



*A Policy Research Partnership  
to Reduce Youth Substance Use*

## **Exploring the Relationship Between Cigarette Smoking Among Adolescents and Adults in the United States**

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ABSTRACT:

**OBJECTIVES:** To determine the relationship between state-specific estimates of youth and adult cigarette smoking prevalences, overall, and after adjusting for cigarette prices and strength of smoke-free air laws. **METHODS:** Crude relationships were determined using state-specific adolescent and adult smoking estimates from three national surveillance systems conducted during 1997, 1999, or 2000. Weighted least-squares regression analyses were conducted to assess crude and adjusted relationships between state-specific estimates of adolescent and adult smoking. **RESULTS:** In each crude analysis conducted, adolescent smoking prevalence was significantly and positively related to adult smoking prevalence. These relationships were attenuated, but generally persisted, after controlling for cigarette prices and strength of smoke-free air laws. **CONCLUSIONS:** Results support the premise that adult smoking influences adolescent smoking behavior. Funders and policy makers need to consider that an effective youth prevention strategy may be to curb smoking among adults.

## ***Introduction***

Cigarettes are the most common form of tobacco used in the United States, among both youths and adults (1, 2). Interest in preventing adolescent uptake of tobacco use increased substantially during the early and mid-1990's (3), as adolescent smoking initiation and prevalence increased (1, 4-9). This prompted considerable debate in the public health community about the relative merits of a youth or adult-centered tobacco control approach (10-14). A focus on youth has often been viewed by policy-makers as more politically palatable to the communities they serve; however, many researchers have argued that since the problem of tobacco affects people of all ages, effective solutions must do so as well, thereby favoring a more balanced strategy (10-14). An effective approach would target audiences in every age group, encouraging adults to quit without ignoring the reality that virtually all new tobacco users are children or adolescents.

A considerable number of studies have noted relationships between parental and adolescent smoking (15-21). Bauman and colleagues noted that a key distinction in studies of parental and adolescent smoking was to distinguish whether the parents were current, former, or never smokers. When they made such distinctions, they found that the relationship between parental smoking status and adolescent smoking was as strong as that for peer smoking (16-17). Chassin and colleagues found that parental smoking cessation may help to lower the risk for adolescent smoking when the other parent was not a current smoker (20). Farkas and colleagues noted that the earlier parents quit, the less likely their children were to become smokers (21).

To test the hypothesis that state-specific smoking prevalence for adolescents and adults would be directly related, we initially studied the relationship using data from the 1997 Youth Risk Behavior Surveillance System and Behavioral Risk Factor Surveillance System (22). We documented a direct relationship, a finding also noted by Males (23). To assess this phenomenon more fully, we conducted similar analyses using data from additional years and another surveillance system (the National Household Survey on Drug Abuse). Furthermore, because we recognized that cigarette prices and the strength of smoke-free air laws could influence both adolescent and adult smoking prevalences, we also studied the relationship after controlling for these important policy variables (24-26). We hypothesized that the relationship between adolescent and adult smoking would be attenuated, but not eliminated, after controlling for these potential covariates.

## ***Methods***

### *Data*

Youth and adult smoking data for this study were taken from three nationally-coordinated surveillance systems: 1) the Youth Risk Behavior Surveillance System (YRBSS); 2) the Behavioral Risk Factor Surveillance System (BRFSS); and 3) the National Household Survey on Drug Abuse (NHSDA).

The YRBSS provides state-specific adolescent data on public high school students between the approximate ages of 14 to 18 years. For this study, we used the following measures of adolescent smoking from YRBSS: current smoking prevalence, frequent cigarette use, youth ever smoking, and youth ever-daily smoking. The 1997 and 1999 YRBSS define current smoking prevalence (current cigarette use) as having smoked on at least 1 of the 30 days preceding the survey, and frequent cigarette use as having smoked

on at least 20 of the 30 days preceding the survey. The 1997 and 1999 YRBSS define youth ever smoking (i.e. lifetime cigarette use) as having ever tried cigarette smoking, even one or two puffs (6, 27). The 1999 YRBSS defines youth ever-daily smoking as having ever smoked at least 1 cigarette every day for 30 days (27).

