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INTRODUCTION

Historically one of the oldest and most important crops in the United States, tobacco has become embroiled in the second half of the twentieth century in a struggle pitting American economic interests against public health. It is in the tobacco growing and manufacturing states that this conflict between lives and money is particularly prominent. In Kentucky, for example, tobacco accounted for nineteen percent of cash receipts from all agricultural commodities in 2000, yielding over $674 million.[1] Not only is tobacco an important economic product in Kentucky and other tobacco growing states, but it is also a cultural icon affecting many small-scale family farms that represent generations of tobacco-growing traditions.

While the tobacco industry ranks among the most substantial and successful economic enterprises in the United States and in Kentucky, tobacco use remains the single leading cause of preventable illnesses and death in the United States.[2] Cigarette smoking and other tobacco use account for more premature deaths than automobile accidents, firearms, illicit drugs, risky sexual behavior, poor diet and low physical activity, and

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[1] Kentucky Agricultural Statistics Service (2001), *at* www.nass.usda.ogv/ky.

[2] *See* Ctrs. for Disease Control & Prevention, Nat'l Ctr. for Chronic Disease Prevention & Health Promotion, Off. on Smoking & Health, U.S. Dep't of Health & Hum. Servs., *Reducing Tobacco Use: A Report of the Surgeon General* (2000) [hereinafter *Reducing Tobacco Use*].

microbial and toxic agents combined.[3] Not only do states like Kentucky lead the nation in growing and manufacturing tobacco, but they also exceed other states in smoking prevalence. Kentucky leads the United States in adult smoking, with nearly one in three adults reporting current smoking, exceeding the United States adult smoking rate of 22.7%.[4] These statistics profoundly affect the health and welfare of Kentucky: one of every three smokers will die of smoking-related diseases. The result is not only suffering for the smoker and people close to them, but increased health care costs, and lost productivity, both while the smoker is alive and the lost years of productivity due to premature death.[5]

Given the public health toll from tobacco use, state governments have a strong incentive for intervening to reduce tobacco use. On the other hand, given tobacco's role in employment, tax revenues, and, in selected areas, trade balances, governments have a legitimate interest in the "health" of their tobacco industries. Tobacco companies cite the industry's economic contribution in attempts to combat tobacco control policy measures. Thus, many governments have resisted taking strong action because of concerns that effective interventions would have harmful economic consequences. In recent years, independent economists have countered the industry's economic argument by conducting macroeconomic analyses that examine the net contributions of tobacco to economies, rather than the gross contributions featured by the industry. Recent efforts by the World Bank, in partnership with the World Health Organization ("WHO"), also have addressed these concerns.

The purpose of this Article is to describe tobacco control policies that states and other governments have implemented, and to explore the impact of these measures. The Article, therefore, provides a framework for what is both possible and feasible for state governments to undertake in order to reduce and minimize the impact of tobacco use in their state. Specifically, this Article reviews and updates the findings from studies that explore the relationship between tobacco control policies and population smoking

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[3] J. Michael McGinnis & William H. Foege, *Actual Causes of Death in the United States*, 270 JAMA 2207 (1993).

[4] *See* Ctrs. for Disease Control & Prevention, U.S. Dep't of Health & Hum. Servs., *State-Specific Prevalence of Current Cigarette Smoking Among Adults and the Proportion of Adults Who Work in a Smoke-Free Environment—United States, 1999*, 49 MORBIDITY & MORTALITY WKLY. REP. 978 (2000).

[5] *See* Dorothy P. Rice et al., *The Economic Costs of Illness: A Replication and Update*, 7 MILBANK Q. 61 (1985); Dorothy P. Rice et al., *The Economic Costs of the Health Effects of Smoking 1984*, 64 MILBANK Q. 489 (1986).

prevalence, health, and the economy as a whole. Data from Kentucky is highlighted as an example of one state that is disproportionately affected by tobacco use given its economic and cultural dependence on tobacco. The Article begins with an overview of recent trends in tobacco use and its consequences, followed by a review of the evidence for the effectiveness of tobacco control policies. A description of the types and comprehensiveness of policies currently in place and a discussion of some of the factors correlated with the strength and comprehensiveness of these policies follows.

I. TOBACCO USE AND ITS CONSEQUENCES

The health implications of tobacco have been contemplated for at least the past millennium. During the first half of that period, the predominant view was that tobacco afforded users a wide variety of health benefits. The American Indians employed tobacco as an analgesic and as a treatment for such diverse ailments as intestinal problems, asthma, rheumatism, headaches, toothaches, boils, worms, fevers, and the pains of childbirth.[6]

Serious medical and scientific attention to the health consequences of smoking is a phenomenon of the present century, primarily of its second half.[7] This is a reflection of the development of the science of epidemiology during this period and of the relatively modest number of victims claimed by tobacco prior to the twentieth century. Before this century, relatively

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[6] *See* JORDAN GOODMAN, TOBACCO IN HISTORY: THE CULTURES OF DEPENDENCE (1993).

[7] Concern about the health consequences of smoking predates the "modern era" by nearly four centuries. In 1604, for example, King James I of England lambasted smoking as "a custome lothsome to the eye, hatefull to the Nose, harmefull to the braine, dangerous to the Lungs, and in the blacke stinking fume thereof, neerest resembling the horrible Stigian smoke of the pit that is bottomlesse" (quoted in JACOB SULLUM, FOR YOUR OWN GOOD: THE ANTI-SMOKING CRUSADE AND THE TYRANNY OF PUBLIC HEALTH 18 (1998)). King James subsequently raised the tax on tobacco by 1000%, deriving significant revenues for his coffers. This illustrates the profound dilemma that has confronted policy decision makers ever since: whatever its health consequences, tobacco has long been truly a "golden leaf" for farmers and politicians alike. Its role in the very earliest commerce between England and the American colonies is legendary, as is its role in contemporary politics. *See* A.L. FRITSCHLER & J.M. HOEFLER, SMOKING AND POLITICS: POLICY MAKING AND THE FEDERAL BUREAUCRACY (5th ed. 1996); *Reducing Tobacco Use*, *supra* note 2; PETER TAYLOR, THE SMOKE RING: TOBACCO, MONEY, AND MULTINATIONAL POLITICS (1984).

few people reached the ages at which tobacco takes its greatest toll (average life expectancy in the United States was forty-seven in 1900; currently it is seventy-five). More importantly, widespread intensive use of the most dangerous form of tobacco consumption, cigarette smoking, began only in the very late 1800s. Lung cancer, today the source of thirty percent of all cancer deaths in the United States,[8] was a rarity until cigarette smoking spawned the epidemic first widely observed during the 1930s. Although lung cancer incidence and death rates are decreasing nationwide due to reduced smoking prevalence, the 1997-1998 age-adjusted incidence rate for lung cancer in Kentucky was 81.6 per 100,000 population,[9] compared to an average annual rate of 54.4 in the United States.[10] There were 82.8 deaths per 100,000 from respiratory and intrathoracic cancer in 1998,[11] compared to an average annual rate of 49.1 in the United States.[12]

Although a few scientific studies associated smoking with disease prior to mid-century,[13] the first evidence that strongly implicated smoking in disease (specifically, lung cancer) was published in the 1950s.[14] Since then,

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[8] *See* Ctrs. for Disease Control & Prevention, Ctr. for Chronic Disease Prevention & Health Promotion, Off. on Smoking & Health, U.S. Dep't of Health & Hum. Servs., *Reducing the Health Consequences of Smoking: 25 Years of Progress: A Report of the Surgeon General* (1989) [hereinafter *Reducing the Health Consequences of Smoking*].

[9] G.H. Friedell & T.C. Tucker, University of Kentucky, Kentucky Cancer Registry, *1998 Cancer Incidence Report* (1998).

[10] Holly L. Howe et al., *Annual Report to the Nation on the Status of Cancer (1973 through 1998), Featuring Cancers with Recent Increasing Trends*, 93 J. NAT'L CANCER INST. 824, 826 (2001).

[11] Kentucky Cabinet for Health Servs., Dep't for Public Health, Div. of Epidemiology & Health Planning, Health Data Branch, *1998 Vital Statistics Report* (1998).

[12] Howe et al., *supra* note 10, at 828.

[13] *See* A.C. Broders, *Squamous-Cell Epithelioma of the Lip*, 74 JAMA 656 (1920); H.L. Lombard & C.R. Doering, *Classics in Oncology, Cancer Studies in Massachusetts*, 198 NEW ENG. J. MED. 487 (1928); Raymond Pearl, *Tobacco Smoking and Longevity*, 87 SCI. 216 (1938).

