State Tobacco Control Spending and Youth Smoking

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Comprehensive State Tobacco Control Programs

• Excise Tax Funded Programs

• Ballot Initiatives
  • California 1988, Proposition 99, $0.25 excise tax increase
  • Massachusetts 1992, Question 1, $0.25 excise tax increase
  • Arizona 1995, Proposition 200, $0.40 excise tax increase
  • Oregon 1996, Measure 44, $0.30 excise tax increase

• Legislative Initiatives
  • Washington 2001, $0.60 excise tax increase
  • Maine 1997, $0.37 excise tax increase
State Support from Federal and Private Programs

- **Americans’ Stop Smoking Intervention Study (ASSIST)**
  - NCI and ACS funded 17 states between 1991 and 1998
  - Change tobacco control policies through state based coalitions

- **Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT)**
  - CDC funded remaining states (excluding CA) between 1991 and 1998

- **National Tobacco Control Program (CDC funded)**
  - In 1999 it replaced ASSIST and IMPACT
  - Currently fund all 50 states, DC, and 7 territories

- **SmokeLess States Program**
  - In 1994 RWJF began funding tobacco coalitions in 19 states.
  - RWJF currently funds coalitions in 42 states

- **American Legacy Foundation**
  - Created in 1999 as part of the MSA has funded several states.
Total State Investment in Tobacco Control

- $861.9 million ($3.16 per capita) in 2002
- CDC’s Best Practices recommends a minimum of $5.98 per capita
- As of 2002, only 6 states had reached the minimum level of funding
Previous Studies

- Numerous state specific reports have been conducted
  - Generally find large reductions in smoking occur after comprehensive programs are adopted
  - All but 2, by Hu and Colleagues, use univariate trend analyses

- Two studies have used national data to look at state level expenditures on smoking
  - Farrelly, Chaloupka, and Pechacek (2001)
    - Aggregate state level data
    - State spending on TC inversely related to per-capita cigarette sales
  - Farrelly, Nimsch, and Bray (2001)
    - State spending on tobacco control has no impact on youth smoking prevalence
    - State spending has some impact on average number of cigarettes smoked
    - Contained very small # of youths from Massachusetts, Arizona, or Oregon. All three states had comprehensive programs in place at the time of the surveys.
Data

- 1991 – 2001 Monitoring the Future Surveys of 8th, 10th, and 12th grade students
- 503,143 students, mostly between 12-18 years old.
- 120,300 of which were current smokers

Cigarette Smoking

- Indicator for smoking in the past 30 days
- Average daily cigarette consumption for smokers
Data

Wide variety of socioeconomic and demographic information

- Race/ethnicity
- Gender
- Age
- Age Squared
- Education
- Parental education
- Earned income
- Income from other sources
- Time Fixed effects
Unobserved Smoking Sentiment Controls

- Tobacco Producing State
- Regional Fixed Effects
- State Fixed Effects
State Tobacco Control Expenditures

- Total state-level per capita tobacco control expenditures
  - Derived by aggregating the expenditures from the following programs:
    - Excise tax funding and other state funds earmarked for tobacco control
    - National programs
      - ASSIST
      - IMPACT
      - SmokeLess States
      - ASTHO
    - Other non-governmental state funds
Cigarette Prices

- Tobacco Institute
  - State-level weighted average price per pack of 20 cigarettes
  - Deflated by the Consumer Price Index (1982-1984=100)
Clean Indoor Air Index

- Private worksites
- Restaurants
- Recreational Facilities
- Shopping malls
- Health Facilities

- Public transit facilities
- Cultural Facilities
- Public Schools
- Private Schools

• Each of the above restriction takes on a value of between 0-5 depending on strength of the restriction

• Adding up the restriction ratings of the nine restriction placing a weight of two on the following restrictions: restaurants, recreation facilities, shopping malls, cultural facilities, public schools, and private schools

• Subtracting 20% for preemption
Youth Access Laws

Index Variable

- Minimum purchase age
- Packaging
- Clerk intervention
- Photo identification
- Vending machine availability
- Free distribution of samples
- Graduated penalties
- Random inspections
- Statewide enforcement

- Each restriction takes on a value of between 0-5 depending on strength of the restriction
- The index adds up the equally weighted restriction ratings of the 9 aforementioned restrictions
Simple tally of the number of purchase, use, and possession laws each state enforces.
Cragg’s Two Part Model:

- Probit methods for smoking prevalence
- Least squares estimates of conditional cigarette demand
Tobacco Control Expenditure Results

Tobacco Control Expenditures are found to have a negative and significant impact on the propensity and intensity of youth and young adult smoking.

<table>
<thead>
<tr>
<th>Predicted Probabilities of Smoking</th>
<th>Tobacco Producing State Indicator</th>
<th>U.S. Census Division Indicators</th>
<th>State Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Probability - No State-Level Spending</td>
<td>24.28</td>
<td>24.26</td>
<td>23.96</td>
</tr>
<tr>
<td>Mean Predicted Probability</td>
<td>23.87</td>
<td>23.84</td>
<td>23.86</td>
</tr>
<tr>
<td>Predicted Probability at CDC Minimum Recommendation</td>
<td>21.80</td>
<td>21.74</td>
<td>23.33</td>
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<tr>
<td>Predicted Probability at CDC Maximum Recommendation</td>
<td>18.00</td>
<td>17.91</td>
<td>22.30</td>
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Percentage Point Changes in Predicted Probabilities

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<tr>
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<tbody>
<tr>
<td>No Funding ? Mean</td>
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<td>-0.42</td>
<td>-0.10</td>
<td>-2.48</td>
<td>-2.52</td>
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<td>-1.56</td>
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Other Results

- Cigarette prices have a negative impact on both prevalence and average consumption.
  - Price elasticity of smoking participation \(-0.261\)
  - Price elasticity of conditional demand \(-0.164\)

- Clean indoor air laws, youth access laws, and PUP laws have a negative and significant impact on smoking prevalence.

- Youth access and PUP laws are found to decrease average smoking by smokers.
Discussion

- Increased spending on tobacco control decreases both the propensity and intensity of youth smoking.
- If states would have spent the CDC recommended minimum expenditure to sustain a comprehensive program, youth prevalence would have been approximately 6.57% lower than what was observed.
- Other policies that were found to decrease smoking among 8th, 10th, and 12th graders:
  - Higher cigarette prices
  - Stronger clean indoor air restrictions
  - Stronger youth access restrictions
  - Stronger purchase possession and use laws