Weighted YRBSS data were published for 24 states in 1997, and for 22 states in 1999. The Centers for Disease Control and Prevention (CDC) weighted these state-specific estimates to adjust for nonresponse and varying probabilities of selection. The data are considered to be representative of all public high school students (grades 9-12), in the respective states. In our analyses, we only included data from states with weighted YRBSS data. State-specific sample sizes ranged from 1,325 to 8,636 participants in 1997, and from 1,248 to 7,125 participants in 1999 (6, 27). Standard errors for these weighted 1997 and 1999 YRBSS data were provided by the Centers for Disease Control and Prevention, and were used to estimate variances for analyses.

The BRFSS provides state-specific estimates of major risk behaviors among adults aged 18 years and older. Adult current smoking and adult ever smoking measures were included as independent predictor variables from 1997 and 1999 BRFSS data. In the 1997 and 1999 BRFSS, current smokers were those who had ever smoked at least 100 lifetime cigarettes and who currently smoked every day or some days. Adult ever smoking was defined by the 1997 and 1999 YRBSS as having ever smoked 100 lifetime cigarettes. We used adult BRFSS data from all states for which we also had YRBSS data, which were 24 states in 1997 and 22 states in 1999. State-specific sample sizes ranged from 1,595 to 3,596 participants in 1997, and from 1,633 to 5,011 participants in 1999 (28-29).

The NHSDA provides state-specific adolescent and adult data on substance abuse for adolescents between the ages of 12 to 17 years, adults between the ages of 18 to 25 years (referred to below as young adults), and adults greater than or equal to 26 years (referred to below as adults). In the 1999-2000 NHSDA, current smokers were those who smoked all or part of a cigarette on at least one of the 30 days preceding the survey. Representative samples were drawn from all 50 states and the District of Columbia, with sample sizes ranging from 900 to 1,030 in 42 states and the District of Columbia, and from 3,600 to 4,630 in 8 states. About one-third of each sample represented each age category: 12 to 17 years; 18 to 25 years; and  $\geq 26$  years (30).

State-specific estimates for price, as of November 1<sup>st</sup> of each year, were taken from *The Tax Burden on Tobacco* (31). The average price of a pack of cigarettes was constructed by using weighted averages for a pack of 20 cigarettes based on the prices of single packs, cartons, and vending machine sales, where the weights are the national proportions of each type of sale. These prices are inclusive of state level sales taxes applied to cigarettes, but are exclusive of local cigarette taxes. Because the price published is as of November 1<sup>st</sup>, and because the surveys are conducted throughout the year, we created a weighted average annual cigarette price measure by subtracting state and federal excise taxes from the current year's price and the previous/following year's price and weighting the pre-tax prices accordingly. Average federal and state excise taxes for the whole year were calculated and added to the weighted average pre-tax price.

Data on state-specific smoke-free air legislation were compiled to construct a smoke-free air (SFA) legislation index, using a multi-step process. Initially, these legislative data were taken from the American Lung Association's 'State Legislated



Actions on Tobacco Issues' (SLATI) system, and the Centers for Disease Control and Prevention's 'State Tobacco Activities Tracking and Evaluation' (STATE) system. We then contracted with the MayaTech Corporation to validate initial coding, and expand upon our initial categorization scheme by incorporating legislative information on additional locations, such as schools, recreational facilities, and cultural facilities.

The state-specific SFA index values were constructed from ratings given to each state, based upon the levels of restriction provided for the following 10 locations in 1997, 1999, and 2000: private worksites, health facilities, restaurants, recreational facilities, cultural facilities, retail/grocery stores, shopping centers, public transit, public schools, and private schools. SFA ratings were summed for each of these 10 locations, and additional weighting was given to 6 designated youth-oriented locations (restaurants, recreational facilities, cultural facilities, shopping centers, public schools, private schools), which were multiplied by 2 prior to summation. After the ratings were summed, 20% of this total SFA score was then subtracted for the existence of any state preemption clauses. The calculation of the subtracted preemption percentage was based upon the average estimated percentage of states with SFA preemption in relevant youth-oriented categories, as described in a paper by Chriqui et al (2002) (32). Preemption clauses prevent a local area, within a state, from enacting smoke-free ordinances that are stronger or more protective than state smoke-free air laws.

### *Statistical Analysis*

Weighted least-squares regression analyses were conducted using SPSS software. Regression analyses of adult smoking measures, as the independent predictor variables, on adolescent smoking measures, as the dependent outcome variables, were conducted

for BRFSS, YRBSS, and NHSDA data. Analyses with YRBSS data were conducted overall and by gender (male, female). All regression analyses were weighted by the reciprocal of the variance of the dependent variables. Average price of a pack of cigarettes and strength of smoke-free air legislation were included as potential covariates in adjusted weighted least squares regression analyses. Crude and adjusted beta coefficients were calculated and reported, along with standard errors, r-squared values, and statistical probabilities (p-values).

