



# Are Tobacco Excise Taxes Discouraging Smoking Behavior? Cross-Sectional Evidence from Poland

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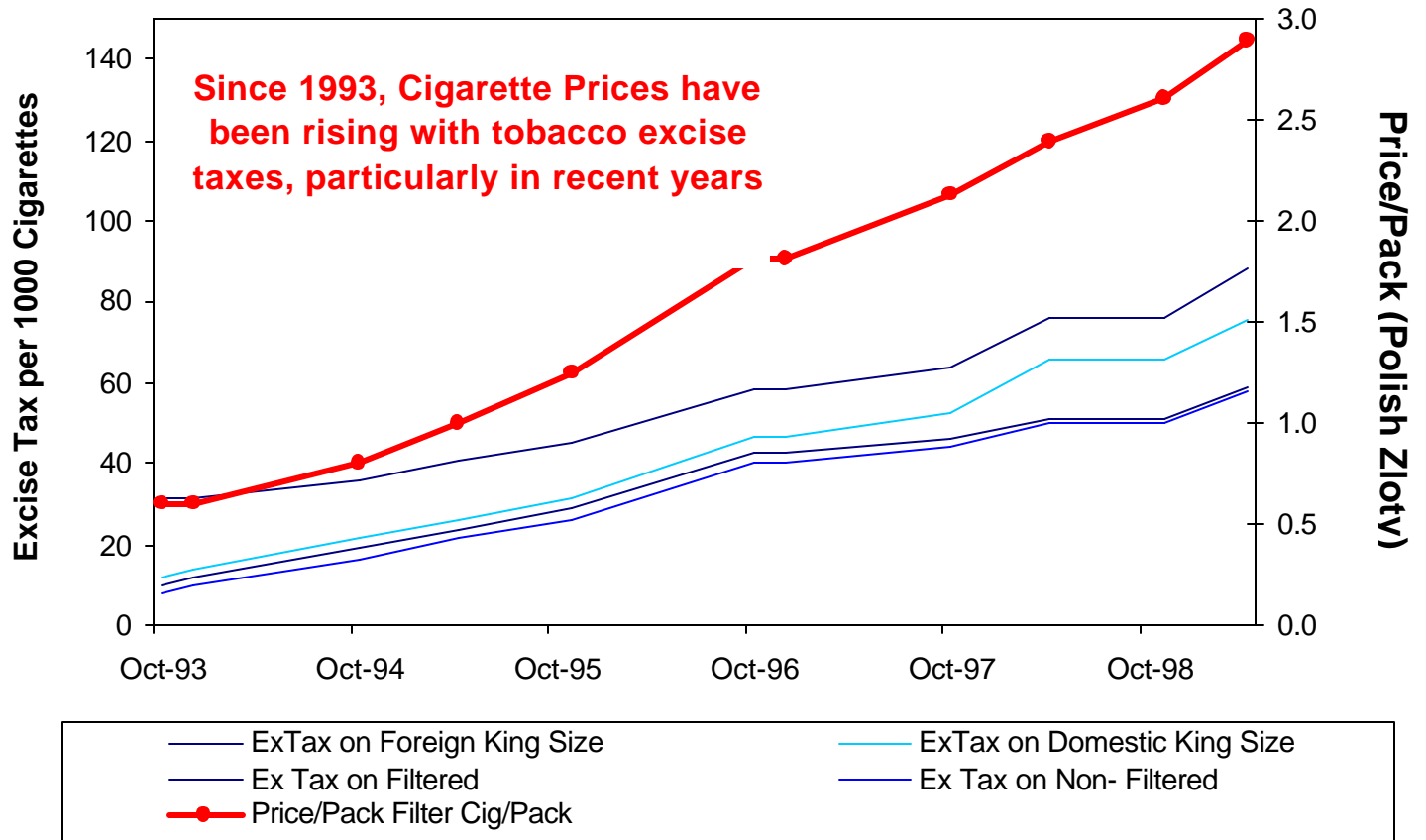
*and*

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Maria Sklodowska–Curie Oncology Center

