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Clean indoor-air laws and youth access restrictions

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The development of public policy on tobacco is incomplete without the consideration of clean indoor air and youth access policies. Clean indoor-air laws protect non-smokers from the dangers of environmental tobacco smoke and implicitly transfer property rights to ambient air from smokers to non-smokers, but also have economic costs for individuals and businesses. Numerous studies conclude that comprehensive clean indoor-air policies lead to significant reductions in smoking prevalence and average cigarette consumption among continuing smokers. Youth access laws limit the supply of tobacco products to adolescents, who are deemed too young to fully comprehend the risks of consuming tobacco products. The existing empirical evidence on the impact of limits on youth smoking is mixed. For both clean-air laws and youth access restrictions, economic theory justifies government intervention in an inefficient tobacco market. The laws work best when drafted comprehensively without pre-emptive provisions. Clean indoor-air policies can, in some instances, be self-enforcing, while youth access policies depend crucially on aggressive enforcement to ensure compliance. Overall, the global coverage of clean indoor air and youth access policies is minimal. While high-income countries as a group have histories of clean indoor air and, to a lesser extent, youth access laws, low-income and middle-income countries are in the nascent stages of developing such policies.

11.1 Introduction

In addition to measures that raise prices and increase information, governments that seek to reduce demand for tobacco may consider policies for clean indoor air and youth access restrictions. Both policies are justified on economic efficiency grounds (see Chapter 7). Clean indoor-air policies are important because they partly address the external physical costs that are borne by non-smokers exposed to environmental tobacco smoke (ETS). Youth access policies are salient because young people do not know how to assess or accurately appreciate the risks of consuming tobacco products and becoming addicted to nicotine.

Clean-air laws explicitly transfer 'ambient air' property rights from smokers to non-smokers (US Department of Health and Human Services (USDHHS) 1986; California Environmental Protection Agency (California EPA) 1997; National Cancer Institute (NCI 1999). As clean-air laws become more restrictive and comprehensive,

however, they impose additional costs on smokers. For some smokers, these higher costs will result in reduced cigarette consumption or cessation. In contrast, youth access restrictions assume that minors should be protected from the inherent dangers of tobacco, since they do not know how to assess or accurately appreciate the risks of becoming addicted to nicotine (USDHHS 1994). Youth access restrictions aim, in effect, to raise the costs of smoking for adolescents to such high levels that few children would begin to smoke, and so that young smokers would find it difficult to continue.

This chapter is in four parts. First, the effectiveness of clean indoor-air laws and their costs are reviewed. Second, the impact of youth access restrictions and the associated costs of ensuring compliance are described. Third, the relevance of these tobacco-control policies to low-income and middle-income countries is discussed. Finally, conclusions are presented and research priorities are discussed. It is important to note that this chapter draws heavily on studies in North America. Clean-air laws and youth restrictions have been the focus of many of the tobacco-control efforts in North America, and specifically the United States. North American settings tend to have higher levels of general awareness about the risks of tobacco use, more spending on tobacco control programs, and greater administrative capacity than their counterparts in other countries. Consequently, there may be some difficulty in exporting the policy lessons from these countries to low-income and middle-income countries. Nonetheless, the lessons learned in North America could be instructive in drafting tobacco-control policies in low-income and middle-income countries, and in spurring research.

11.2 Clean air policies

11.2.1 Definition

Clean indoor-air laws are inextricably linked to the growing scientific evidence on the health risks faced by non-smokers exposed to second-hand or environmental tobacco smoke (ETS) (USDHHS 1986; California EPA 1997; NCI 1999). Clean indoor-air laws protect the public from ETS by transferring rights to ambient airspace from smokers to non-smokers, and they serve to reduce the social desirability of smoking. These laws typically prohibit smoking in one or more of the following locations: elevators, health-care facilities, public transportation, indoor cultural and recreational facilities, government buildings, public meeting rooms, schools, shopping malls, retail stores, and, in some jurisdictions, restaurants, bars, and private workplaces.