Additional weighted least-squares regression analyses were conducted to further adjust for income disparity. These analyses did not produce noticeably different results for youth-adult data; therefore, income disparity was not considered relevant for adjustment.

## ***Results***

Table 1 presents crude and adjusted results from the weighted least-squares regression analyses of youth and adult smoking measures. In each crude analysis conducted, adolescent smoking prevalence was significantly and positively related to adult smoking prevalence. These relationships were attenuated, but generally persisted, after controlling for cigarette prices and strength of smoke-free air laws. Adjusted overall relationships for 1997 YRBSS and BRFSS data, between youth-adult current smoking prevalence and frequent use, were attenuated; but remained significant. This attenuated, but significant, relationship persisted among males for current smoking prevalence (with borderline significance among females), and among both males and females for frequent use. Crude relationships between youth-adult current smoking prevalence and frequent

use were significant for 1999 YRBSS and BRFSS data, and adjusted relationships remained significant among females for current prevalence and frequent use.

Crude relationships for NHSDA data from all states and the District of Columbia were also highly significant for youth, young adult, and adult smoking in 1999-2000 (See also: Figure 1). Adjusted relationships for 1999-2000 NHSDA data also remained significant for all youth, young adult, and adult smoking data.

Table 2 presents results from additional weighted least-squares regression analyses that were conducted to explore a possible relationship between youth and adults with respect to measures of smoking initiation. These analyses, using 1997 YRBSS and BRFSS data, showed a significant adjusted relationship between youth ever-smoking and adults ever-smoking at least 100 cigarettes. Analyses using 1999 YRBSS and BRFSS data showed significant crude and adjusted relationships between youth ever-daily smoking and adults ever smoking at least 100 cigarettes.

## ***Discussion***

These analyses were conducted to determine the relationship between state-specific estimates of youth and adult cigarette smoking prevalence, overall, and after adjusting for important policy covariates. In each crude analysis conducted, adolescent smoking prevalence was significantly and positively related to adult smoking prevalence. After adjustment, the adolescent-adult relationship was attenuated, but remained significant, for: 1997 overall and male current prevalence; 1997 overall, male, and female frequent use; 1999 female current prevalence and frequent use; and all age groups tested using 1999/2000 NHSDA data. Therefore, the relationships generally persisted after controlling for two important policy variables, price and strength of smoke-free air

legislation. Adjusted analyses, using 1997 and 1999 YRBSS and BRFSS data, also showed a significant relationship between the following measures of smoking initiation: youth ever smoking and adults ever smoking at least 100 cigarettes; and youth ever-daily smoking and adults ever smoking at least 100 cigarettes.

There are several limitations regarding these analyses. Results for the YRBSS/BRFSS data may be influenced by the relatively small number of states with weighted data used in analyses. There were 24 states with weighted YRBSS data in 1997, and 22 states with weighted YRBSS data in 1999. BRFSS data from 1997 and 1999 were only used for the same number of corresponding states with weighted YRBSS data in both respective years. The ecological fallacy may also be involved, since smoking behavior data were drawn and analyzed from state-specific population data. Other variables, such as relationship quality between adolescents and parents, may mediate the relationship between adolescent and adult smoking prevalence. Further research is needed to explore additional variables, which cannot be ruled out by these analyses, and may affect the state-specific relationship between adolescent and adult cigarette smoking.

Results are consistent with the notion that adult smoking influences adolescent smoking. Findings are also consistent with parental literature, suggesting that youth behavior models adult behavior, and other research, suggesting that if adults quit youth may be less likely to smoke (16, 17, 19-21). These data support the belief that efforts to prevent initiation and promote quitting, among both adolescents and adults, would be included as key components of an optimal tobacco control strategy and an effective public health effort to reduce tobacco-related mortality and morbidity. An optimal tobacco control strategy would also include a component to protect non-smokers from

environmental tobacco smoke. Glantz and Jamieson have proposed that tobacco control efforts directed at adolescents and young adults need to also emphasize smoke-free air policies, which encourage smoking cessation among youth, as well as adults (26).