[14] *See* Richard Doll & A. Bradford Hill, *A Study of the Aetiology of Carcinoma of the Lung*, 2 BRIT. MED. J. 1271 (1952); Richard Doll & A. Bradford Hill, *Lung Cancer and Other Causes of Death in Relation to Smoking*, 2 BRIT. MED. J. 1071 (1956); Richard Doll & A. Bradford Hill, *Smoking and Carcinoma of the Lung*, 2 BRIT. MED. J. 739 (1950); Richard Doll & A. Bradford Hill, *The Mortality of Doctors in Relation to Their Smoking Habits: A Preliminary Report*, 1 BRIT. MED. J. 1451 (1954); E. Cuyler Hammond & Daniel Horn, *Smoking and Death Rates—Report on Forty-Four Months of Follow-up of 187,783 Men: I. Total Mortality*, 166 JAMA 1159 (1958); E. Cuyler Hammond & Daniel Horn, *Smoking and Death*

nearly 70,000 scientific articles have implicated smoking in a wide variety of ailments, constituting the largest and best documented literature linking any behavior to disease in humans.[15]

Today, cigarette smoking is established as the leading cause of lung cancer (responsible for approximately ninety percent of lung cancer deaths in the United States), the leading cause of chronic bronchitis and emphysema (responsible for over eighty percent of chronic obstructive pulmonary disease deaths), and a major cause of heart disease and stroke.[16] Smoking also causes aneurysms, atherosclerotic peripheral vascular disease, oral cavity and laryngeal cancer, intrauterine growth retardation, and neonatal death, including Sudden Infant Death Syndrome ("SIDS"). It also is associated with additional cancers (bladder, pancreatic, renal, gastric, and cervical),[17] as well as a host of other conditions affecting a wide variety of organ systems and disease processes, including, for example, vision and hearing problems, slowed healing from injuries, and increased susceptibility to certain infections.[18] In addition, smoking among pregnant women has been associated with low birth weight and increased risk of infant mortality.[19] Chronic inhalation of secondhand smoke causes lung cancer in nonsmokers and an assortment of diseases and functional limitations in the children of smokers.[20]

Rates—Report on Forty-Four Months of Follow-up of 187,783 Men: II. Death Rates by Cause, 166 JAMA 1294 (1958); Ernest L. Wynder & Evarts A. Graham, *Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma: A Study of Six Hundred and Eighty-Four Proved Cases*, 143 JAMA 329 (1950).

[15] *See* Ctrs. for Disease Control & Prevention, Nat'l Ctr. for Chronic Disease Prevention & Health Promotion, Off. on Smoking & Health, U.S. Dep't of Health & Hum. Servs., *Preventing Tobacco Use Among Young People: A Report of the Surgeon General* (1994) [hereinafter *Preventing Tobacco Use Among Young People*].

[16] Ctrs. for Disease Control & Prevention, U.S. Dep't of Health & Hum. Servs., *Annual Smoking—Attributable Mortality, Years of Potential Life Lost, and Economic Costs—United States, 1995-1999*, 51 MORBIDITY & MORTALITY WKLY. REP. 300 (2002).

[17] *Reducing the Health Consequences of Smoking*, *supra* note 8.

[18] *See* AM. COUNCIL ON SCI. & HEALTH, CIGARETTES: WHAT THE WARNING LABEL DOESN'T TELL YOU 117-28, 155-62 (2d ed. 1997).

[19] *See* James S. Marks et al., *A Cost-Benefit/Cost-Effectiveness Analysis of Smoking Cessation for Pregnant Women*, 6 AM. J. PREVENTIVE MED. 282 (1990); Xiaobin Wang et al., *Maternal Cigarette Smoking, Metabolic Gene Polymorphism, and Infant Birth Weight*, 287 JAMA 195 (2002).

[20] Envtl. Protection Agency, Indoor Air Div., Off. of Radiation & Indoor Air, *The Costs and Benefits of Smoking Restrictions: An Assessment of the Smoke-free Environment Act of 1993 (H.R. 3434)* (1994).

Secondhand smoke also is associated with tens of thousands of heart disease deaths annually.[21]

All told, smoking is far and away the leading cause of premature death and avoidable morbidity and disability in the United States and in most industrialized nations, and the intensification of smoking in low and middle income countries will soon bring the same distinction to smoking in developing countries. The WHO estimates that 500 million of the five billion people alive at the beginning of this decade will die as a result of consumption of tobacco products.[22]

The mortality toll of tobacco reflects not only the lethal effect of tobacco products, but also the prevalence of their consumption. In the United States, approximately forty-five million adults, almost a quarter of the adult population, smoke cigarettes (down from a high of forty-two percent in 1965).[23] Smoking prevalence and the corresponding health effects of smoking vary substantially across the fifty states. Table 1 summarizes recent data on smoking prevalence across the United States, showing population prevalence rates as low as 12.9% of adults in Utah, and as high as 30.5% in Kentucky.[24]

TABLE 1.
ADULT SMOKING PREVALENCE IN THE U.S., 2000[25]

STATE	PERCENT (95% CONFIDENCE INTERVAL)
Alabama	25.3 (±2.2)
Alaska	25.0 (±2.8)
Arizona	18.6 (±3.1)
Arkansas	25.2(±1.8)

[21] *See* Stanton A. Glantz & William W. Parmley, *Passive Smoking and Heart Disease: Mechanisms and Risk*, 273 JAMA 1047 (1995).

[22] *See* Richard Peto et al., *Mortality From Smoking Worldwide*, 52 BRIT. MED. BULL. 12, 20 (1996).

[23] *Reducing the Health Consequences of Smoking*, *supra* note 8.

[24] Ctrs. for Disease Control & Prevention, U.S. Dep't of Health & Hum. Servs., *State-Specific Prevalence of Current Cigarette Smoking Among Adults, and Policies and Attitudes About Second Hand Smoke—United States, 2000*, 50 MORBIDITY & MORTALITY WKLY. REP. 1101 (2001).

[25] *Id.* Persons aged eighteen years or older who reported having smoked cigarettes in their lifetime and who reported smoking every day or some days on the 2000 Behavioral Risk Factor Surveillance Systems surveys ("BRFSS") conducted by the Center for Disease Control.

California	17.2 (±1.5)
Colorado	20.1 (±2.0)
Connecticut	20.0 (±1.5)
Delaware	23.0 (±2.1
District of Columbia	20.9 (±2.2)
Florida	23.2 (±1.4)
Georgia	23.6 (±1.7)
Hawaii	19.7 (±1.4)
Idaho	22.4 (±1.4)
Illinois	22.3 (±1.6)
Indiana	27.0 (±1.8)
Iowa	23.3 (±1.7)
Kansas	21.1 (±1.4)
Kentucky	30.5 (±1.6)
Louisiana	24.1 (±1.4)
Maine	23.8 (±2.2)
Maryland	20.6 (±1.5)
Massachusetts	20.0 (±1.1)
Michigan	24.2 (±1.9)
Minnesota	19.8 (±1.7)
Mississippi	23.5 (±2.2)
Missouri	27.2 (±1.9)
Montana	18.9 (±1.8)
Nebraska	21.4 (±1.7)
Nevada	29.1 (±2.8)
New Hampshire	25.4 (±2.3)
New Jersey	21.0 (±1.5)
New Mexico	23.6 (±1.7)
New York	21.6 (±1.6)
North Carolina	26.1 (±1.9)
North Dakota	23.3 (±2.1)
Ohio	26.3 (±2.2)
Oklahoma	23.3 (±1.6)
Oregon	20.8 (±1.5)
Pennsylvania	24.3 (±1.6)
Rhode Island	23.5 (±1.7)
South Carolina	24.7 (±1.9)
South Dakota	22.0 (±1.3)

Tennessee	25.7 (±1.8)
Texas	22.0 (±1.3)
Utah	12.9 (±1.6)
Vermont	21.5 (±1.6)
Virginia	21.5 (±2.1)
Washington	20.7 (±1.5)
West Virginia	26.1 (±1.9)
Wisconsin	24.1 (±1.8)
Wyoming	23.8 (±1.9)

II. INTERVENTIONS TO REDUCE SMOKING

Variations in smoking prevalence across states reflect several factors, including cultural and economic history, as well as investments in public health strategies to reduce smoking. States generally draw upon three state-based sources to fund tobacco control: monies from the Master Settlement Agreement ("MSA"), excise tax revenues, and general appropriations funds. In addition, states receive funding from federal sources including the Centers for Disease Control and Prevention Office on Smoking and Health, as well as private foundations committed to tobacco control. Table 2 shows that total resources devoted to tobacco control activities vary substantially across states, ranging from $.10 cents per capita in Pennsylvania to $20.82 in Ohio. In Kentucky, total resources devoted to tobacco control activities are less than $1 per capita.

TABLE 2.
PER CAPITA FUNDING OF TOBACCO
CONTROL ACTIVITIES BY STATE, 2001[26]

STATE	AVERAGE TOTAL $/PERSON
Alabama	$ 0.53
Alaska	$ 4.31
Arizona	$ 7.32
Arkansas	$ 0.58
California	$ 3.44
Colorado	$ 3.10

[26] Ctrs. for Disease Control & Prevention, *STATE System*, *at* http://www2.cdc.gov/nccdphp/osh/state/epi_2001/funding_actual.asp.

