The Guide to Community Preventive Services
THE COMMUNITY GUIDE
What Works to Promote Health

Increasing Tobacco Use Cessation: Increasing the Unit Price of Tobacco Products (1999 Archived Review)

Table of Contents

Review Summary

Intervention Definition

These interventions increase the unit price for tobacco products through municipal, state, or federal legislation that raises the excise tax on these products. Such increases make the continued use of tobacco products less attractive to users, and in several states, they have provided revenue for comprehensive tobacco use prevention and control programs.

Summary of Task Force Finding

The Community Preventive Services Task Force recommends interventions that include increasing the unit price for tobacco products based on strong evidence of their effectiveness in:

- Reducing population consumption of tobacco products
- Reducing tobacco use initiation
- Increasing tobacco cessation

Results from the Systematic Reviews

Seventeen studies qualified for the review of this intervention.

- For interventions that included at least a provider reminder system and a provider education program:
    - The most common measurement described was the effect of every 1% increase in tobacco product price on the percentage change in consumption (price elasticity of demand).
    - Findings from ten aggregated studies suggested that a 10% increase in product price would result in a 4.1% decrease in consumption.
- Overall, the included studies pointed to a reduction in tobacco use when all factors were taken into account by increasing the unit price of tobacco products.
- The included studies reflected evaluations of the effect of increased tobacco price on tobacco use in the states of California, Oregon, Massachusetts, other western states in addition to national-level evaluations and examples from other countries including Canada, the UK, Austria, Finland, Switzerland and New Zealand.

These findings were based on a systematic review of all available studies, conducted on behalf of the Task Force by a team of specialists in systematic review methods, and in research, practice and policy related to tobacco use and secondhand smoke exposure.

Publications

Hopkins DP, Briss PA, Ricard CJ. Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke [www.thecommunityguide.org/tobacco/tobac-AJPM-evrev.pdf]. *Am J Prev Med* 2001;20(2S):16–66.

Task Force on Community Preventive Services. Recommendations regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke [www.thecommunityguide.org/tobacco/tobac-AJPM-recs.pdf]. *Am J Prev Med* 2001;20(2S):10–5.

Task Force on Community Preventive Services. Tobacco [www.thecommunityguide.org/tobacco/Tobacco.pdf]. In: Zaza S, Briss PA, Harris KW, eds. *The Guide to Community Preventive Services: What Works to Promote Health?* Atlanta (GA): Oxford University Press;2005:3-79 (Out of Print).

Task Force Finding

Intervention Definition

Interventions to increase the unit price for tobacco products include legislation at the state or national level to raise the product excise tax. Although other factors also affect tobacco product pricing, excise tax increases historically have resulted in equivalent or larger increases in tobacco product price.

Task Force Finding (February 1999)*

Interventions to increase the price of tobacco products are strongly recommends by the Task Force based on strong evidence of effectiveness in reducing tobacco use prevalence in study populations of adolescents and young adults. A detailed description of the evidence is provided in Hopkins et al. In addition, increasing the price for tobacco products is also effective in (1) reducing population consumption of tobacco products, and (2) increasing tobacco use cessation.

*From the following publication:

Task Force on Community Preventive Services. Recommendations regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke [www.thecommunityguide.org/tobacco/tobac-AJPM-recs.pdf]. *Am J Prev Med* 2001;20(2S):10–5.

Supporting Materials

Evidence Gaps

What are Evidence Gaps?

Each Community Preventive Services Task Force (Task Force) review identifies critical evidence gaps—areas where information is lacking. Evidence gaps can exist whether or not a recommendation is made. In cases when the Task Force finds insufficient evidence to determine whether an intervention strategy works, evidence gaps encourage researchers and program evaluators to conduct more effectiveness studies. When the Task Force recommends an intervention, evidence gaps highlight missing information that would help users determine if the intervention could meet their particular needs. For example, evidence may be needed to determine where the intervention will work, with which populations, how much it will cost to implement, whether it will provide adequate return on investment, or how users should structure or deliver the intervention to ensure effectiveness. Finally, evidence may be missing for outcomes different from those on which the Task Force recommendation is based.