Research suggests that population tobacco control strategies that influence adult smoking, like price and smoke-free air, also influence youth smoking (33-38). Therefore, these strategies have a two-for-one effect. This lends further weight to the contention that reducing adult smoking is an important strategy to reduce the uptake of smoking among youth. Public health researchers have an important role in explaining why an emphasis on adult cessation is necessary, and why it does not imply any neglect of youth smoking. The public health response to curbing the tobacco-related health burden should be evidenced based, rather than simply popular.

## *References*

1. Centers for Disease Control and Prevention. Youth Tobacco Surveillance, United States, 1998-1999. *MMWR Morb Mortal Wkly Rep.* 2000;49(SS-10):1-44.
2. U.S. Department of Health and Human Services. Women and Smoking: A report of the Surgeon General. Public Health Service. Office of the Surgeon General. Rockville, MD. 2001.
3. Department of Health and Human Services. Food and Drug Administration. 21 CFR Part 801, et al. Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents; Final Rule. *Federal Registrar*; 61(168): August 28, 1996.
4. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 1993. *MMWR Surveillance Summaries.* March 24, 1995/44(SS-1); 1-55.
5. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 1995. *MMWR Surveillance Summaries.* September 27, 1996/45(SS-4); 1-83.
6. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 1997. *MMWR Surveillance Summaries.* August 14, 1998/47(SS-3); 1-89.
7. Substance Abuse and Mental Health Services Administration. *Summary of Findings from the 2000 National Household Survey on Drug Abuse.* Office of Applied Studies, NHSDA Series H-13, DHHS Publication No. (SMA) 01-3549. Rockville, MD, 2001.
8. Centers for Disease Control and Prevention. Incidence of Initiation of Cigarette Smoking – United States, 1965-1996. *MMWR* 1998; 47:837-840.
9. Johnston, LD, O'Malley, PM, Bachman, JG. *Monitoring the Future National Survey Results on Drug Use: 1975-2000. Volume I: Secondary School Students.* US Department of Health and Human Services, National Institute on Drug Abuse. NIH Publication No. 01-4924; August 2001.
10. Myers ML. Adults Versus Teenagers: A False Dilemma and a Dangerous Choice. *Tobacco Control.* 1999;8(3):336-338.
11. Glantz SA. Preventing Tobacco Use – The Youth Access Trap. *American Journal of Public Health.* 1996;86(2):155-156.

