

Evaluating Tobacco Control Policies: The Role of Survey Data and ~~Demand Models~~

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Introduction

- Demand Analysis- focuses on effects of price (and other policies)
 - Benefits and Limitations of Survey Data
 - Data Collected
 - Methods
 - Previous Results and Specification of Policy Variables
 - Surveillance/Evaluation System: systems approach to policy- who it affects, other policies and integration of knowledge
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Basic Approach



- Attitudes, norms and opportunities as link between policy changes and cigarette use
 - Evolution over time of demographic groups
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Demand Analysis

Focuses on the Effect of Price on Smoking Rates:

- Different smoking rates
- Entire population, particular socio-demographic groups

Controls for other factors and policies:

Gauge of role of other factors influencing smoking rates

Data Driven Demand Analysis

- Aggregate data- usually consumption, usually times series
 - Survey data- individual data, usually cross section, requires cross sectional variations in variables of interest
 - Combination cross section-time series: longitudinal or not
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Survey Data and Demand

■ Advantages

- Can consider smoking behaviors in more detail
- Price independently determined from individual perspective

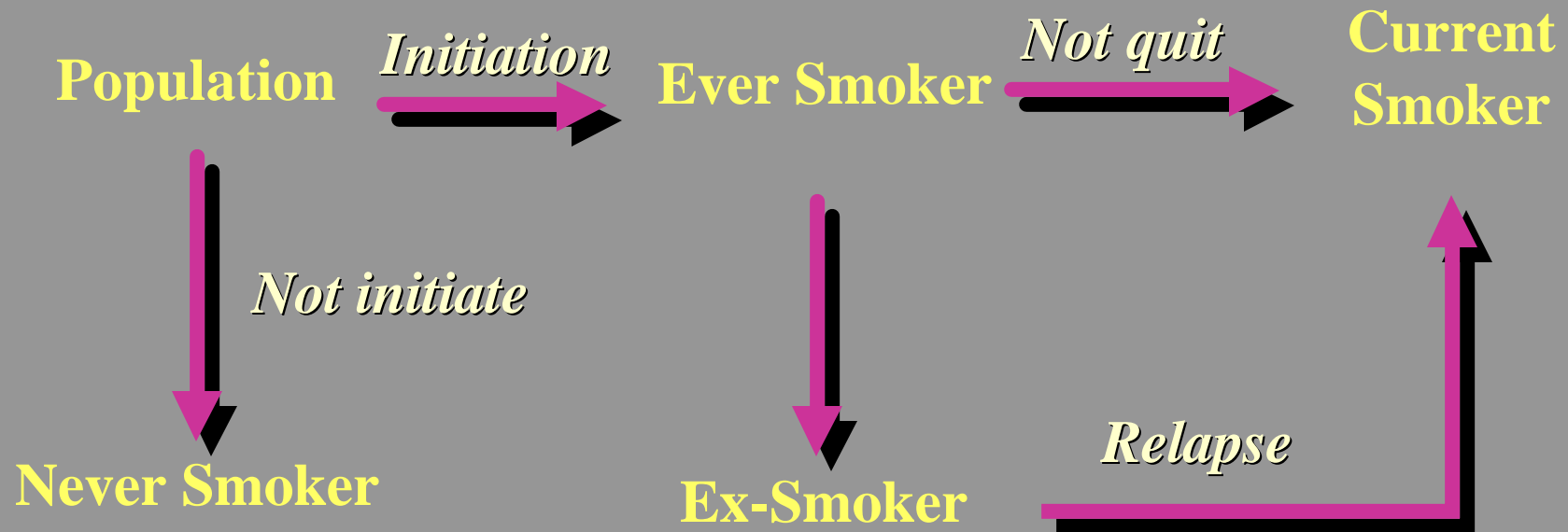
■ Problems:

- Need sufficient sample size for outcomes
- Sufficient variation in the independent variables of interest, especially price- may be a problem in nation without regional differences.

Part of Surveillance/Evaluation System

- Survey data is part of surveillance system that tracks smoking rates, norms and policies
- Considers socio-demographic groups to isolate problem areas and future concerns
- Demand is an important part of evaluation systems: most of you will probably rely on aggregate time series analysis, but survey data provides important links

Measures of Smoking Rates



Smokers and ex-smokers may be distinguished by quantity smoked per day, days smoked, multiple product use

Survey Data-Outcomes

Participation

- Different products: cigarettes, bidis, chewing tobacco, roll your own, etc.
 - Cigarette Definitions:
 - Adult- 100+ lifetime and currently smoking,
 - Youth- Last 30 days
 - May be other definitions
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Survey Data-Outcomes

Quantity: conditional demand

- Cigarettes or packs per smoker per time period (month/ year)
 - Everyday vs. Someday
 - **Different cigarette types: international vs. domestic, plain vs. filter, etc.**
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Survey Data-Outcomes

Quit (less used)

- Attempts
- success

Initiation

Survey Data-Predictors

Price

- Price: May Need to collect locally, ask questions on survey
 - Taxes may be used, not consistent with economic theory, but may be more policy relevant (and sensitive to smuggling)
 - Adjust for differences in standard of living (or relative to household expenditures), and price changes over time (price index)
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Survey Data-Predictors