Connecticut	$ 0.30
Delaware	$ 4.61
District of Columbia	$ 1.67
Florida	$ 2.81
Georgia	$ 2.19
Hawaii	$ 8.75
Idaho	$ 1.60
Illinois	$ 2.35
Indiana	$ 5.99
Iowa	$ 3.52
Kansas	$ 0.83
Kentucky	$ 0.90
Louisiana	$ 0.36
Maine	$ 15.08
Maryland	$ 4.05
Massachusetts	$ 10.22
Michigan	$ 0.66
Minnesota	$ 4.71
Mississippi	$ 7.90
Missouri	$ 0.43
Montana	$ 4.85
Nebraska	$ 4.83
Nevada	$ 1.93
New Hampshire	$ 3.29
New Jersey	$ 3.80
New Mexico	$ 1.89
New York	$ 2.27
North Carolina	$ 0.32
North Dakota	$ 1.71
Ohio	$ 20.82
Oklahoma	$ 1.13
Oregon	$ 2.71
Pennsylvania	$ 0.10
Rhode Island	$ 3.03
South Carolina	$ 0.78
South Dakota	$ 4.09
Tennessee	$ 0.24
Texas	$ 0.59

Utah	$ 0.67
Vermont	$ 13.63
Virginia	$ 1.98
Washington	$ 3.08
West Virginia	$ 4.28
Wisconsin	$ 4.37
Wyoming	$ 3.79

The primary goal of most tobacco control programs is to reduce overall smoking prevalence. Reductions in population smoking prevalence can come from two sources: the prevention of smoking initiation and increased smoking cessation. Since ninety percent of smokers begin smoking as adolescents,[27] prevention programs typically target children and adolescents. Cessation efforts, on the other hand, are mostly designed for adult smokers, who have established smoking patterns. The vast majority of tobacco-attributed deaths over the next fifty years will occur among current adult smokers.[28] Therefore, while prevention efforts are essential to reducing smoking prevalence in the long term, comprehensive approaches to promote smoking cessation are critical to near-term improvements in public health. A mix of tobacco control policies that are effective *only* in reducing smoking initiation would have little impact on smoking-attributable deaths during the first half of the twenty-first century. In contrast, a set of policies that was effective in significantly reducing tobacco use in all segments of the population (current and never-smokers) would generate substantial reductions in the public health toll caused by tobacco.

Beyond the public health burden caused by tobacco use, governments at the local, state, and federal levels have important economic reasons for implementing tobacco control policies that aim to prevent smoking initiation and/or stimulate smoking cessation. For example, economic justification for government intervention occurs when consumers possess inadequate information to make efficient choices.[29] Even after several decades of public health warnings, many consumers have inadequate information about the health consequences of tobacco use and a poor

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[27] *Preventing Tobacco Use Among Young People*, *supra* note 15.

[28] *See* R. Peto & A.D. Lopez, *The Future Worldwide Health Effects of Current Smoking Patterns*, *in* CRITICAL ISSUES IN GLOBAL HEALTH 154 (C.E. Koop et al. eds., 2001).

[29] *See* H. VARIAN, MICROECONOMIC ANALYSIS (2d ed. 1984); K.E. Warner et al., *Criteria for Determining an Optimal Cigarette Tax: The Economist's Perspective*, 4 TOBACCO CONTROL 380 (1995).

understanding of the addictive nature of tobacco products. While general awareness of many of the health risks attributable to smoking is relatively high in the United States,[30] many smokers still underestimate tobacco's danger relative to other health risks, and many smokers fail to fully internalize these risks.[31] Most importantly, the addictive nature of tobacco is under-appreciated, particularly among adolescents. For example, in a study of adolescent smokers in the U.S., only five percent believed that they would still be smoking five years later, but over seventy-five percent were still smoking eight years later.[32]

The remaining sections of this Article summarize key areas of tobacco control policy and the evidence of how these strategies affect smoking behavior across the population and among individual demographic groups.

III. TAXATION AS A POLICY LEVER TO REDUCE TOBACCO CONSUMPTION

Nearly all governments tax tobacco products. Some of these taxes are specific excise, or per unit, taxes; others are expressed as a percentage of wholesale or retail prices (ad valorem excise taxes). Historically, these taxes have primarily been used to generate revenues. In recent years, however, a growing number of governments have increased tobacco taxes to promote public health, earmarking some of the new revenues generated from the higher taxes for comprehensive programs to reduce tobacco use and/or implement other health-related programs.

A. Description of the Different Tax Approaches By States

There are significant differences across states in the level of tobacco taxes. The average state excise tax on cigarettes in the United States in 2001 was $0.42/pack. However, as illustrated by Table 3, there is a substantial range among the states. The tobacco-growing states tend to have the lowest excise taxes: North Carolina, at $0.05/pack; Kentucky at $0.03/pack; and Virginia at $0.025/pack of cigarettes. In contrast, state

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[30] *See* W. Kip Viscusi, *Do Smokers Underestimate Risks?*, 98 J. POL. ECON. 1253 (1990).

[31] *See* John Z. Ayanian & Paul D. Cleary, *Perceived Risks of Heart Disease and Cancer Among Cigarette Smokers*, 281 JAMA 1019 (1999); Neil D. Weinstein, *Accuracy of Smokers' Risk Perceptions*, 20 ANNALS BEHAV. MED. 135 (1998).

[32] Steve Sussman et al., *Self-initiated Quitting Among Adolescent Smokers*, 27 PREVENTIVE MED. A19 (1998).

excise taxes in New York are $1.11/pack, those in Alaska and Hawaii are as high as $1.00/pack, followed by California at $0.87/pack.[33] Increases in late 2001 and early 2002 have taken taxes even higher in some states, with New York's tax scheduled to rise to $1.50/pack in April 2002, while voters in Washington state recently overwhelmingly approved an increase to $1.425/pack.

Typically, states apply an ad valorem tax to sales of smokeless tobacco. However, there is substantial variation in both the level of the tax and the type of sale against which the ad valorem tax is applied. Because of the differences in how the tax is charged across states, it is more difficult to directly compare states' taxation of smokeless tobacco. Nonetheless, Table 3 shows that the pattern of taxation of smokeless tobacco is similar to that of cigarettes, with tobacco producing states implementing the lowest taxes on smokeless tobacco. Kentucky does not tax smokeless tobacco, cigars, or loose leaf tobacco at all.

TABLE 3.
EXCISE TAXES FOR CIGARETTES
AND SMOKELESS TOBACCO BY STATE, 2001[34]

STATE	CENTS PER PACK OF CIGARETTES	SMOKELESS TOBACCO (PERCENTAGE OF)
Alabama	16.5	NA
Alaska	100.0	75.0 (Wholesale price)
Arizona	58.0	NA
Arkansas	31.5	23.0 (Manufacturer's sales price)
California	87.0	61.5 (Wholesale sales price)
Colorado	20.0	20.0 (Manufacturer's list price)
Connecticut	50.0	20.0 (Wholesale sales price)
Delaware	24.0	15.0 (Wholesale sales price)
District of Columbia	65.0	NA

[33] Ctrs. for Disease Control & Prevention, *STATE System*, *at* http://www2.cdc.gov/nccdphp/osh/state/epi_2001.

[34] *Id.*

Florida	33.9	25.0 (Wholesale sales price)
Georgia	12.0	NA
Hawaii	100.0	40.0 (Wholesale sales price)
Idaho	28.0	40.0 (Wholesale sales price)
Illinois	58.0	20.0 (Wholesale sales price)
Indiana	15.5	15.0 (Wholesale sales price)
Iowa	36.0	22.0 (Wholesale sales price)
Kansas	24.0	10.0 (Wholesale sales price)
Kentucky	3.0	NA
Louisiana	24.0	20.0 (Manufacturer's invoice price)
Maine	74.0	62.0 (Wholesale sales price)
Maryland	66.0	15.0 (Wholesale sales price)
Massachusetts	76.0	50.0 (Wholesale sales price)
Michigan	75.0	16.0 (Wholesale sales price)
Minnesota	48.0	35.0 (Wholesale sales price)
Mississippi	18.0	15.0 (Manufacturer's list price)
Missouri	17.0	10.0 (Manufacturer's invoice price)
Montana	18.0	12.5 (Wholesale sales price)
Nebraska	34.0	15.0 (Purchase price)
Nevada	35.0	30.0 (Wholesale price)
New Hampshire	52.0	21.6 (Wholesale sales price)
New Jersey	80.0	48.0 (Wholesale price)

New Mexico	21.0	25.0 (Product value)
New York	111.0	20.0 (Wholesale sales price)
North Carolina	5.0	2.0 (Cost)
North Dakota	44.0	28.0 (Wholesale purchase price)
Ohio	24.0	NA
Oklahoma	23.0	30.0 (Factory list price)
Oregon	68.0	35.0 (Wholesale sales price)
Pennsylvania	31.0	NA
Rhode Island	71.0	20.0 (Wholesale sales price)
South Carolina	7.0	5.0 (Manufacturer's list price)
South Dakota	33.0	10.0 (Wholesale purchase price)
Tennessee	13.0	6.0 (Wholesale sales price)
Texas	41.0	35.0 (Manufacturer's list price)
Utah	51.5	35.0 (Manufacturer's sales price)
Vermont	44.0	41.0 (Wholesale price)
Virginia	2.5	NA
Washington	82.5	75.0 (Wholesale sales price)
West Virginia	17.0	NA
Wisconsin	59.0	20.0 (Manufacturer's list price)
Wyoming	12.0	20.0 (Wholesale purchase price)

B. Relationship Between Smoking and Cigarette Taxes

The variations in cigarette excise taxes have important public health implications. Well over one hundred studies from high-income countries

clearly demonstrate that increases in cigarette and other tobacco product taxes lead to significant reductions in cigarette smoking and other tobacco use. These studies confirm the most fundamental law of economics: as the price of a product increases, the demand for that product falls. The reductions in tobacco use that result from higher taxes and prices reflect the combination of increased smoking cessation, reduced relapse, lower smoking initiation, and decreased consumption among continuing tobacco users.

Economists use the term "price elasticity" of demand to reflect the impact of price changes on consumption, where the elasticity is defined as the percentage change in the quantity consumed resulting from a one percent increase in price. Studies from the United States, United Kingdom (UK), Canada, and many other high-income countries generally estimate that the overall price elasticity of cigarette demand ranges from -0.25 to -.50;[35] an expert panel convened by the National Cancer Institute arrived at a consensus estimate of the adult overall price elasticity of demand for cigarettes of -0.40,[36] meaning that for every ten percent increase in the real price of cigarettes, demand is expected to drop by four percent.