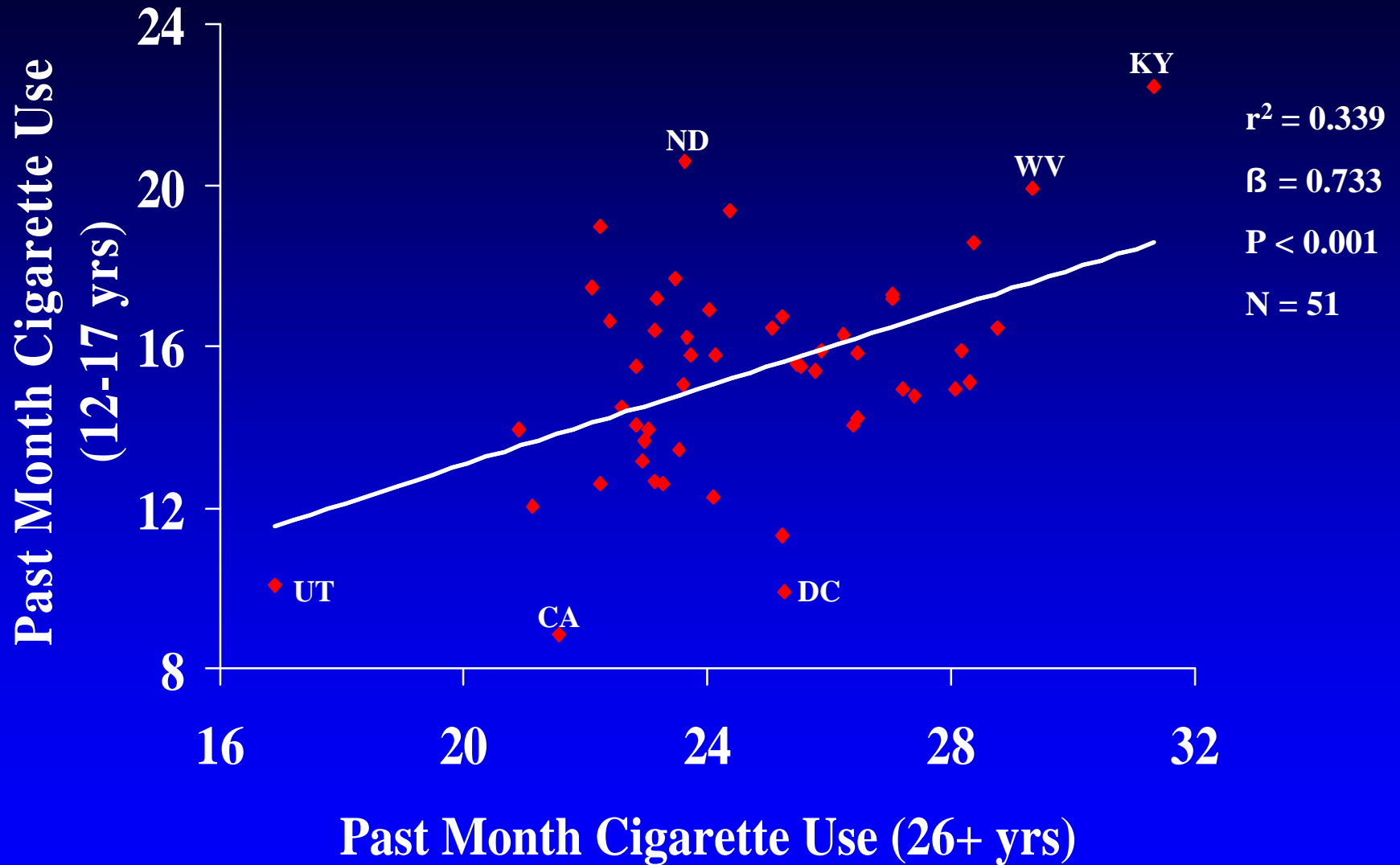
12. Hill D. Why We Should Tackle Adult Smoking First. *Tobacco Control*. 1999;8(3):333-335.
13. McNeill A. Why Children Start Smoking: The Need for a Comprehensive Tobacco Control Policy. *British Journal of Addiction*. 1992;87(1):24-25.
14. Bayer R, Kiesig V. Is Child-Centered Tobacco Prevention a Trap? *American Journal of Public Health*. 2003;93(3):369-370.
15. Jacobson PD, Lantz PM, Warner KE, Wasserman J, Pollack HA, Ahlstrom AK. The Social Context of Adolescent Smoking. *Combating Teen Smoking Research and Policy Strategies*. Ann Arbor: The University of Michigan Press;2001:79-114.
16. Bauman KE, Foshee VA, Linzer MA, Koch GG. Effect of Parental Smoking Classification on the Association Between Parental and Adolescent Smoking. *Addictive Behaviors*. 1990;15(5):413-422.
17. Bauman KE, Carver K, Gleiter K. Trends in Parent and Friend Influence During Adolescence: The Case of Adolescent Cigarette Smoking. *Addictive Behaviors*. 2001;26(3):349-361.
18. Bailey SL, Ennett ST, Ringwalt CL. Potential Mediators, Moderators, or Independent Effects in the Relationship Between Parents' Former and Current Cigarette Use and Their Children's Cigarette Use. *Addictive Behaviors*. 1993;18(6):601-621.
19. Chassin L, Presson CC, Todd M, Rose JS, Sherman SJ. Maternal Socialization of Adolescent Smoking: The Intergenerational Transmission of Parenting and Smoking. *Developmental Psychology*. 1998;34(6):1189-1202.
20. Chassin L, Presson C, Rose J, Sherman SJ, Prost J. Parental Smoking Cessation and Adolescent Smoking. *Journal of Pediatric Psychology*. 2002;27(6):485-496.
21. Farkas AJ, Distefan JM, Choi WS, Gilpin EA, Pierce JP. Does Parental Smoking Cessation Discourage Adolescent Smoking?. *Preventive Medicine*. 1999; 28(3): 213-218.
22. Giovino GA. Development of a State Tobacco Database for the Robert Wood Johnson Foundation's ImpacTeen Study. Presentation at "Tobacco-Free Future: Shining the Light," the Fifth Annual National Conference on Tobacco and Health. Kissimmee, Florida; August 24, 1999.  
[http://www.impactteen.org/generalarea\\_PDFs/giovino0899.pdf](http://www.impactteen.org/generalarea_PDFs/giovino0899.pdf).
23. Males MA. *Smoked: Why Joe Camel is Still Smiling*. Monroe, Maine: Common Courage Press: 1999.