# Poland 1993-1999

## Cigarette Excise Tax Rates vs. Price per Pack





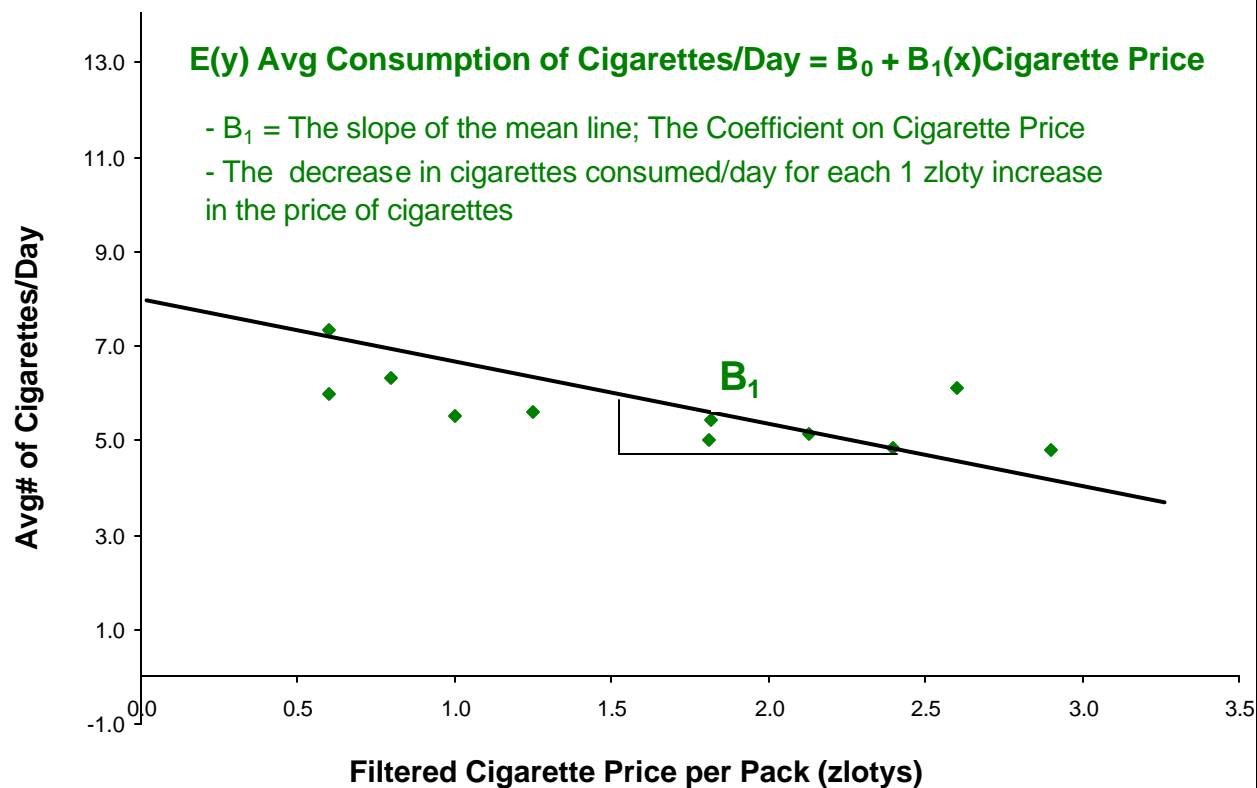
# Descriptive Statistics

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See Table1.xls  
for Descriptive Statistics  
of Cross-Sectional  
Database