Overall price elasticity of demand for cigarettes consists of two components: participation elasticity—the extent to which price influences whether or not people smoke; and conditional demand elasticity—the amount of cigarettes consumed by those who smoke. Most studies attribute approximately half of the change in overall demand to changes in smoking participation (increased quitting and reduced initiation) and half to reduced consumption among the remaining smokers.[37]

C. *Variations in the Effect of Tobacco Excise Taxes Across Age Groups*

Many studies have used individual-level data to explore differences in the price elasticity of cigarette demand by age, with a particular emphasis on youth and young adults. Using data from the Health Examination Survey

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[35] Frank J. Chaloupka et al., *The Taxation of Tobacco Products*, *in* TOBACCO CONTROL IN DEVELOPING COUNTRIES 237-72 (Prabhot Jha & Frank Chaloupka eds., 2000) [hereinafter Chaloupka et al., *The Taxation of Tobacco Products*].

[36] Nat'l Cancer Inst., Div. of Cancer Prevention & Control, Cancer Control Sci. Program, *The Impact of Cigarette Excise Taxes on Smoking Among Children and Adults: Summary Report of a National Cancer Institute Expert Panel* (1993).

[37] G.S. BECKER ET AL., AN EMPIRICAL ANALYSIS OF CIGARETTE ADDICTION (Nat'l Bureau of Econ. Research, 1990); Eugene M. Lewit et al., *Price, Public Policy, and Smoking in Young People*, 6 TOBACCO CONTROL S17 (Supp. 2 1997).

III ("HES III") conducted between 1966 and 1970, Lewit, Coate, and Grossman estimated that the price elasticity of adolescent demand for cigarettes was -1.44, more than three times as high as the adult elasticity estimates.[38] Importantly, Lewit et al., also found that the strongest impact of price is on adolescent smoking participation, which represents one of two components of the overall elasticity estimate; their estimate of the elasticity of participation accounted for over eighty percent of their overall adolescent price elasticity estimate.

Chaloupka and Grossman used data on teen smoking gathered in 1992, 1993, and 1994 as part of the *Monitoring the Future* project.[39] Their study confirmed the results of Lewit et al., estimating the average overall adolescent price elasticity of demand for cigarettes at -1.313, and the elasticity of smoking participation as -0.68.[40] Thus, overall adolescent elasticity is two to three times higher than adult elasticity, and the elasticity of smoking participation accounts for over half of the overall estimate by their calculations. Based on these and several additional studies, it is generally well-accepted that there is an inverse relationship between price elasticity and age.[41]

More recently, researchers have begun to explore the differential impact of cigarette prices on the process of youth smoking uptake. Gruber and Zinman found that while younger adolescents (who typically are more likely to be experimenters than established smokers) were not significantly influenced by cigarette prices, older youth (twelfth graders) were highly sensitive to cigarette prices, smoking less where excise taxes are higher.[42] Similarly, Emery and her colleagues showed that while higher cigarette prices did not influence whether or not a youth experiments with smoking, prices were significantly related to reduced consumption among regular

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[38] Eugene M. Lewit et al., *The Effects of Government Regulations on Teenage Smoking*, 24 J.L. & ECON. 545, 549-50, 560 (1981).

[39] FRANK J. CHALOUPKA ET AL., TOBACCO CONTROL POLICIES AND YOUTH SMOKING (Nat'l Bureau of Econ. Research, 1996) [hereinafter CHALOUPKA ET AL., TOBACCO CONTROL POLICIES].

[40] *Id.*

[41] *See, e.g.*, J. GRUBER, YOUTH SMOKING IN THE U.S.: PRICES AND POLICIES (Nat'l Bureau of Econ. Research, Working Paper, 2000); *Preventing Tobacco Use Among Young People*, *supra* note 15; *Reducing the Health Consequences of Smoking*, *supra* note 8; Jeffrey E. Harris & Sandra W. Chan, *The Continuum-of-Addiction: Cigarette Smoking in Relation to Price Among Americans Aged 15-29*, 8 HEALTH ECON. 81, 82 (1998).

[42] J. GRUBER & J. ZINMAN, YOUTH SMOKING IN THE U.S.: EVIDENCE AND IMPLICATIONS (Nat'l Bureau of Econ. Research, Working Paper, 2000).

smokers and a reduced likelihood of being an established smoker in adolescence.[43]

These results suggest that higher cigarette prices are particularly effective in preventing young smokers from moving beyond experimentation into regular, addicted smoking. In addition, these results make sense in the context of the natural history of smoking. In the very early stages of smoking uptake, adolescents typically obtain their cigarettes from friends, rather than paying for them; as they transition to more regular smoking, they begin buying the cigarettes that they consume.[44]

D. Variations in Elasticity Across Income and Race/Ethnicity

Similarly, several studies have explored differences in the price sensitivity of cigarette demand by income, education, and/or socioeconomic status.[45] Economic theory predicts that individuals with lower incomes and/or less education will be more responsive to price. The studies demonstrate how less educated persons,[46] lower income individuals,[47] and people in lower socioeconomic classes[48] show greater reductions in smoking in response to price increases compared to the general population of smokers.

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[43] Sherry Emery et al., *Does Cigarette Price Influence Adolescent Experimentation?*, 20 J. HEALTH ECON. 261, 268 (2001).

[44] *See* Sherry Emery et al., *How Adolescents Get Their Cigarettes: Implications for Policies on Access and Price*, 91 J. NAT'L CANCER INST. 184 (1999).

[45] *See Reducing Tobacco Use*, *supra* note 2; Ctrs. for Disease Control & Prevention, U.S. Dep't of Health & Hum. Servs., *Responses to Increases in Cigarette Prices By Race/Ethnicity, Income, and Age Groups—United States, 1976-1993*, 47 MORBIDITY & MORTALITY WKLY. REP. 605 (1998) [hereinafter *Responses to Increases*]; Frank J. Chaloupka & K.E. Warner, *The Economics of Smoking*, *in* HANDBOOK OF HEALTH ECONOMICS 1539-627 (A.J. Culyer & J.P. Newhouse eds., 2000); Chaloupka et al., *The Taxation of Tobacco Products*, *supra* note 35, at 237; Joy Townsend et al., *Cigarette Smoking By Socioeconomic Group, Sex, and Age: Effects of Price, Income, and Health Publicity*, 309 BRIT. MED. J. 923 (1994) [hereinafter Townsend et al., *Cigarette Smoking By Socioeconomic Group*].

[46] *See* Frank J. Chaloupka, *Rational Addictive Behavior and Cigarette Smoking*, 99 J. POL. ECON. 722 (1991) [hereinafter Chaloupka, *Rational Addictive Behavior*].

[47] *See Responses to Increases*, *supra* note 45, at 606.

[48] *See* Townsend et al., *Cigarette Smoking By Socioeconomic Group*, *supra* note 45; Joy Townsend, *Cigarette Tax, Economic Welfare and Social Class Patterns of Smoking*, 19 APPLIED ECON. 355 (1987).

E. Effect of Addiction on Economic Analyses

Many researchers once viewed cigarette smoking and other addictive behaviors as irrational and, therefore, not suitable for conventional economic analysis.[49] They believed that the demand for cigarettes (and other addictive substances) did not follow the basic laws of economics, including perhaps the most fundamental law, embodied in the downward-sloping demand curve. As the now-substantial body of economic research demonstrates, however, the demand for cigarettes clearly responds to changes in prices and other factors, as found in applications of both traditional models of demand and more recent studies that explicitly account for the addictive nature of smoking.[50]

Several researchers have modeled addiction as a rational behavior. In this context, rationality simply implies that individuals incorporate the interdependence between past, current, and future consumption into their utility maximization process. Becker and Murphy et al., developed several hypotheses from this basic mode.[51] First, current consumption of an addictive good is inversely related to not only the current price of the good, but also to all past and future prices. In other words, these theories suggest that the more a smoker consumed in past periods, the more they will consume in the present; additionally, if a smoker anticipates reduced consumption in the future (perhaps due to expected cigarette price increases), their consumption in the present will be reduced. Consequently, the long-run effect of a permanent change in price will exceed the short-run effect. Moreover, in the Becker and Murphy model, the ratio of the long-run to short-run price effect rises as the degree of addiction rises. In addition, they predict that the effect of an anticipated price change will be greater than the impact of a comparable unanticipated price change, while a permanent price change will have a larger impact on demand than a temporary price change. Finally, the theory of rational addiction suggests that price responsiveness varies with time preference: addicts with higher discount rates (less orientation to the future) will be relatively more responsive to changes in price than those with lower discount rates. The

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[49] *See* JON ELSTER, ULYSSES AND THE SIRENS: STUDIES IN RATIONALITY AND IRRATIONALITY 157-61 (1979); Thomas C. Schelling, *Self-Command in Practice, in Policy, and in a Theory of Rational Choice*, 74 AM. ECON. REV. 1 (1984); G.C. Winston, *Addiction and Backsliding: A Theory of Compulsive Consumption*, 1 J. ECON. BEHAV. & ORGAN. 295 (1980).

[50] *See* BECKER ET AL., *supra* note 37; Chaloupka, *Rational Addictive Behavior*, *supra* note 46.