24. Chaloupka FJ and Grossman M. Price, Tobacco Control Policies, and Youth Smoking. NBER Working Paper 5740, 1996.
25. Taurus JA and Chaloupka FJ. Price, Clean Indoor Air Laws, and Cigarette Smoking: Evidence from Longitudinal Data for Young Adults. NBER Working Paper 6937. Cambridge: National Bureau of Economic Research, 1999.
26. Glantz SA, Jamieson P. Attitudes Toward Secondhand Smoke, Smoking, and Quitting Among Young People. *Pediatrics*. 2000;106(6):E82.
27. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 1999. *MMWR Surveillance Summaries*. June 9, 2000/49(SS-5); 1-96.
28. Centers for Disease Control and Prevention. Behavioral Surveillance Branch Division of Adult and Community Health. National Center for Chronic Disease Prevention and Health Promotion. 1997 BRFSS Summary Prevalence Report. August 21, 1998. pp. viii-xii.
29. Centers for Disease Control and Prevention. Behavioral Surveillance Branch Division of Adult and Community Health. National Center for Chronic Disease Prevention and Health Promotion. 1997 BRFSS Summary Prevalence Report. June 23, 2000. pp. ix-1.
30. NHSDA. Person-Level Sampling Weight Calibration for the 2000 NHSDA. Chen P, Emrich S, Gordek H, Penne MA, Singh AC, Westlake M. Research Triangle Institute. July 22, 2002. pp. 1-4.
31. Orzechowski and Walker. *The Tax Burden on Tobacco*. Arlington, VA. Vol. 36, 2001.
32. Chriqui J, Frosh MM, Fues LA, El Arculli R, Stillman FA. State Laws on Youth Access to Tobacco: An Update, 1993-1999. *Tobacco Control*. 2002;11(2):163-164.
33. Chaloupka F, Wakefield M, Czart C. Taxing Tobacco: The Impact of Tobacco Taxes on Cigarette Smoking and Other Tobacco Use. In: Rabin RL Sugarman SD, editors. *Regulating Tobacco*. New York. Oxford University Press; 2001. p. 39-72.
34. Jacobson PD, Zapawa LM. Clean Indoor Air Restrictions: Progress and Promise. In: Rabin RL Sugarman SD, editors. *Regulating Tobacco*. New York. Oxford University Press; 2001. p. 207-245.
35. Fichtenberg CM, Glantz SA. Effect of Smoke-Free Workplaces on Smoking Behaviour: Systematic Review. *BMJ*. 2002;325(7357):174-175.



36. Wasserman J, Manning WG, Newhouse JP, Winkler JD. The Effects of Excise Taxes and Regulations on Cigarette Smoking. *Journal of Health Economics*. 1991;10(1):43-64.
37. Ohsfeldt R, Boyle RG, Capilouto EI. Tobacco Taxes, Smoking Restrictions, and Tobacco Use. NBER Working Paper 6486. Cambridge: National Bureau of Economic Research, 1998.
38. Wakefield MA, Chaloupka FJ, Kaufman NJ, Orleans CT, Barker DC, Ruel EE. Effect of Restrictions on Smoking at Home, at School, and in Public Places on Teenage Smoking: Cross Sectional Study. *British Medical Journal*. 2000;321:333-337.

**Figure 1: Prevalence of Past Month Cigarette Use Among Youth (12-17 yrs) and Adults (26+ yrs) in the United States, 1999-2000**



Sources: 1999-2000 National Household Survey on Drug Abuse (NHSDA)

**Table 1:** Weighted Linear Regression Analyses of Youth and Adult Smoking Measures: Crude and Adjusted Estimates; Selected States, United States, 1997, 1999 and 2000