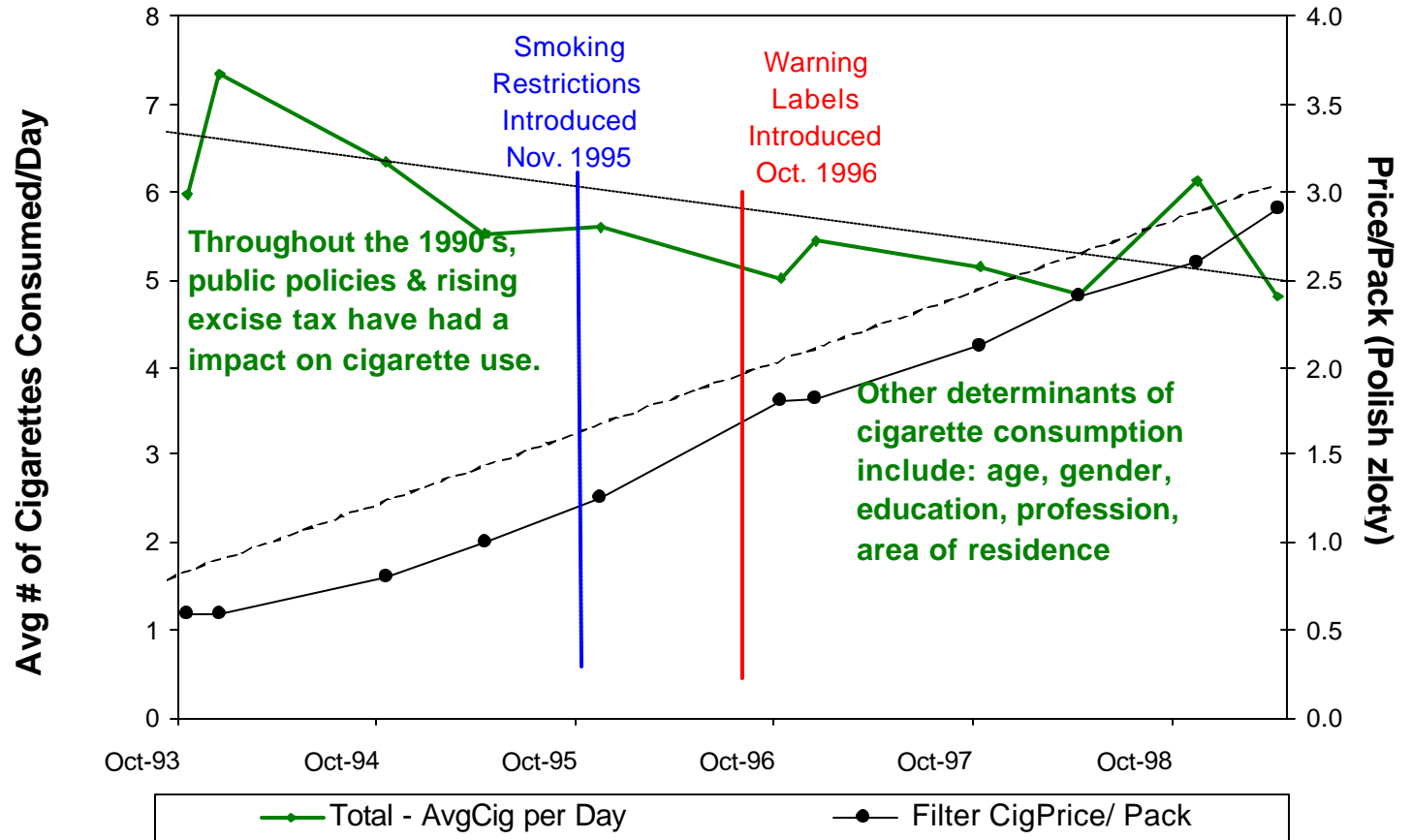
# The Basic Econometric Model

Cigarette Consumption as a Function of Cigarette Price  