[51] *See* BECKER ET AL., *supra* note 37; Gary S. Becker & Kevin M. Murphy, *A Theory of Rational Addiction*, 96 J. POL. ECON. 675 (1988).

opposite will be true with respect to the effects of information concerning the future consequences of addictive consumption. Thus, the model suggests that younger, less educated, and lower income persons will be relatively more responsive to changes in the price of cigarettes, while older, more educated, and higher income persons will be relatively more responsive to new information on the health consequences of cigarette smoking. The empirical applications of these theories generally estimate

enacted legislation restricting smoking in a variety of public places and private worksites. Arizona led the way among states, enacting the first "clean indoor air" laws in 1973, with the explicit objective of limiting nonsmokers' exposure to secondhand smoke.[54] In 1998, California enacted the most comprehensive smoking restrictions in the country, completely banning smoking in all places of employment, including bars and restaurants. Although many states and local communities have adopted strict workplace smoking restrictions, the tobacco-growing states lag behind in protecting workers from the dangers of secondhand smoke.[55] Kentucky has no state-mandated smoking restrictions in public places, workplaces, restaurants, child care centers, or health facilities.[56] State law favors allowing smoking in government buildings where ventilation and air exchange are adequate. Although Kentucky does not preempt local governments from adopting clean indoor air laws, there are no existing smoke-free local ordinances or regulations.

In general, state and local laws can prohibit smoking in elevators, health care facilities, public transportation, indoor cultural and recreational facilities, government buildings, public meeting rooms, schools, shopping malls, and retail stores. As in California, the most extensive laws also include restaurants and private workplaces. In addition to formal policies restricting smoking, increased awareness among the general population of the consequences of secondhand smoke exposure, particularly among children, has led many workplaces and households to adopt voluntary restrictions on smoking.

In a state with very weak or nonexistent state laws restricting smoking, it is surprising that over half (fifty-six percent) of indoor workers in Kentucky reported that their worksites were smoke-free,[57] reflecting voluntary policy change. While nearly seven of ten manufacturing facilities in Kentucky reported having smoking policies, only forty-three percent

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[hereinafter *The Health Consequences of Involuntary Smoking*]; Envtl. Protection Agency, Off. of Research & Dev., Off. of Air & Radiation, *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders* (1992); Kyle Steenland, *Passive Smoking and the Risk of Heart Disease*, 267 JAMA 94 (1992); Kyle Steenland et al., *Environmental Tobacco Smoke and Coronary Heart Disease in the American Cancer Society CPS-II Cohort*, 94 CIRCULATION 622 (1996).

[54] *The Health Consequences of Involuntary Smoking*, *supra* note 53.

[55] E.M. SCHILLINGS & C.E. WELCH, STATE LEGISLATED ACTIONS ON TOBACCO ISSUES (Am. Lung Ass'n 2001).

[56] *Id.*

[57] Donald R. Shopland et al., *State-Specific Trends in Smoke-Free Workplace Policy Coverage: The Current Population Survey Tobacco Use Supplement, 1993 to 1999*, 42 J. OCCUPATIONAL & ENVTL. MED. 680, 682 (2001).

banned indoor smoking.[58] A similar percentage of food service establishments (thirty-nine percent) were smoke-free in 2001, reflecting a twenty percent increase since 1999.[59] Although nearly all Kentucky public and private middle and high schools reported banning indoor smoking in 2001, only forty-five percent completely banned smoking on school grounds.[60] Given the paucity of laws or regulations on smoking in Kentucky, it is not surprising that almost two-thirds of middle school nonsmokers and nearly three-fourths of high school nonsmokers report exposure to secondhand smoke within the past seven days.[61]

A number of recent econometric and other studies have examined the impact of smoking restrictions on cigarette demand in the United States and elsewhere.[62] In general, restrictions on smoking in public places and private

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[58] Ellen J. Hahn & M.K. Rayens, University of Kentucky, Dep't for Public Health, *Tobacco Prevention and Cessation: A Kentucky Report Card, 1997-2001* (2002).

[59] *Id.*

[60] *Id.*

[61] Ellen J. Hahn et al., Kentucky Dep't for Public Health, *Kentucky Youth Tobacco Survey 2000* (2001).

[62] *See* FRANK J. CHALOUPKA & ROSALIE L. PACULA, AN EXAMINATION OF GENDER AND RACE DIFFERENCES IN SMOKING: RESPONSIVENESS TO PRICE AND TOBACCO CONTROL POLICIES (Nat'l Bureau of Econ. Research, Working Paper, 1998); FRANK J. CHALOUPKA & ROSALIE L. PACULA, LIMITING YOUTH ACCESS TO TOBACCO: THE EARLY IMPACT OF THE SYNAR AMENDMENT ON YOUTH SMOKING (Univ. of Ill. Working Paper, 1998) [hereinafter CHALOUPKA & PACULA, LIMITING YOUTH ACCESS TO TOBACCO]; W.N. EVANS ET AL., DO WORKPLACE SMOKING BANS REDUCE SMOKING? (Nat'l Bureau of Econ. Research, Working Paper, 1995); R.L. OHSFELDT ET AL., TOBACCO TAXES, SMOKING RESTRICTIONS, AND TOBACCO USE (Nat'l Bureau of Econ. Research, Working Paper, 1998); Frank J. Chaloupka, *Clean Indoor Air Laws, Addiction and Cigarette Smoking*, 24 APPLIED ECON. 193 (1992); CHALOUPKA ET AL., TOBACCO CONTROL POLICIES, *supra* note 39; Frank J. Chaloupka & Henry Saffer, *Clean Indoor Air Laws and the Demand for Cigarettes*, 64 CONTEMP. POL'Y ISSUES 72 (1992); Frank J. Chaloupka & Henry Wechsler, *Price, Tobacco Control Policies and Smoking Among Young Adults*, 16 J. HEALTH ECON. 359 (1997); Theodore E. Keeler et al., *Taxation, Regulation and Addiction: A Demand Function for Cigarettes Based on Time-Series Evidence*, 12 J. HEALTH ECON. 1 (1993); J.L. Townsend, *UK Smoking Targets: Policies to Attain Them and Effects on Premature Mortality* [hereinafter Townsend, *UK Smoking Targets*], *in* I. ABEDIAN ET AL., THE ECONOMICS OF TOBACCO CONTROL: TOWARD AN OPTIMAL POLICY MIX (1998); J. Wasserman et al., *The Effects of Excise Taxes and Regulations on Cigarette Smoking*, 10 J. HEALTH ECON. 43 (1991).

workplaces have been found to reduce both smoking prevalence and average daily cigarette consumption among smokers.

Among studies by non-economists, Farkas and his colleagues found that both workplace and household smoking restrictions were associated with higher rates of cessation attempts among adult smokers, lower rates of relapse in adult smokers who attempted to quit, and higher rates of light smoking (less than fifteen cigarettes per day) among current daily smokers.[63] Farkas and his colleagues also found that youth who worked in smokefree establishments were significantly less likely to smoke than adolescents who worked in places without a smoking ban.[64] They also found that adolescents who lived in a home that completely banned smoking were significantly less likely to be smokers, and were significantly more likely to have successfully quit if they had ever begun smoking.

Research by economists and non-economists alike point to a powerful role for strong smoking restrictions in both reducing the amount that current smokers smoke, as well as in potentially improving cessation rates, and reducing smoking prevalence among both youth and adults. Although smoking restrictions are primarily intended to reduce nonsmokers' exposure to secondhand smoke, research suggests that they also can lead to significant reductions in cigarette smoking since they reduce the smoker's opportunities to smoke or otherwise raise the "cost" of smoking. In addition, restrictions on smoking may alter the perceived norms related to smoking by changing attitudes concerning the social acceptability of smoking.[65] It is estimated that 178,000 smokers would stop smoking and those who continued to smoke would consume ten billion fewer cigarettes per year if all workplaces in the United States implemented smoke-free policies.[66]

B. Effect of Restrictions on Smoking to Youth Access

In the United States, laws banning the sale of cigarettes to minors have been in place in forty-six states and the District of Columbia for over a

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[63] *See* Arthur J. Farkas et al., *The Effects of Household and Workplace Smoking Restrictions on Quitting Behaviors*, 8 TOBACCO CONTROL 261 (Autumn 1999).

[64] *See* Arthur J. Farkas et al., *Association Between Household and Workplace Smoking Restrictions and Adolescent Smoking*, 284 JAMA 717 (2000).

[65] *See generally Preventing Tobacco Use Among Young People*, *supra* note 15.