11.2.2 The effectiveness of clean-air laws

The evidence evaluating the effectiveness of smoking restrictions is considerable (see, for example, Warner 1981a, 1981b; Borland *et al.* 1990; Wasserman *et al.* 1991; Chaloupka 1992; Chaloupka and Saffer 1992; Evans *et al.* 1999; Yurekli and Zhang, 2000). On the whole, solid support is found for the hypotheses that restrictions on smoking in public places and private workplaces will reduce both smoking prevalence and average daily cigarette consumption among smokers. Wasserman *et al.* (1991), for

example, in one of the earliest studies, found that overall per capita smoking was reduced by approximately 6% as a result of relatively restrictive clean indoor air policies.

Chaloupka and Saffer (1992) similarly explored the effect of clean indoor-air laws on the demand for cigarettes over time. The authors examined whether laws that prohibited cigarette smoking in a number of public places and restaurants, and laws that additionally regulated smoking in private work places, had different effects on demand. Estimating single-equation and simultaneous-equation econometric models, they concluded that the enactment of clean-air laws is a function of cigarette demand, implying that localities with low levels of cigarette sales are more likely to have adopted relatively comprehensive clean indoor-air laws (in particular, those that restrict smoking in private workplaces). This result is consistent with the conclusions of Warner (1981a, 1981b), who reported that regions where smoking is less prevalent are more likely to pass clean-air laws. Chaloupka and Saffer concluded that laws restricting smoking in public places and restaurants had a negative and significant impact on cigarette demand but, after accounting for the reverse causality, they concluded that laws restricting smoking in private workplaces had no additional impact. The authors noted that the weak effect of restricting smoking in private workplaces did not imply that smoking would not be reduced if such laws were more widespread. Rather, the results suggested that only US states with low levels of smoking due to strong anti-smoking sentiment had passed private workplace clean-air laws during the period covered by their data.

Using data from a large national US survey, Chaloupka (1992) explored the impact of clean-air laws on individuals' cigarette smoking in the context of an economic model of addiction. His analyses indicated that clean-air laws produced a statistically significant reduction in the demand for cigarettes. However, it did not appear that more restrictive laws had an increasingly large impact on cigarette consumption. It should be noted, however, that the apparent lack of a marginal effect of more extensive laws was likely due to the very small number of individuals (about 2.4% of the sample) living in states with very extensive clean indoor-air laws during the time period covered by his data.

More recent research by Yurekli and Zhang (2000), using more recent annual data for US states, reached the opposite conclusion. They created an index for clean indoor-air laws that assumes that the laws have a gradually growing impact on smoking over time. The index takes into account whether or not there are laws restricting smoking in the places where people spend most of their time. It also takes account of the level of smoking restrictions, such as whether there is a complete smoking ban or whether the restrictions allow for smoking in specific areas. They concluded that clean indoor-air laws significantly reduced per capita cigarette consumption, with greater reductions resulting from more comprehensive restrictions. Using their estimates, the authors predicted that consumption decreased by 4.8 packs per person per year in states that had adopted clean indoor-air laws.

In a critical review of evaluations of workplace health-promotion programs, published between 1968 and 1994, Eriksen and Gottlieb (1998) concluded that workplace smoking restrictions reduced smoking in these locations and, consequently, exposure to ETS. However, they found that the restrictions did not reduce smoking prevalence

among workers. This is consistent with the findings of Borland *et al.* (1990) in Australia. They concluded that a smoking ban across the entire Australian Civil Service reduced cigarette consumption among smokers by 5.2 cigarettes per day but did not significantly affect smoking prevalence.

In contrast, Glasgow *et al.* (1997) used data from the Community Intervention Trial for Smoking Cessation (COMMIT) to examine the relationship between workplace smoking restrictions and changes in smoking behavior in a cohort of smokers. Their results revealed that employees who worked in a smoke-free workplace in 1988 were over 25% more likely to make a serious quit-attempt by 1993, and over 25% more likely to quit smoking, than those who worked where smoking was permitted. Among continuing smokers, those in smoke-free workplaces consumed an average of 2.75 fewer cigarettes per day than those who worked in places with a non-restrictive smoking policy. Based on these results, the authors estimated that if all workplaces in the United States were smoke-free, 178 000 smokers would quit.