Identified Evidence Gaps

Effectiveness

The effectiveness of increasing the unit price for tobacco products and mass media campaigns (when implemented with other interventions) is established. However, research issues regarding the effectiveness of these interventions remain.

- What intervention components contribute most to effectiveness of multicomponent interventions? What components contribute the least?
- What are the minimum and optimal requirements for the duration and intensity of mass media campaigns?
- What are the most effective combinations of messages for mass media campaigns?
- Do tobacco users respond differently to changes in product price that result from excise tax increases than to industry-induced increases?
- How long do the effects of a single excise tax increase last? Because the effectiveness of mass media cessation series and smoking cessation contests has not been established, basic research questions remain.

Because the effectiveness of mass media cessation series and smoking cessation contests has not been established, basic research questions remain.

- Are these interventions effective in increasing tobacco use cessation in the population?
- Do recruited tobacco users exposed to these interventions quit at a greater rate than recruited tobacco users not exposed to these interventions?
- What are the rates of participation in these interventions?

Applicability

The effectiveness of increasing the unit price and of mass media campaigns in reducing tobacco use in the population is established. However, identifying differences in the effectiveness of each intervention for specific subgroups of the population remains important.

- Do significant differences exist regarding the effectiveness of these interventions, based on the level of scale (i.e., national, state, local) at which they are delivered?
- What are the effects of mass media campaigns among populations that differ by race and ethnicity?

Other Positive or Negative Effects

Several potential negative effects of tobacco product price increases were reviewed in this evaluation. Although further research on the potential negative effects is warranted, evaluating the effect of potential positive effects of reductions in tobacco use should also be investigated to provide a complete picture of the effects of increases in state and federal excise taxes.

- What are the effects of these interventions on reducing smoking-related fires? What are the effects on secondhand smoke exposure?
- What proportion of smokers substitute tobacco products, modify their smoking habits, or both in response to an increase in the price of tobacco products? How much of the potential health benefit of a price increase is reduced by these behaviors? How can these potential problems be reduced?
- Do mass media campaigns that focus on tobacco have additional effects on other drug use?

Economic Evaluations

The available economic information on mass media campaigns was limited. Considerable research is, therefore, warranted regarding the following questions:

- What are the costs of mass media campaigns, especially campaigns that achieve an effective intensity over an extended duration?
- How do the costs per additional quitter compare with other interventions intended to reduce tobacco use?
- What is the cost-benefit, cost-utility, or cost per illness averted of these interventions?

Barriers

Implementation of these interventions requires political action and support. Research issues generated in this review include the following:

- What components of successful legislative and referendum campaigns are most effective? What components are least effective?
- What information is most important in gaining public support for these interventions? In gaining legislative support?

What are the most effective ways to maintain adequate funding levels for mass media campaigns?

Included Studies

The 17 qualifying studies include consolidated evaluations of the effect of tobacco product price on tobacco use in the states of:

California

Flewelling RL, Kenney E, Elder JP, Pierce J, Johnson M, Bal DG. First-year impact of the 1989 California cigarette tax increase on cigarette consumption [see comments]. *American Journal of Public Health* 1992;82:867-9.

Glantz S. Changes in cigarette consumption, prices, and tobacco industry revenues associated with California's proposition 99. *Tobacco Control* 1993;2:311-4.

Hu TW, Bai J, Keeler TE, Barnett PG, Sung HY. The impact of California Proposition 99, a major anti-smoking law, on cigarette consumption. *Journal of Public Health Policy* 1994;15:26-36.

Hu TW, Sung HY, Keeler TE. Reducing cigarette consumption in California: tobacco taxes vs an anti-smoking media campaign. *American Journal of Public Health* 1995;85:1218-22.