[66] R.E. Glasgow et al., *Relationship of Worksite Smoking Policy to Changes in Employee Tobacco Use: Findings from COMMIT*, 6 TOBACCO CONTROL S44 (Supp. 2 1997).

decade. Additionally, many municipalities require a license to sell tobacco products; the threat of license revocation is a potentially effective enforcement mechanism. Nationally, the United States Congress passed legislation in 1992, commonly referred to as the Synar Amendment,[67] which ties Federal block grant monies to states' active and effective enforcement of a law prohibiting the sale of tobacco to anyone under the age of eighteen. The strongest federal action came in 1996, when the Food and Drug Administration ("FDA") established eighteen as the national minimum age at which tobacco products could be sold, preempting state and local laws. In Kentucky, tobacco retailers are not licensed to sell tobacco products, making enforcement of state youth access laws difficult. Although it is illegal both to sell tobacco products to anyone under eighteen years of age and for teenagers to possess or use tobacco in Kentucky, only about one-third of smokers in grades six through twelve reported they were refused purchase of cigarettes due to their age in the past thirty days.[68]

The literature provides mixed evidence on the effectiveness of these youth access limits. A few studies have found that raising retailer compliance with the minimum age laws reduces the prevalence of youth smoking.[69] Others, however, have found little impact on youth smoking, even with high compliance by retailers.[70] Moreover, research suggests that there would be no noticeable effect on adolescent cigarette purchases until store compliance was high enough that illegal sales of cigarettes to minors occurred in only about ten percent of random checks.[71] Even if very high rates of merchant compliance were achieved, adolescent smokers might rely to a greater extent on older friends to buy or give them cigarettes. In Kentucky, about half of middle and high school smokers obtain cigarettes from social sources by either borrowing cigarettes or giving someone else money to get cigarettes.[72] Moreover, middle school smokers are less likely than high school smokers to buy cigarettes in a store.[73]

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[67] Alcohol, Drug Abuse, & Mental Health Administration Reorganization Act, Pub. L. No. 102-321, § 1926 (1992).

[68] Hahn et al., *supra* note 61.

[69] *See* Jean L. Forster et al., *The Effects of Community Policies to Reduce Youth Access to Tobacco*, 88 AM. J. PUB. HEALTH 1193, 1197 (1998).

[70] Nancy A. Rigotti et al., *The Effect of Enforcing Tobacco Sales Laws on Adolescents' Access to Tobacco and Smoking Behavior*, 337 NEW ENG. J. MED. 1044 (1997).

[71] J.R. DiFranza et al., *Reducing Youth Access to Tobacco*, 1 TOBACCO CONTROL 58 (1992).

[72] Hahn et al., *supra* note 61.

[73] *Id.*

Glantz has argued that tobacco control emphasis on access laws may actually contribute to adolescent smoking by shifting attention away from the tobacco industry and toward the supply chain, namely the tens of thousands of small stores from which many adolescents buy their cigarettes. Glantz has also suggested that these laws convey the message that smoking is an adult habit or custom and, thereby, make smoking appear attractive to adolescents who strive to look and act like adults.[74]

A few recent econometric analyses have examined the impact of these limits on youth tobacco use in the United States, generally finding little or no impact on youth cigarette smoking and other tobacco use.[75] Chaloupka and Grossman attributed this to the relatively weak enforcement of these laws.[76] Chaloupka and Pacula[77] examined the impact of enforcement and compliance with the limits on youth access on youth smoking using data collected in a special 1994 survey of state activities related to the Synar Amendment.[78] Chaloupka and Pacula's estimates suggest that when the limits on youth access are comprehensively and aggressively enforced, they significantly reduce the prevalence of youth smoking.

Certainly, the mixed evidence about youth access laws should not be construed to imply that such laws should be repealed, since this would send a message that adolescent smoking is condoned. Nor does the research suggest that access laws are wholly ineffective. Clearly more research is necessary to determine whether these measures can delay addiction by encouraging adolescents to remain experimenters rather than becoming regular smokers. Research has shown that delayed daily smoking is associated with lower levels of cigarette consumption among adults.[79] Additionally, lower consumption has been shown to contribute to eventual

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[74] *See* Stanton A. Glantz, *Preventing Tobacco Use—The Youth Access Trap*, 86 AM. J. PUB. HEALTH 156 (1996).

[75] *See* CHALOUPKA & PACULA, LIMITING YOUTH ACCESS TO TOBACCO, *supra* note 62; CHALOUPKA ET AL., TOBACCO CONTROL POLICIES, *supra* note 39; Wasserman et al., *supra* note 62.

[76] *See* CHALOUPKA ET AL., TOBACCO CONTROL POLICIES, *supra* note 39.

[77] CHALOUPKA & PACULA, LIMITING YOUTH ACCESS TO TOBACCO, *supra* note 62.

[78] L.A. Downey & J.A. Gardner, Off. of Soc. Sci. Res., Univ. of Ill. at Chicago, *Reducing Youth Access to Tobacco: A Partial Inventory of State Initiatives* (1996).

[79] *See* Naomi Breslau, *Daily Cigarette Consumption in Early Adulthood: Age of Smoking Initiation and Duration of Smoking*, 33 DRUG & ALCOHOL DEPENDENCE 287 (1993); Naomi Breslau et al., *Early Smoking Initiation and Nicotine Dependence in a Cohort of Young Adults*, 33 DRUG & ALCOHOL DEPENDENCE 129 (1993).

success in quitting.[80] Therefore, youth access laws may accomplish goals that are consistent with the public health agenda, but are different than their explicit intent.

V. BAN ON ADVERTISING AND PROMOTION AS A POLICY LEVER TO REDUCE TOBACCO CONSUMPTION

Tobacco advertising is nearly ubiquitous in the United States, and cigarettes are the most widely advertised product in the world. Until 1999, when the MSA banned most forms of outdoor cigarette advertising in the United States, it was nearly impossible to drive on the freeway or sit at a bus stop without seeing an advertisement for cigarettes. In most magazines and newspapers, cigarette ads account for a large portion of the advertising pages, and one must pass through a door with a cigarette logo to enter nearly any grocery or convenience store. Moreover, a variety of sporting and cultural events bear the sponsorship of cigarette brands. To achieve this level of advertising penetration, tobacco companies spent $8.4 billion on advertising and promotion in the United States, the highest spending level reported to date.[81] As a percentage of sales, these expenditures have increased dramatically since 1980. Despite the advertising restrictions of the MSA between state Attorneys General and the tobacco companies, tobacco companies continue to target Kentucky's children, as evidenced by the fact that both middle and high school smokers smoke Marlboro, the most heavily advertised brand.[82]

Tobacco advertising activities include the placement of ads in traditional advertising venues such as billboards, in magazines and newspapers, and the Internet. However, in recent years, the tobacco industry has begun to substantially shift its advertising and promotional expenditures toward spending on promotional activities such as allowances to retailers, point-of-purchase promotional materials, direct mail advertising, the distribution of free samples, coupons, and specialty items, multiple pack promotions, and retail value-added offers, as well as endorsements, sponsorship of cultural, sporting, and other entertainment events, and sponsorship of community and other organizations. While nearly ninety

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[80] *See generally* John P. Pierce et al., *Beyond Stages of Change: The Quitting Continuum Measures Progress Toward Successful Smoking Cessation*, 93 ADDICTION 277 (1998).

[81] Fed. Trade Comm'n, *Cigarette Report for 1999* (2001) [hereinafter *Cigarette Report*].

[82] Wasserman et al., *supra* note 62.

percent of all cigarette advertising and promotional expenditures in the United States in 1974 were devoted to traditional advertising, by 1999, in striking contrast, this had fallen to under ten percent, with the balance going to the less-traditional promotional activities.[83] Promotional allowances ($3.5 billion in 1999) and coupons and retail value added ($2.6 billion in 1999) have been the largest spending categories in recent years.[84]

The impact of cigarette advertising on cigarette smoking, particularly youth smoking, has been the subject of extensive debate over the past several decades. The public health community generally believes that advertising encourages smoking and is an important influence on smoking initiation among youth. The industry, on the other hand, contends that cigarette advertising is a form of competition that has no impact on overall cigarette smoking, but instead simply affects market share. In addition, the industry argues that advertising provides useful information to smokers about their products, including information on tar and nicotine content.

Warner has suggested several mechanisms through which cigarette advertising and promotion could affect cigarette consumption.[85] He identified four direct mechanisms: (1) advertising can entice children and young adults to experiment with smoking and to initiate regular smoking; (2) it can reduce current smokers' (adults and adolescents) willingness to quit smoking; (3) it can serve as a cue or stimulus that leads to increased daily cigarette consumption by smokers; and (4) it can induce former smokers to resume tobacco use by reinforcing the attractions of smoking.[86] Warner also noted two indirect mechanisms: (1) discouraging a full discussion of the health consequences of cigarette smoking in the media that is dependent on tobacco advertising; and (2) contributing to a social environment in which smoking is perceived to be socially acceptable.[87] The United States Surgeon General added a third indirect mechanism, namely that institutions dependent on tobacco industry promotional and other support may create political opposition to strong tobacco control policies.[88]

Warner and his colleagues have examined the first indirect mechanism empirically, concluding that there is strong evidence that magazines' coverage of the hazards of smoking was significantly diminished as the

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[83] *Cigarette Report, supra* note 81.

[84] *Id.*

[85] KENNETH E. WARNER, SELLING SMOKE: CIGARETTE ADVERTISING AND PUBLIC HEALTH 59-60 (1986).

[86] *Id.*

[87] *Id.*

[88] *Reducing the Health Consequences of Smoking, supra* note 8.

magazines' share of advertising revenues from cigarette advertising rose.[89] They found that magazines that did not carry cigarette advertising were more than forty percent more likely to cover the health consequences of smoking than those with cigarette advertising.[90] The difference was even more pronounced in women's magazines, with those that did not advertise cigarettes more than 230% more likely to cover the hazards of smoking.[91]

Numerous econometric studies, mostly from the United States and the UK, have explored the relationship between cigarette advertising and promotional expenditures and cigarette demand. In general, these studies have produced mixed findings, with most studies concluding that advertising has, at most, a small positive impact on demand. However, critics of these studies note that econometric methods, which estimate the impact of a marginal change in advertising expenditures on smoking, are ill-suited for studying the impact of advertising.[92]

In their seminal work, Lewit and his colleagues used data on about 6700 youth, ages twelve to seventeen years, taken from Cycle III of the U.S. Health Examination Survey conducted from 1966 through 1970.[93] Based on measures of televised cigarette advertising and counter-advertising, and self-reported information on time spent watching television, Lewit and his colleagues estimated the number of pro- and anti-smoking commercials each youth would have seen.[94] Their estimates provide support for the hypothesis that televised pro-smoking advertisements significantly increased youth smoking.