In the most recent analysis of the impact of workplace smoking bans, Evans *et al.* (1999) developed a sophisticated simultaneous-equations econometric model that allowed for worker self-selection (i.e. the model allowed smokers and non-smokers to choose the type of clean-air environment they worked in). Estimates from their models indicated that workplace smoking bans reduced smoking prevalence by 4–6% and also reduced average daily cigarette consumption among smokers by 10%. Furthermore, they found that workplace smoking bans had the largest impact on workers who worked longer hours, and the smallest impact on part-time workers.

In addition, Evans and his colleagues examined the possibility that workplace smoking bans might impose economic costs on firms, if talented smokers (both current workers and new job applicants) strongly preferred employers with weak workplace smoking policies. If their empirical results were driven purely by worker self-selection or by the movement of smokers away from firms with smoking bans, then the effect of smoking bans would have been present only for new or recently hired workers. Their estimates, however, showed that smoking bans had the smallest effect on workers with the shortest length of service, and no systematic difference in service length was noted between workers from firms with smoking bans and firms without bans. Thus, they concluded that smoking bans did not result in the self-selection of workers at any significant level.

Finally, in addition to reducing overall smoking, clean indoor-air policies alter the smoking behavior of adolescents and young adults. Chaloupka and Wechsler (1997), for example, found that relatively strong restrictions, at state or local level, on smoking in public places resulted in reduced smoking prevalence in college students. Additionally, they found that some restrictions on public smoking led to further reductions in smoking by lowering average cigarette consumption among smokers. Chaloupka and Grossman (1996) found similar effects of strong restrictions on US adolescents.

11.2.3 Costs of clean-air laws

The costs of clean-air laws fall on smokers, firms, and society at large. The largest cost, and the hardest to quantify, is the extra cost imposed on smokers from having fewer opportunities to smoke and having to go elsewhere to smoke. These costs include the

discomfort experienced from standing outside to smoke in the cold or heat, or of congregating in a room full of smokers to smoke, possibly exposing smokers to more smoke than they care to inhale. These extra costs to smokers are offset, however, by increased access to smoke-free places and reduced costs for non-smokers from ETS, nuisance, dry cleaning, and so on.

As arguments to counter the enactment of smoking restrictions, the tobacco and restaurant industries often present the possibility that substantial economic losses arise from these restrictions. For example, the National Smokers' Alliance in the United States, an organization funded by Philip Morris and other tobacco companies, claimed that restaurants and bars suffered a 15% loss of business from the enactment of the California law banning smoking in their premises in 1998. Furthermore, the American Beverage Institute reported that 60% of Californian bartenders surveyed suggested that they lost business and tips, and that 30% said there were layoffs or shorter work-weeks for bar employees following the ban. These claims, however, have not been independently verified.

In contrast, several studies that use data from the receipts of taxable meals as a measure of business (Glantz and Smith 1994, 1997; Bartosch and Pope 1999; Hyland and Cummings 1999a, 1999b) found that there were no adverse economic effects of smoking restrictions. Similarly, other studies that considered effects on employment in the restaurant industry and the number of surviving operations showed that employment and the number of businesses increased after the implementation of smoking restrictions (Hyland and Cummings 1999a, 1999b).

More recently, concerns have been voiced by opponents of clean-air laws about their potential negative impacts on tourism. Empirical studies, however, find that clean-air laws have not harmed tourism revenues. Hyland *et al.* (1999), for example, analyzed taxable sales receipts in New York before and after the passage of New York City's smoke-free air law, and found that restaurant business grew after the law went into effect. In a broader study, Glantz and Charlesworth (1999) analyzed hotel revenues and tourism rates in areas that had passed laws requiring 100% smoke-free restaurants and compared these with figures from the United States overall. The authors found that international tourism was either unaffected or increased following the implementation of smoke-free laws. Specifically, a smoke-free restaurant law was associated with a statistically significant increase in hotel revenues in four localities and no significant change in four others.

