAY

A giant federal tobacco tax hike has spurred a historic drop in smoking, especially among teens, poor people and those dependent on government health insurance, a USA TODAY analysis finds.

2009 Federal Tobacco Tax Increase Cut Number of Youth Smokers by At Least 220,000 in First Two Months Alone, New Study Shows
RALEIGH, N.C., May 17 /PRNewswire-USNewswire/ -- As the legislative session begins, a report released today by a tobacco policy expert at the University of Illinois at Chicago confirms that a significant cigarette tax increase in North Carolina will produce a large, sustained increase in state tobacco tax revenues. Several states, including South Carolina, have recently raised tobacco taxes to deal with budget shortfalls.

www.bridgingthegapresearch.org
Press on the Impact of the 2009 tobacco tax hike article

Fewer kids might start smoking, if Quinn’s cigarette-tax hike to help Medicaid passes

By Lili Tan
May 10, 2012

"Part of the purpose of the increase in federal tobacco taxes that went into effect in 2009 was to generate revenues, and a big part was the public health impact, and it’s certainly having that with respect to kids," said Frank Chaloupka, paper co-author and an economics professor at the University of Illinois at Chicago.

Chaloupka found a 16 to 24 percent drop in youth smoking immediately after the tax increase. He and his researchers culled data from Monitoring the Future surveys, which asked eighth-, 10th- and 12th-graders about their tobacco use, and have tracked youth substance use since the 1970s.

Chaloupka also projected that roughly 78,000 fewer youths would start smoking in Illinois if Gov. Quinn’s $1 cigarette tax hike passes.

“Where price really matters is for kids who are making the transition between experimenting with cigarettes – getting them from their friends or sneaking them from their parents – to buying their own and moving into more regular smoking,” he said.
www.bridgingthegapresearch.org

coming soon: www.tobacconomics.org