Other Policies

- Media
 - Clean air
 - Advertising Restrictions
 - Cessation Treatment: provider involvement and availability
 - Youth Access
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Survey Data-Predictors

- Socio-demographic
 - Age, gender, urban/rural, racial/ethnic, religion, other
 - Wealth/income
 - Alternatively, may estimate separate equations for different groups or allow for interaction terms.
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Specification of Model

Relationship between policies based on:

- **Evidence for tobacco and other literature,**
 - **Theories (especially economics, but also sociology, epidemiology, etc)**
 - **Data availability, especially price**
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Methods-Equation Specification

- Log vs. linear (dep. And indep.)
- Conventional vs. rational addiction models
- Single and two stage
- Cross section and time series

Equation Specification: Two stage methods

- **Identification of price variables:** May use taxes and other variables, may be solution to obtaining the price variable
- **Two stage selection process:**
 - Participation: logit or probit
 - Conditional quantity (OLS)

Equation Specification:

Conventional vs. addiction models

- Conventional = no past or future
- Addiction/rational addiction = past and future smoking variables, less used in cross section

Are links to the past smoking important? Are links to past policy important (recent changes vs. long-term changes?)

Need to control for multiple policies

- Individual policies may coincide with other policies
 - Different policies affect different demographic groups
 - Difficult to sort out effects in empirical studies
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Prices/Taxes

Substantial literature

- Participation elasticities vary by age:

Age 10–19	0.6 (.2-1.1)	Age 20–24	0.5
Age 25–34	0.3	Age > 35	0.2

- Conditional elasticities generally half or less, appear to be greater at older ages.
- Some studies find gender differences
- Studies find racial/ethnic and education/income differences (more educated/income less price responsive)

Tax Effects

- Effects often differ by demographics (age, race, and gender) and may depend on other policies
 - Time dynamics: affect initiation and cessation (through prevalence and cessation rates).
Effects grow continuously over time as youth (more responsive to price) age.
 - Effects may depend on the way in which policy is implemented: level (size and relative to initial price), *smuggling*, publicity, etc.
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CLEAN INDOOR AIR LAWS

- Work site- good evidence, especially on private restrictions, smaller effects for non-total ban, role of media and enforcement (7%)
 - Public places-limited ability to distinguish the effects
 - Restaurants and bars (2%)
 - Schools (youth 1%)
 - Other places— public transit, shopping areas, enclosed arenas (1%)
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Effects of Clean air laws

- Effects on quantity at first and then cessation
 - Depends on age, gender and racial/ethnic (who works indoors and smoking reactions)
 - Depends on extent of laws, loopholes, enforcement and publicity
 - Depends on private work restrictions in place
 - Depends on norms and other policies (knowledge and concern about second hand smoke, smokers as a force)
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Media and Campaigns: Important Factors

- Scale and duration, but depends on media cost and effectiveness and ability to reach new audiences
- Other policies
- Content
 - Social marketing approach (pre-testing)**
 - Target particular groups**
 - Tied to other policies (e.g., cessation treatments, second smoke and clean air).**

Knowledge of effects weak, difficult to distinguish effects from other policies

Youth Access Policies

Effects weak especially in the absence of enforcement and other policies

- **Retail Compliance depends on:**
 - **Enforcement through compliance checks and penalties- depends on levels, self-service and vending machine bans**
 - **Merchant Concern: merchant awareness and community mobilization (depends on other policies)**
 - **Effects may depend on age gender and racial/ethnic**
 - **Effects on youth: takes 10-15 years to have large effects on adult population**
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Other Public Policies

■ Advertising Bans

- Total vs. Partial ban (ala' Chaloupka and Saffer)

■ Health Warnings/Information

- Health warnings probably need to be graphic
- Information policies probably more important in growth stages

■ Cessation Treatment Policies

- Health care provider involvement
- Access to pharmacotherapies

■ Product Regulations

- Limit tar and nicotine, etc.
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Simulation as Part of Evaluation/ Surveillance

Package

- Demand study provides information of use to policy makers directly related to your nation
- Previous studies of policy (same nation and others) provide support for and confidence in the results
- Used with simulation model to show the implications and used to disentangle the effect of multiple policies

Purpose of Simulation Model

- **Justification**-Shows smoking rate and health impact with and with out policy.
 - **Prediction and Planning**
 - Demographics groups affected
 - How effects depend on implementation and combinations of policies
 - **Systematic way of understanding policies, and integrating knowledge**
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SimSmoke Simulation Model

- **Dynamic computer simulation model of tobacco control policies for the US**
 - **Funding by SAMHSA, RWJF, NCI, FAMRI, TRDRP, GSK**
 - **Currently developed as national model, in process of developing models for California and other states, Taiwan, Poland and other countries**
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Disentangling the effect of policies

- Use time series to examine change in smoking rates from a group of policies implemented together
- Use Survey data to distinguish the effects of different policies
- SimSmoke to sort out different policies

Example- Arizona Full Court Press

Summary

Evaluations are not done in isolation

- Consider other studies
- Consider characteristics of your population
- Use multiple outcomes

Evaluation as an on-going process

- Multiple policies, changing policies
 - Simulation modeling a way to organize and extend results
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***“All models are wrong,
some models are useful”***

George Box
