



Limiting youth access to tobacco: Comparing the long-term health impacts of increasing cigarette excise taxes and raising the legal smoking age to 21 in the United States

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Abstract

Although many states in the US have raised cigarette excise taxes in recent years, the size of these increases have been fairly modest (resulting in a 15% increase in the per pack purchase price), and their impact on adult smoking prevalence is likely insufficient to meet Healthy People 2010 objectives. This paper presents the results of a 75-year dynamic simulation model comparing the long-term health benefits to society of various levels of tax increase to a viable alternative: limiting youth access to cigarettes by raising the legal purchase age to 21. If youth smoking initiation is delayed as assumed in the model, increasing the smoking age would have a minimal immediate effect on adult smoking prevalence and population health, but would affect a large drop in youth smoking prevalence from 22% to under 9% for the 15–17-year-old age group in 7 years (by 2010)—better than the result of raising taxes to increase the purchase price of cigarettes by 100%. Reducing youth initiation by enforcing a higher smoking age would reduce adult smoking prevalence in the long-term (75 years in the future) to 13.6% (comparable to a 40% tax-induced price increase), and would produce a cumulative gain of 109 million QALYs (comparable to a 20% price increase). If the political climate continues to favor only moderate cigarette excise tax increases, raising the smoking age should be considered to reduce the health burden of smoking on society. The health benefits of large tax increases, however, would be greater and would accrue faster than raising the minimum legal purchase age for cigarettes.

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1. Introduction

Although the United States has seen considerable declines in tobacco use in recent years, adult smoking prevalence at the end of this decade is likely to remain significantly above the target established with Healthy

People 2010 [1,2]. To meet this objective target, adult prevalence (which has fallen from 25% in 1995 to 23% in 2001 [3]) must drop to 12% [4]. Considering the effects of tobacco use on mortality, productivity, birth outcomes and quality of life, delayed attainment of smoking rate targets carries significant public health consequences.

Among the best-supported interventions to reduce smoking in the population are increased cigarette excise taxes [5–9]. Popular because they are believed to simultaneously discourage smoking initiation and encourage cessation while increasing state revenues [5,9], new excise tax increases have been passed in 35 states and the District of Columbia since the beginning of 2002. Because the smoking behavior of teenagers, who are the most vulnerable to initiate smoking, is particularly sensitive to price increases, the incremental annual benefit of raising taxes grows with every year for decades [9,10].

In spite of strong evidence for the effectiveness of cigarette taxes to reduce smoking, there may be limits to how high a tax rate will be politically viable. Recent tax increases, although frequent, have been modest in most states, resulting in an average per pack price increase of only about 15%, and in several cases are only temporary [11]. Resistance from tobacco companies and smokers [5] coupled with concerns about the possible emergence of black markets [12] and an unfair burden on poor smokers who may lack the resources to quit [13] may discourage lawmakers from setting tax rates high enough to derive maximum benefit to the population.

Keeping in mind the political costs of additional tax increases, policymakers may want to consider other interventions to improve the population's progress toward healthy people smoking prevalence goals. Already, many states have implemented programs including education and advertising campaigns, clean indoor air laws and telephone support hotlines, but a weakness in current efforts to reduce smoking is the relative ease of youth access to tobacco, which persists even with stricter enforcement of the current legal smoking age [14].

Teenagers obtain cigarettes from two primary types of sources: commercial sources (direct retail purchase), and social sources (buying or being given cigarettes from friends, acquaintances and relatives). With more rigorous enforcement of the minimum legal purchase

age for tobacco of 18 years, the proportion of underage smokers who usually buy their own cigarettes in stores has been cut in half (from 38.7% to 18.8%) from 1995 to 2003. This reduction in reliance on commercial sources of cigarettes, however, has been offset in part by increased use of social sources over the same time span. The proportion of teen smokers who usually obtain cigarettes by giving someone else money to buy them has nearly doubled (from 16% in 1995 to 30% in 2003) and 9% of underage smokers are usually simply given cigarettes by adults [15].

Gaps in youth access restrictions are problematic because they undermine the potentially large health benefits of reduced youth prevalence. By one estimate, the long-term population health benefits of a given decrease in youth smoking initiation probability are seven times greater than those resulting from comparable improvements in adult cessation probability [16]. Ninety percent of current adult smokers took up the habit before their 18th birthday [17], and more than half of those who initiate smoking in their teens continue to smoke for 16 years or longer [18]. If youth access to tobacco can be restricted, it will provide direct health benefits to those who will not initiate smoking. It will also benefit those for whom initiation will be simply delayed because of the increased probability of cessation associated with a later age of onset [19].

Effectiveness of youth access tobacco programs, however, has been debated in literature. Rigotti et al. [20] reporting on an evaluation of the effectiveness of enforcing laws that ban tobacco sales to minors as a strategy to reduce tobacco use by adolescents conclude, "we found no meaningful difference in smoking behavior between communities that implemented enforcement programs and those that did not." Later, in response to comments by Moskowitz et al. [21] the authors acknowledge [22] "nonetheless, we remain optimistic that vigorous enforcement of the law is possible and can stop the illegal sale of tobacco to children."

In a meta-analysis study, Fichtenberg and Glantz [22] argue that youth access tobacco programs do not affect teen smoking prevalence because as fewer merchants sell tobacco to minors, teens will use social sources to obtain tobacco. In an editorial, based on results from Fichtenberg and Glantz study, Ling et al. [23] conclude that it is time to abandon youth access tobacco programs. This resulted in additional discus-

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