Total Sample, 1993-1999



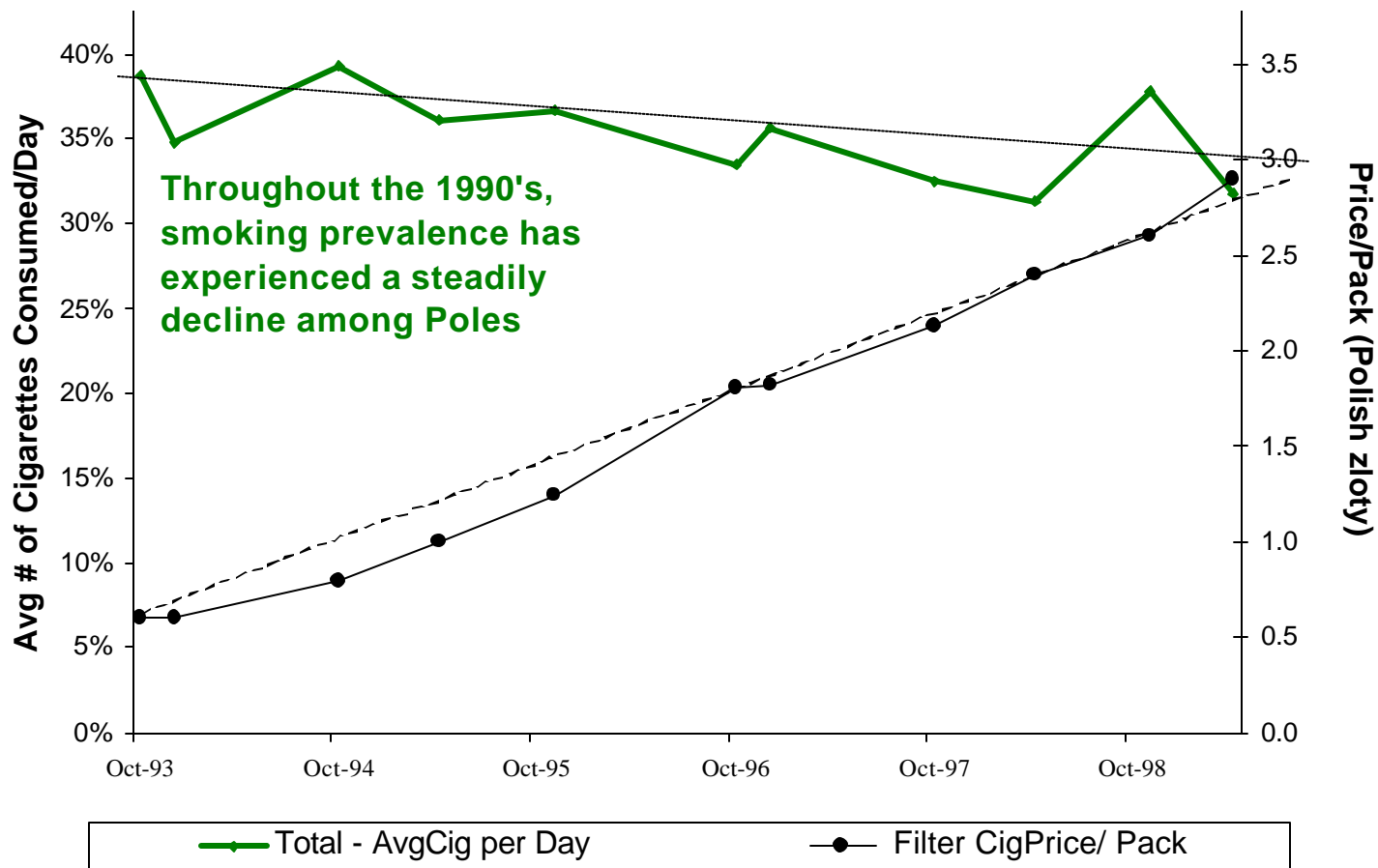
# Cigarette Consumption & The Impacts of Tax and Public Policies in Poland