	Number of States in Sample	Crude Results				Adjusted for Average Price of a Pack of Cigarettes and Smoke-Free Air Legislation Index			
		N	Beta	SE	P-value	R-Squared	Beta	SE	P-value
<b>Adult current smoking vs. youth smoking estimates, 1997 *</b>									
<b>Current Prevalence</b>									
Overall	24	1.243	0.258	<0.001	0.514	0.999	0.316	0.005	0.564
Male	24	1.383	0.197	<0.001	0.692	1.064	0.243	<0.001	0.747
Female	24	0.791	0.274	0.009	0.274	0.638	0.313	0.055	0.315
<b>Frequent Use</b>									
Overall	24	0.840	0.154	<0.001	0.575	0.809	0.211	0.001	0.583
Male	24	0.795	0.134	<0.001	0.615	0.701	0.187	0.001	0.626
Female	24	0.664	0.181	0.001	0.38	0.644	0.209	0.006	0.384
<b>Adult current smoking vs. youth smoking estimates, 1999 **</b>									
<b>Current Prevalence</b>									
Overall	22	0.769	0.281	0.013	0.273	0.427	0.285	0.151	0.477
Male	22	0.768	0.275	0.011	0.281	0.268	0.257	0.311	0.598
Female	22	0.859	0.276	0.006	0.326	0.689	0.287	0.027	0.426
<b>Frequent Use</b>									
Overall	22	0.473	0.174	0.013	0.269	0.305	0.190	0.125	0.399
Male	22	0.472	0.157	0.007	0.310	0.232	0.176	0.203	0.504
Female	22	0.634	0.173	0.002	0.402	0.529	0.191	0.013	0.458
<b>Youth, Young Adult, and Adult Current Smoking 1999/2000 ***</b>									
<b>NHSDA: Youth age 12-17 yrs.</b>									
NHSDA Young Adult 18-25 yrs.	51	0.488	0.038	<0.001	0.770	0.427	0.039	<0.001	0.817
NHSDA Adult >= 26 yrs.	51	0.733	0.146	<0.001	0.339	0.464	0.169	0.008	0.437
<b>NHSDA: Young Adult age 18-25 yrs.</b>									
NHSDA Adult >= 26 yrs.	51	0.994	0.259	<0.001	0.231	0.782	0.313	0.016	0.261

\* Youth data were taken from 25 states with weighted data reported for the 1997 YRBSS. Adult data were taken from 1997 BRFSS data for the same 25 states.

\*\* Youth data were taken from 23 states with weighted data reported for the 1999 YRBSS. Adult data were taken from 1999 BRFSS data for the same 23 states.

\*\*\* Youth, young adult, and adult data were taken from the 1999/2000 combined NHSDA for all 50 states and the District of Columbia. Prevalence of past month cigarette use was used for analysis.

The 1997 and 1999 YRBSS define youth current smoking prevalence (current cigarette use) as having smoked on >= 1 of the 30 days preceding the survey, and youth frequent cigarette use (current frequent cigarette use) as having smoked on >=20 of the 30 days preceding the survey.

The 1997 and 1999 BRFSS define adult current smoking as having ever smoked 100 lifetime cigarettes and currently smoking every day or on some days.

The 1999-2000 NHSDA defines youth, young adult, and adult current smoking as use of cigarettes during the 30 days preceding the survey.

Note: All analyses were done by weighting the reciprocal of the variance of the dependent variables.

**Table 2:** Weighted Linear Regression Analyses of Youth and Adult Smoking Measures of Initiation: Crude and Adjusted Estimates; Selected States, United States, 1997 and 1999

	Number of States in Sample	Crude Results				Adjusted for Average Price of a Pack of Cigarettes and Smoke Free Air Legislation Index			
		<i>N</i>	<i>Beta</i>	<i>SE</i>	<i>P-value</i>	<i>R-Squared</i>	<i>Beta</i>	<i>SE</i>	<i>P-value</i>
<b>Initiation</b>									
1997 Youth ever* and Adult ever 100**	22	0.373	0.286	0.208	0.078	0.528	0.254	0.052	0.472
1999 Youth ever* and Adult ever 100**	20	0.408	0.234	0.099	0.144	0.246	0.207	0.251	0.451
1999 Youth ever daily* and Adult ever 100**	20	0.450	0.140	0.005	0.366	0.336	0.147	0.036	0.483

\* Youth smoking data were taken from 25 states with weighted data reported for the 1997 YRBSS and 23 states with weighted data reported for the 1999 YRBSS. Youth ever smoking is defined as having ever tried cigarette smoking, even one or two puffs. Youth ever daily smoking is defined as having ever smoked  $\geq 1$  cigarettes every day for 30 days.

\*\* Adult data were taken from 1997 BRFSS data for the same 25 states and 1999 BRFSS data for the same 23 states. Adult ever 100 is defined by the 1997 and 1999 BRFSS as having ever smoked 100 lifetime cigarettes.

Note: All analyses were done by weighting the reciprocal of the variance of the dependent variables.

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