Several researchers have hypothesized that studying the impact of advertising and promotion bans on cigarette smoking would provide more direct evidence on the impact of advertising. Many of the older studies examined the impact of the United States ban on broadcast cigarette

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[89] *See* Kenneth E. Warner, *Cigarette Advertising and Media Coverage of Smoking and Health*, 312 NEW ENG. J. MED. 384 (1985); Kenneth E. Warner & Linda M. Goldenhar, *The Cigarette Advertising Broadcast Ban and Magazine Coverage of Smoking and Health*, 10 J. PUB. HEALTH POL'Y 32 (1992).

[90] Kenneth E. Warner et al., *Cigarette Advertising and Magazine Coverage of the Hazards of Smoking: A Statistical Analysis*, 326 NEW ENG. J. MED. 305, 307 (1992).

[91] *Id.*

[92] *See* Simon Chapman, *The Limitations of Econometric Analysis in Cigarette Advertising Studies*, 84 BRIT. J. ADDICTION 1267 (1989).

[93] Lewit et al., *supra* note 38.

[94] *Id.*

advertising that began January 2, 1971.[95] In general, these studies produced mixed evidence on the impact of the ban on television and radio advertising. Most concluded that the ban did not significantly reduce cigarette smoking in the United States. Several, including Hamilton and Warner, suggested that the net impact of the 1971 ban was to raise cigarette consumption because it also led to the elimination of effective anti-smoking commercials broadcast under the Fairness Doctrine.[96] Schneider et al. supported this argument empirically, concluding that the advertising ban led to a net increase of nearly five percent in per capita tobacco consumption, in part due to a price reduction resulting from the reduced costs associated with less advertising.[97] In addition, they argued, the advertising ban limited the provision of information to smokers concerning the tar and nicotine content of different brands and, consequently, reduced the likelihood that smokers would switch to lower tar and nicotine brands.[98]

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[95] *See* W.L. SIMONICH, GOVERNMENT ANTISMOKING POLICIES (1991); Badi H. Baltagi & Dan Levin, *Estimating Dynamic Demand for Cigarettes Using Panel Data: The Effects of Bootlegging, Taxation, and Advertising Reconsidered*, 68 REV. ECON. STAT. 148 (1986); John A. Bishop & Jang H. Yao, *"Health Scare," Excise Taxes, and Advertising Ban in the Cigarette Demand and Supply*, 52 S. ECON. J. 402 (1985); George R. Franke, *U.S. Cigarette Demand, 1961-90: Econometric Issues, Evidence, and Implications*, 30 J. BUS. RES. 33 (1994); Rajeev K. Goel & Mathew J. Morey, *The Interdependence of Cigarette and Liquor Demand*, 62 S. ECON. J. 451 (1995); Richard A. Ippolito et al., Fed. Trade Comm'n, Bureau of Econ., *Staff Report on Consumer Responses to Cigarette Health Information* (1979); K. Kao & V.J. Tremblay, Comment, *Cigarette "Health Scare," Excise Tax, and Advertising Ban*, 54 S. ECON. J. 770 (1988); Robert McAuliffe, *The FTC and the Effectiveness of Cigarette Advertising Regulations*, 7 J. PUB. POL'Y & MARKETING 46 (1988); R.H. Porter, *The Impact of Government Policy on the U.S. Cigarette Industry*, *in* EMPIRICAL APPROACHES TO CONSUMER PROTECTION ECONOMICS (Richard A. Ippolito & D.T. Scheffman eds., 1986); L. Schneider et al., *Government Regulation of Cigarette Health Information*, 24 J.L. & ECON. 575 (1981); Barry J. Seldon & Roy Boyd, *The Stability of Cigarette Demand*, 23 APPLIED ECON. 319 (1991); Barry J. Seldon & Khosrow Doroodian, *A Simultaneous Model of Cigarette Advertising: Effects on Demand and Industry Response to Public Policy*, 71 REV. ECON. STAT. 673 (1989); Carol H. Tremblay & Victor J. Tremblay, *The Impact of Cigarette Advertising on Consumer Surplus, Profit, and Social Welfare*, 13 CONTEMP. ECON. POL'Y 113 (1995).

[96] *See* James L. Hamilton, *The Demand for Cigarettes: Advertising, the Health Scare, and the Cigarette Advertising Ban*, 54 REV. ECON. STAT. 401 (1972); Kenneth E. Warner, *Clearing the Airwaves: The Cigarette Ad Ban Revisited*, 5 POL'Y ANALYSIS 435 (1979).

[97] Schneider et al., *supra* note 95.

[98] *Id.*

A recent study using data from twenty-two high-income countries, for the period from 1970 through 1992, provides strong evidence that comprehensive bans on cigarette advertising and promotion lead to significant reductions in cigarette smoking. The study predicted that a comprehensive set of tobacco advertising bans in high-income countries could reduce tobacco consumption by over six percent.[99] However, the study concludes that partial bans have little impact on smoking behavior, given that the tobacco industry can shift its resources from the banned media source (e.g., television) to those that are not banned.[100]

Approaches employed by other disciplines, including survey research and experiments that assess reactions to and recall of cigarette advertising, support the hypothesis that increases in cigarette advertising and promotion directly and indirectly increase cigarette demand. For example, research has shown that children and adolescents are highly exposed to these tobacco industry advertisements;[101] they can recognize cigarette advertising symbols and campaigns;[102] a large proportion of adolescents are receptive to tobacco industry advertising and promotional activities;[103] and that receptivity increases the likelihood of future experimentation with cigarettes.[104] These studies conclude that cigarette advertising is effective in getting and retaining children's attention, with the strength of these associations strongly correlated with current smoking behavior, smoking initiation, and smoking intentions.

Others have articulated logical arguments that conclude that cigarette advertising and promotional activities are not consistent with the tobacco industry's claim that the market for tobacco products is mature and that marketing activities are designed to promote brand share rather than market

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[99] Henry Safer & Frank J. Chaloupka, *The Effect of Advertising Bans on Tobacco Consumption*, 19 J. HEALTH ECON. 1117 (2000).

[100] *Id.* at 1134.

[101] *See* Elizabeth A. Gilpin et al., *Are Adolescents Receptive to Current Sales Promotion Practices of the Tobacco Industry?*, 26 PREVENTIVE MED. 14 (1997).

[102] *See generally* Lucy L. Henke, *Young Children's Perceptions of Cigarette Brand Advertising Symbols: Awareness, Affect, and Target Market Identification*, XXIV J. ADVER. 13 (1995); Charles King III et al., *Adolescent Exposure to Cigarette Advertising in Magazines: An Evaluation of Brand-Specific Advertising in Relation to Youth Readership*, 279 JAMA 516 (1998).

[103] *See* Nicola Evans et al., *Influence of Tobacco Marketing and Exposure to Smoking on Adolescent Susceptibility to Smoking*, 87 J. NAT'L CANCER INST. 1538 (1995); Gilpin et al., *supra* note 101.

[104] *See* John P. Pierce et al., *Tobacco Industry Promotion of Cigarettes and Adolescent Smoking*, 279 JAMA 511 (1998).

expansion. For example, Tye and his colleagues calculated that cigarette firms' battling only for brand share did not make financial sense in a United States market in which the top two firms now control seventy-five percent of cigarette sales (and one company has ninety-five percent of smokeless tobacco sales) and in which brand loyalty is notoriously strong.[105] The authors argued that if the industry believed its own brand-share argument, it would have welcomed the opportunity for a legislated ban on tobacco advertising, proposed in the United States Congress in the mid-1980s. Instead, the industry fought the ban vigorously. Similarly, Warner noted that even if the industry is a mature or declining one, retaining existing consumers and recruiting new ones would be particularly important in the cigarette market in which about five percent of consumers are lost annually to cessation and death.[106] Finally, while the overall market may be mature, there are segments of the market that appear to be potential growth markets, such as youth in the United States, for whom smoking prevalence has risen throughout the 1990s, or specific minority groups, such as Hispanic females, for whom smoking rates are well below those of other groups of women.[107] Substantial evidence, including recently released internal industry documents, indicates that increasing shares of advertising and promotion activities have been directed toward these growth or potential growth markets.[108]

Clearly, there is no "smoking gun" that proves that advertising and promotion play a significant role in expanding or maintaining the market for tobacco products, or that they do not. Examining all of the evidence collectively, Warner concluded that it is more likely than not that advertising and promotions do stimulate cigarette consumption.[109] However, he also

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[105] *See* Joe B. Tye et al., *Tobacco Advertising and Consumption: Evidence of a Causal Relationship*, 8 J. PUB. HEALTH POL'Y 492, 493-95 (1987).

[106] *See* WARNER, *supra* note 85, at 64.

[107] *See* Ctrs. for Disease Control & Prevention, Nat'l Ctr. for Chronic Disease Prevention & Health Promotion, Off. on Smoking & Health, U.S. Dep't of Health & Hum. Servs., *Tobacco Use Among U.S. Racial/Ethnic Minority Groups: A Report of the Surgeon General* (1998) [hereinafter *Tobacco Use Among U.S. Racial/Ethnic Minority Groups*].