## Total Sample, 1993-1999



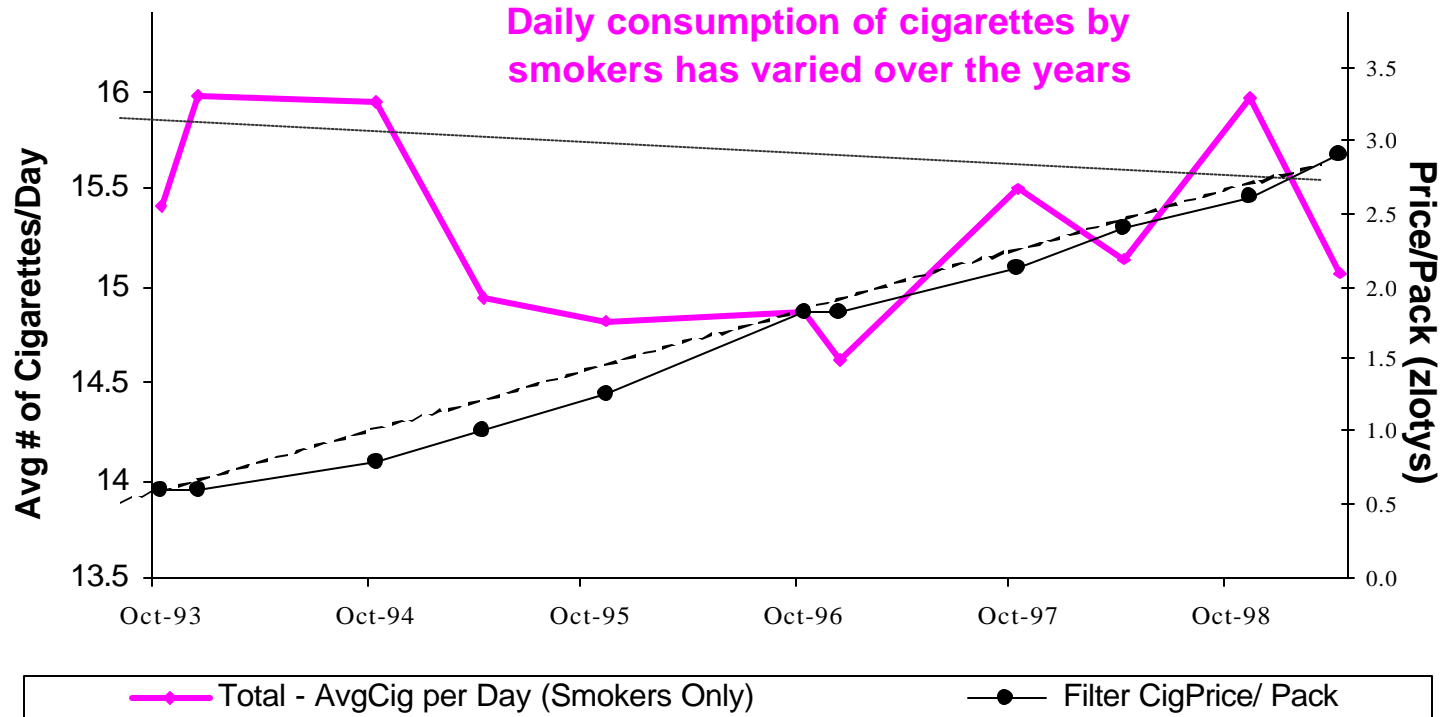
# Trends: Smoking Participation

Total Sample, 1993-1999



# Trends: Daily Cigarette Consumption

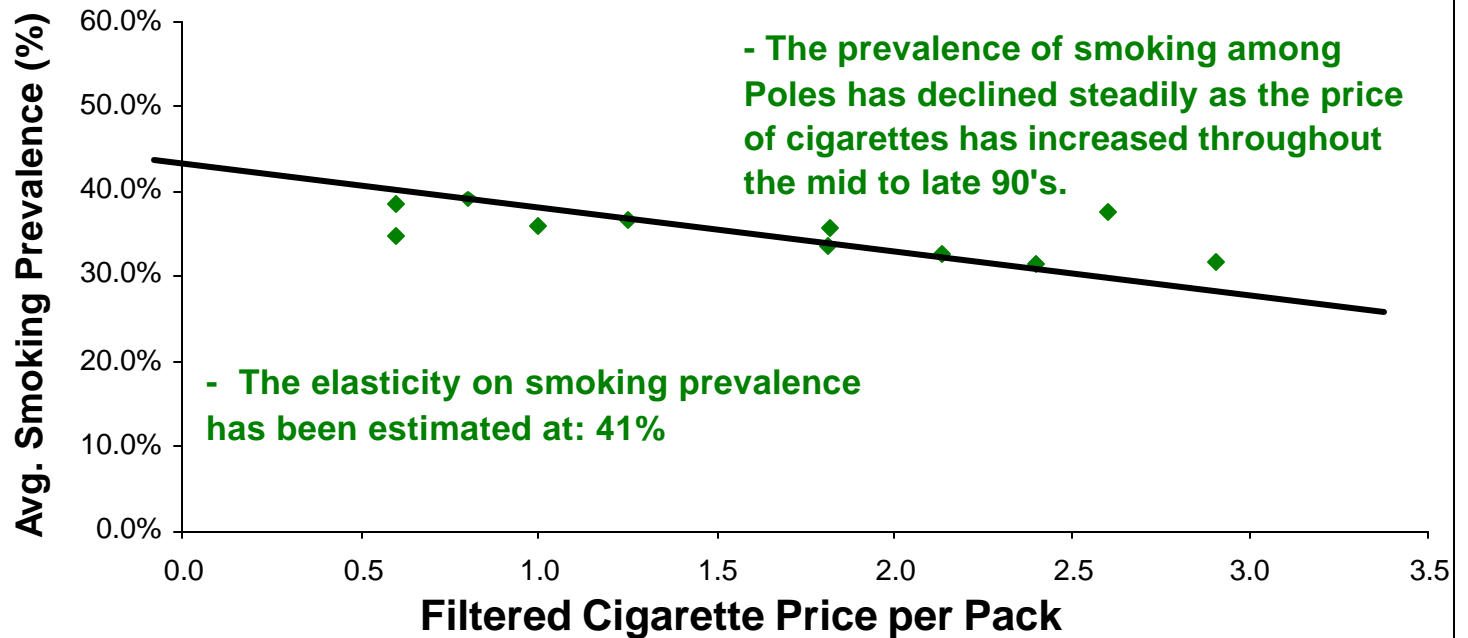
## Smokers Only, 1993-1999



# Modeling: Part I

## Smoking Participation as a Function of Cigarette Price

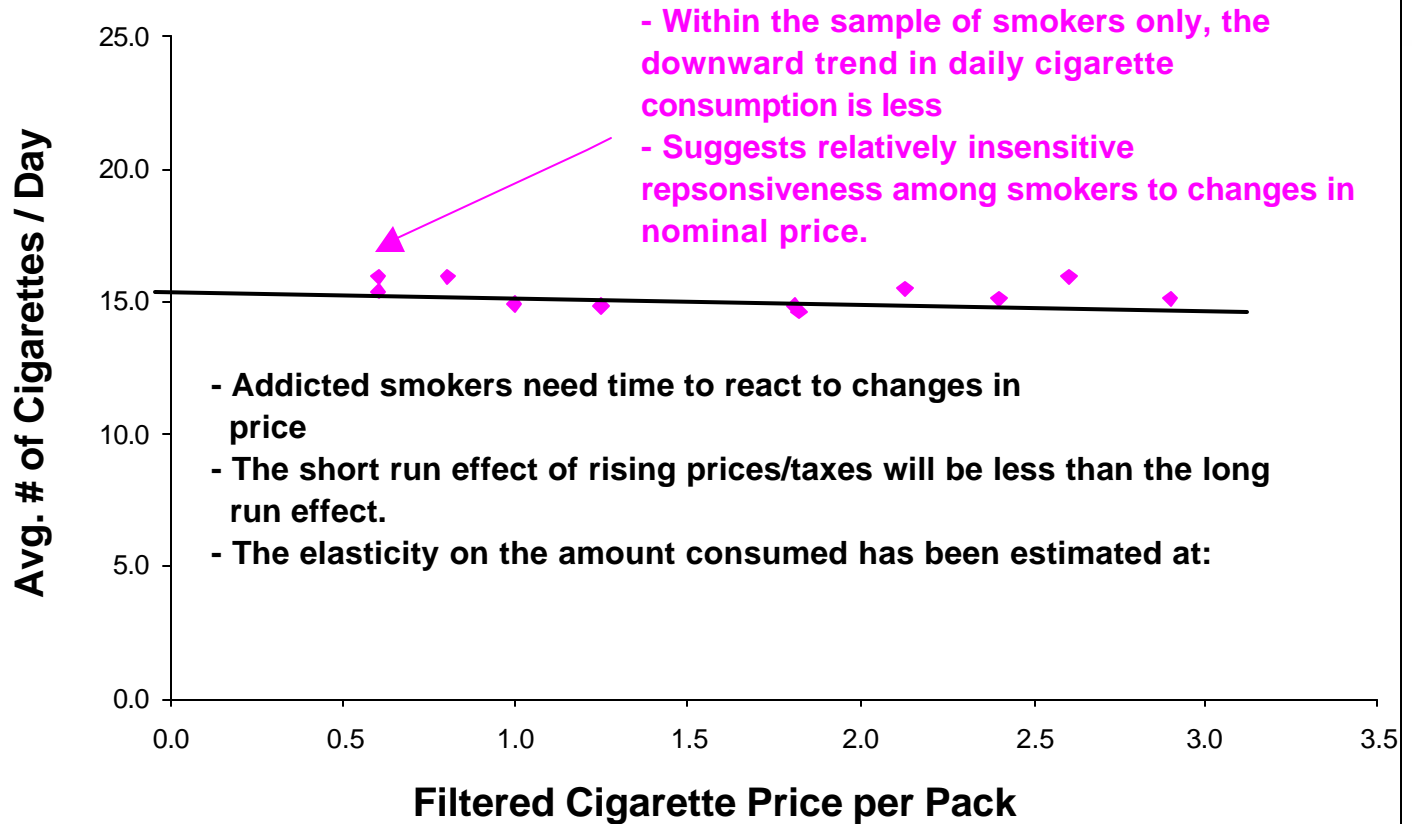
Total Sample, 1993-1999



# Modeling: Part II

## Average Daily Cigarette Consumption as a Function of Cigarette Price

Sample of Smokers Only, 1993-1999



# Results of Basic Model

## Coefficients and T-Stats

Variables	Part I - Probit Model (Prevalence)		Part II - OLS Model (Amount Consumed)	
	Coeff.	T-stat	Coeff.	T-stat
Price of Filtered Cigarettes	-0.5202	2.7784 <sup>a</sup>	-0.1508	-0.9818
Price of Unfiltered Cigarettes	-0.0193	0.0088	0.1606	1.6444 <sup>c</sup>
Price of King Size Cigarettes	-0.1862	0.9185	0.1663	1.6848 <sup>c</sup>
Price of King Size Foreign Cigarettes	-0.0353	0.0521	0.1754	2.3153
Deflated Price of Filtered Cigarettes	-376.2112	3.5105 <sup>a</sup>	-151.0593	-1.5620
Deflated Price of Unfiltered Cigarettes	34.6507	0.0622	118.8182	1.8183 <sup>c</sup>
Deflated Price of King Size Cigarettes	-172.8080	1.3654	63.8135	0.8683