Hu TW, Ren QF, Keeler TE, Bartlett J. The demand for cigarettes in California and behavioural risk factors. *Health Economics* 1995;4:7-14.

Keeler TE, Hu T, Barnett PG, Manning WG. Taxation, regulation, and addiction: a demand function for cigarettes based on time-series evidence. *Journal of Health Economics* 1993;12:1-18.

Pierce JP, Gilpin E, Emery SL, White MM, Rosbrook B, Berry C. Has the California Tobacco Control Program Reduced Smoking? *JAMA* 1998;280:893-9.

Massachusetts

Centers for Disease Control and Prevention. Cigarette smoking before and after an excise tax increase and an antismoking campaign--Massachusetts, 1990-1996. *MMWR - Morbidity & Mortality Weekly Report* 1996;45:966-70.

Oregon

Centers for Disease Control and Prevention. Decline in cigarette consumption following implementation of a comprehensive tobacco prevention and education program--Oregon, 1996-1998. *MMWR - Morbidity & Mortality Weekly Report* 1999;48:140-3.

11 western states

Sung H, Hu T, Keeler TE. Cigarette taxation and demand: An empirical model. *Contemporary Economic Policy* 1994;12:91-100.

National evaluations in the 1990s

Centers for Disease Control and Prevention. Response to increases in cigarette prices by race/ethnicity, income, and age groups-United States, 1976-1993. *MMWR - Morbidity & Mortality Weekly Report* 1998;47:605-9.

Meier KJ, Licari MJ. The effect of cigarette taxes on cigarette consumption, 1955 through 1994. *American Journal of Public Health* 1997;87:1126-30.

Evans WN, Ringel JS, Stech D. Tobacco taxes and public policy to discourage smoking. *Tax policy and the economy* 1999;13:1-56.

National evaluations in the 1980s

Ohsfeldt RL, Boyle RG, Capilouto E. Effects of tobacco excise taxes on the use of smokeless tobacco products in the USA. *Health Education* 1997;6:525-31.

Wasserman J, Manning WG, Newhouse JP, Winkler JD. The effects of excise taxes and regulations on cigarette smoking. *Journal of Health Economics* 1991;10:43-64.

Ohsfeldt RL, Boyle RG. Tobacco excise taxes and rates of smokeless tobacco use in the US: an exploratory ecological analysis. *Tobacco Control* 1994;3:316-23.

Baltagi BH, Goel RK. Quasi-experimental price elasticities of cigarette demand and the bootlegging effect. *American Agricultural Economics Association* 1987;69:750-4.

Barnett PG, Keeler TE, Hu T. Oligopoly structure and the incidence of cigarette excise taxes. *Journal of Public Economics* 1995;57:457-70.

Becker GS, Grossman M, Murphy KM. An empirical analysis of cigarette addiction. *American Economic Review* 1994;84:396-418.

Chaloupka F, Saffer H. Clean indoor air laws and the demand for cigarettes. *Contemporary Policy Issues* 1992;10:72-83.

Evans WN, Farrelly MC. The compensating behavior of smokers: Taxes, tar, and nicotine. *RAND Journal of Economics* 1998;29:0-19.

Jackson JD, Saba RP. Some limits on taxing sin: Cigarette taxation and health care finance. *Southern Economic Journal* 1997;761-75.

Moore MJ. Death and tobacco taxes. *RAND Journal of Economics* 1996;27:415-28.

Peterson DE, Zeger SL, Remington PL, Anderson HA. The effect of state cigarette tax increases on cigarette sales, 1955 to 1988. *American Journal of Public Health* 1992;82:94-6.

Saba RP, Beard TR, Ekelund RB, Ressler RW. The demand for cigarette smuggling. *Economic Inquiry* 1995;23:189-202.

Seldon BJ, Doroodian K. A simultaneous model of cigarette advertising: Effects on demand and industry response to public policy. *Review of Economics and Statistics* 1989;71:673-7.