[108] *See Preventing Tobacco Use Among Young People*, *supra* note 15; *Reducing the Health Consequences of Smoking*, *supra* note 8; *Tobacco Use Among U.S. Racial/Ethnic Minority Groups*, *supra* note 107; King et al., *supra* note 102; Univ. of Ky. Dep't of Health, Econ. & Operational Res. Div., *Effect of Tobacco Advertising on Tobacco Consumption: A Discussion Document Reviewing the Evidence* (1992).

[109] Warner, *supra* note 85, at 74.

characterized the extent of the influence of advertising as unknown and possibly unknowable. While the collective evidence does demonstrate that increased advertising leads to increased tobacco use, states are limited in their abilities to regulate advertising given the constitutional protection afforded free speech. Nevertheless, states like Massachusetts have tested these limits, albeit not always successfully.[110]

VI. COMPREHENSIVE STATE PROGRAMS AS A POLICY LEVER TO REDUCE TOBACCO CONSUMPTION

In recent years, several state governments have adopted comprehensive programs to reduce tobacco use, often funded by earmarked tobacco tax revenues. These programs generally have consistent goals for reducing tobacco use including: preventing initiation among youth and young adults; promoting cessation among all smokers; reducing exposure to secondhand smoke; and identifying and eliminating disparities among population subgroups.[111] In general, these programs have one or more of four key components: (1) national and community interventions; (2) counter marketing campaigns; (3) policy and regulation; and (4) surveillance and evaluation. Programs have placed differing emphasis on these four components, with substantial diversity among the types of activities supported within each component. Recent analyses from the United States and the United Kingdom clearly indicate that these comprehensive efforts have been successful in reducing tobacco use and in improving public health.[112] In California, for example, the state's comprehensive tobacco control program has doubled the rate of decline in tobacco use seen in the rest of the U.S.[113] California lung cancer incidence has fallen by fourteen

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[110] In 1999, Massachusetts adopted regulations restricting advertising of tobacco products, that included: a ban on advertising in enclosed stadiums, a ban on outdoor advertising at any location within a 1000-foot radius of a public playground or a school, and a ban on indoor advertising below five feet in retail stores within the same radius. Most of the provisions of the law were struck down, in a 5-4 decision, by the U.S. Supreme Court in June 2001 as a violation of the First Amendment. Lorillard Tobacco Co. v. Reilly, 533 U.S. 525 (2001).

[111] *See Reducing Tobacco Use*, *supra* note 2.

[112] *See id.*; Townsend, *UK Smoking Targets*, *supra* note 62; Melanie A. Wakefield & Frank J. Chaloupka, *Effectiveness of Comprehensive Tobacco Control Programmes in Reducing Teenage Smoking in the USA*, 9 TOBACCO CONTROL 177 (2000).

[113] J.P. PIERCE ET AL., TOBACCO CONTROL IN CALIFORNIA: WHO'S WINNING THE WAR? AN EVALUATION OF THE TOBACCO CONTROL PROGRAM, 1989-1996 (1998).

percent from 1988 to 1997. In contrast, declines of 2.7% have been seen in the rest of the country.[114]

Similarly, the WHO MONICA Project, a multinational effort to monitor trends and determinants of cardiovascular disease, showed that decreases in smoking prevalence were largest in countries where the public is consistently reminded of the dangers of smoking by extensive coverage of issues related to tobacco in the news media.[115] Media coverage was one part of a comprehensive approach to smoking control in these countries that combined tobacco taxes, smoke-free indoor air policies, antismoking advocacy, litigation against tobacco companies, and restrictions on the promotion and sale of tobacco products in order to change the dynamics of the smoking epidemic. Furthermore, MONICA data suggests that the decrease in smoking prevalence observed among men in some countries is due to the higher prevalence of never smoking in younger age groups.[116] Among women, increasing prevalence of smoking in younger age cohorts counterbalanced increasing prevalence of former smokers in older age groups to yield little overall change in prevalence.[117]

Clearly, more significant decreases in the proportion of smokers among men *and* women could be achieved by implementing comprehensive tobacco control programs that discourage young people from initiating smoking. The extent to which comprehensive programs can prevent young people from becoming persistent smokers today will affect mortality rates in the middle or second half of the twenty-first century.[118] Mortality rates in the near future and throughout the first half of the century, however, could be reduced by aiding current smokers in becoming nonsmokers. A recent study from the UK found that smoking cessation before middle age avoids more than ninety percent of the lung cancer mortality risk attributable to tobacco.[119]

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[114] Ctrs. for Disease Control & Prevention, U.S. Dep't of Health & Hum. Servs., *Declines in Lung Cancer Rates—California, 1988-1997*, 49 MORBIDITY & MORTALITY WKLY. REP. 1066, 1067 (2000).

[115] *See* Anu Molarius et al., *Trends in Cigarette Smoking in 36 Populations From the Early 1980s to the Mid-1990s: Findings From the WHO MONICA Project*, 91 AM. J. PUB. HEALTH 206, 210 (2001).

[116] *Id.*

[117] *Id.*

[118] *See* Richard Peto et al., *Smoking, Smoking Cessation, and Lung Cancer in the UK Since 1950: Combination of National Statistics with Two Case Control Studies*, 321 BRIT. MED. J. 323 (2000).

[119] *Id.*

Despite strong evidence that comprehensive approaches to tobacco control can effectively reduce smoking, and therefore diminish the social and economic burdens of tobacco use, even the best-funded comprehensive tobacco control programs in the United States fall short of optimal funding guidelines for tobacco control. Current estimates of the costs of implementing a comprehensive tobacco control program in the United States range from seven dollars to twenty dollars per capita in smaller states (less than three million population); six dollars to seventeen dollars per capita in medium-sized states (three to seven million population); and five dollars to sixteen dollars per capita in larger states (greater than seven million population).[120] At the highest recommended spending level for the United States, annual funding for a comprehensive tobacco program would equal only 0.9% of United States public spending per capita on health. While the Center for Disease Control ("CDC") recommends spending $6.42 - $17.88 per capita for tobacco prevention and cessation in Kentucky, the state MSA funds designated for tobacco control ($.64 per capita) account for only ten percent of the lower CDC estimate.

Comprehensive tobacco control programs including research funded by tobacco product taxes are self-financing. Therefore, the most obvious constraint would be political opposition, but this is difficult to quantify. A key political tool for addressing political opposition is an earmarked tobacco tax. However, earmarking introduces clear restrictions and inefficiencies on public finance. For this reason alone, most macroeconomists do not favor earmarking, no matter how worthy the cause. Nonetheless, analysis suggests that the efficiency losses from earmarking tobacco taxes would be minimal.[121] Earmarking could be justified if governments used these funds for services that would not have been otherwise used. However, earmarked taxes also have a political function, in that they help to concentrate political winners of tobacco control, and thus influence policy. Earmarked funds that support broad health and social services (such as other disease programs) broaden the political and civil society support base for tobacco control. In Australia, broad political support among Ministries of Sports and Education helped to convince the Ministry of Finance that raising tobacco taxes was possible. Indeed, once

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[120] Ctrs. for Disease Control & Prevention, Nat'l Ctr. for Chronic Disease Prevention & Health Promotion, Off. on Smoking & Health, U.S. Dep't of Health & Hum. Servs., *Investment in Tobacco Control: State Highlights 2001* (2001).

[121] *See* T-w Hu et al., *Earmarked Tobacco Taxes: Lessons Learned*, *in* I. ABEDIAN ET AL., *supra* note 62, at 102-18.

an earmarked tax was passed, the Ministry of Finance went on to raise tobacco taxes further without earmarking them.[122]

Allocating tobacco taxes to other health programs for the poorest socioeconomic groups could produce "double health gains"—reduced tobacco consumption and increased access to and use of health services. In Kentucky, a ten percent increase in cigarette taxes would decrease consumption by five percent and increase government revenues by five percent. These increased earnings could finance a package of essential health services for Kentucky's poorest citizens.

CONCLUSION

We know what policy levers work to reduce tobacco use, the single most preventable cause of death in the United States, and we have the ability to pass laws that significantly reduce tobacco consumption, as evidenced by documented outcomes in California, Massachusetts, and many other states. There is strong evidence that tobacco tax increases, strong and comprehensive restrictions on smoking in public places and workplaces, comprehensive bans on advertising and promotion, and well-funded, sustained comprehensive tobacco prevention and cessation programs are effective in reducing tobacco use. Despite this evidence, these policies have been unevenly applied, partly due to political constraints and lack of awareness of the power of interventions. This Article has highlighted one tobacco growing and manufacturing state that exemplifies the struggle between economic interests and public health. Although overwhelming scientific evidence exists that four major policy levers are effective in reducing tobacco use, many states, including Kentucky, have failed to adopt such policies. Instead, the laws that do exist in these states are weak and ineffective. In many of these states, the focus tends to be on minimizing the economic impact on tobacco growing and manufacturing, rather than on reducing the public health toll caused by tobacco. While the economic impact of declining tobacco use is very real to communities in Kentucky and other tobacco growing states, the health and economic consequences of failing to act are substantial.

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[122] R.L. Galbally, *Health-Promoting Environments: Who Will Miss Out?*, 21 AUSTL. NEW ZEALAND J. PUB. HEALTH 429 (4 special issue) (1997).