Deflated Price of King Size Foreign Cigarettes	-223.9826	2.2274 <sup>b</sup>	73.5911	0.9870
Excise Tax on Filtered Cigarettes	-0.0105	1.5085	-0.0051	-1.2094
Excise Tax on Unfiltered Cigarettes	-0.0125	1.9712 <sup>b</sup>	-0.0055	-1.2367
Excise Tax on King Size Cigarettes	-0.0136	3.5145 <sup>a</sup>	-0.0017	-0.4759
Excise Tax on King Size Foreign Cigarettes	-0.0177	5.3089 <sup>a</sup>	-0.0041	-1.0684
Deflated Excise Tax on Filtered Cigarettes	-6.8206	2.7980 <sup>a</sup>	-3.4047	-1.7016 <sup>c</sup>
Deflated Excise Tax on Unfiltered Cigarettes	-7.6268	3.1674 <sup>a</sup>	-3.6655	-1.7379 <sup>c</sup>
Deflated Excise Tax on King Size Cigarettes	-16.9932	6.4387 <sup>a</sup>	-4.1677	-1.2621
Deflated Excise Tax on King Size Foreign Cigarettes	-4.2799	1.3775	-1.3978	-0.8134

Notes: Z-values of participation (Probit Model) and t-values for conditional demand (OLS Model) are reported next to the coefficients. Their critical values are 2.58, 1.96 and 1.64 at the one, five and ten percent significance levels, respectively, based on a two-tail test. Significance is indicated as follows (all are two-tailed test): (a) indicates significance at 1% level, (b) indicates significance at 5% level, (c) indicates significance at 10% level, (d) indicates significance at 10% level for a one-tailed test.



# Summary:

## Preliminary Demand Analysis

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### ■ Education:

- A very significant and negative relationship was found between the probability of smoking and educational attainment. In other words, persons with high levels of education are *less likely to smoke*.
- A significant and negative result on the high education variable indicates that *highly educated smokers consume less cigarettes per day* than their less educated counterparts.



# Summary:

## Preliminary Demand Analysis

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### ■ **Socio-Occupational Status:**

- Persons of professional standing (ie. doctors, lawyers, teachers etc.), farmers, students, housewives as well as persons receiving public aid (retirement/disability payments from the State) are significantly *less likely to smoke* than persons in other professions/labor market roles.
- Among smokers, skilled workers as well as the subgroup listed above on average, tend to *consume less cigarettes per day* than smokers in other occupations.