Seldon BJ, Boyd R. The stability of cigarette demand. *Applied Economics* 1991;23:319-26.

Tegene A. Kalman filter and the demand for cigarettes. *Applied Economics* 1991;23:1175-82.

Thursby JG, Thursby MC. Interstate cigarette bootlegging: Extent, revenue losses, and effects of federal intervention. *National Bureau of Economic Research* 1996;2-29.

Tremblay CH, Tremblay VJ. The impact of cigarette advertising on consumer surplus, profit, and social welfare. *Contemporary Economic Policy* 1995;13:113-24.

Goel RK, Morey MJ. The interdependence of cigarette and liquor demand. *South Econ J* 1998;October:451-9.

National evaluations conducted in the 1970s

Baltagi BH, Levin D. Estimating dynamic demand for cigarettes using panel data: the effects of bootlegging, taxation and advertising reconsidered. *Review of Economics and Statistics* 1986;68:148-55.

Bishop JA, Yoo JH. Health scare, excise taxes and advertising ban in the cigarette demand and supply. *Southern Economic Journal* 1985;52:402-11.

Chaloupka F. Clean indoor air laws, addiction, and cigarette smoking. *Applied Economics* 1992.

Chaloupka FJ. Rational addictive behavior and cigarette smoking. *Journal of Political Economy* 1991;99:722-42.

Douglas S, Hariharan G. The hazard of starting smoking: estimates from a split population duration model. *Journal of Health Economics* 1994;13:213-30.

Fujii ET. The demand for cigarettes: further empirical evidence and its implications for public policy. *Applied Economics* 1980;12:479-89.

Lewit EM, Coate D. The potential for using excise taxes to reduce smoking. *Journal of Health Economics* 1982;1:121-45.

Schneider L, Klein B, Murphy KM. Governmental regulation of cigarette health information. *Journal of Law and Economics* 1981;24:575-612.

Young T. The demand for cigarettes: alternative specifications of Fujii's model. *Applied Economics* 1983;15:203-11.

Canada

Galbraith JW, Kaiserman M. Taxation, smuggling and demand for cigarettes in Canada: Evidence from time-series data. *Journal of Health Economics* 1997;16:287-301.

Hamilton VH, Levinton C, St-Pierre Y, Grimard F. The effect of tobacco tax cuts on cigarette smoking in Canada [see comments]. *Canadian Medical Association Journal* 1997;156:187-91.

Mummery WK, Hagen LC. Tobacco pricing, taxation, consumption and revenue: Alberta 1985-1995. *Canadian Journal of Public Health Revue Canadienne de Sante Publique* 1996;87:314-6.

United Kingdom

Jones A. UK demand for cigarettes 1954-1986, a double-hurdle approach. *Journal of Health Economics* 1989;133-41.

Townsend J, Roderick P, Cooper J. Cigarette smoking by socioeconomic group, sex, and age: effects of price, income, and health publicity [see comments]. *BMJ* 1994;309:923-7.,

Townsend JL. Cigarette tax, economic welfare, and social class patterns of smoking. *Applied Economics* 1987;19:355-65.

Austria

Worgotter GF, Kunze M. Cigarette prices and cigarette consumption in Austria, 1955-1983. *New York State Journal of Medicine* 1986;86:478-9.

Finland

Pekurinen M. The demand for tobacco products in Finland. *British Journal of Addiction* 1989;84:1183-92.

Switzerland

(Two reports count as a stand-alone study)

Leu R. The effects of cigarette price and anti-smoking publicity on cigarette consumption in Switzerland. *Revue d Epidemiologie et de Sante Publique* 1979;27:359-62.

Leu R. Anti-smoking publicity, taxation, and the demand for cigarettes. *Journal of Health Economics* 1984;3:101-16.

New Zealand

Laugesen M, Meads C. Tobacco advertising restrictions, price, income and tobacco consumption in OECD countries, 1960-1986 [see comments]. *British Journal of Addiction* 1991;86:1343-54.

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