In theory, a workplace smoking ban could reduce health and fire insurance premiums, reduce worker absenteeism, increase productivity, and reduce property damage and maintenance costs (Rice *et al.* 1986). The Office of Technology Assessment estimated that US smokers cost their employers between \$2000 and \$5000 annually, in increased healthcare and fire insurance premiums, absenteeism, lost productivity, and property damage (Warner 1994). Dow Chemical Company revealed that one of its divisions was losing about \$600 000 annually from the absenteeism of ill smokers (Sculco 1992). Non-smokers work longer hours per day compared to their smoking peers because smokers take smoking breaks. In an effort to level the playing field, Thurrock council in Essex, England announced that smokers would be asked to sign a contract extending their working hours from 37 to 39 hours a week to make up for their cigarette breaks. This difference is based on the assumption that smokers take two

15-minute breaks per day to leave the office and light up. This policy was passed ostensibly to safeguard the health and safety of all employees and to minimize legal liability (resulting from damages claims for injuries caused by passive smoking). Despite these examples, it is important to note that definitive studies on the net savings or costs to employers from smoking restrictions have not yet been done.

Clean-air laws are among the most controversial topics in public policy at all levels of government. On the one hand, smokers have individual liberties and legal rights to consume a lethal good without undue government interference. On the other hand, non-smokers have implicit rights to clean air and full information. Extending protective rights to one group compromises the freedom and satisfaction of the other. A detailed discussion of the political economy issues, including tactics by the tobacco industry to thwart public policy initiatives, is beyond the scope of this chapter (for discussions of these issues see: Jacobson and Wasserman 1997; Jacobson and Wu 2000).

11.3 Youth access policies

11.3.1 Definition

Youth access laws are designed to limit the availability of tobacco from commercial sources to minors. Conceptually, this type of supply-reduction policy can work if all suppliers are effectively regulated. Jurisdictions attempt to limit the sale of cigarettes to minors by prohibiting vendors from selling to under-age adolescents, establishing minimum age-at-sale laws, banning self-service displays and limiting vending machines to locations restricted to adults, banning the sale of loose cigarettes, and outlawing the distribution of free tobacco samples to minors. Additionally, some jurisdictions require retail vendors to be licensed to sell tobacco products and some include revocation of the license for retailers who repeatedly violate the law.

11.3.2 The effectiveness of youth access restrictions

The existing empirical literature provides mixed evidence on the effectiveness of youth access laws in reducing youth smoking. Wasserman *et al.* (1991) explored the impact of state laws that restricted the sale or distribution of cigarettes to minors. They found that these laws reduced a teenager's probability of being a smoker but did not affect average cigarette consumption by young smokers. More recently, Chaloupka and Grossman (1996) examined the impact of several policies, implemented by US state and local authorities, that limited youth access to tobacco on youth smoking. They found little impact of these policies, including minimum age-at-sale laws, the posting of 'minimum-age' signs where tobacco products are sold, limits on the distribution of free samples to adolescents, restrictions on vending machine sales, and retailer licensing provisions on youth smoking. They attributed these findings to the relatively weak enforcement of these laws and retailers' poor compliance with them.

The issue of retailers' compliance with limits on cigarette sales to youth has received much attention (Jason *et al.* 1991,1996; Lynch and Bonnie 1994; USDHHS 1994; Rigotti *et al.* 1997; Forster *et al.* 1998). In general, the evidence suggests that retailer compli-

ance is relatively low. The US Centers for Disease Control and Prevention (CDC 1997), for example, summarized the results of a survey conducted as part of the Mexican national program to reduce the prevalence of smoking among children and adolescents. The survey found that 443 of 561 (79%) of retailers sold cigarettes to minors, and that older minors and female minors were more likely to be able to purchase cigarettes than younger minors and male minors. Furthermore, very few retailers asked the minor's age, or asked for proof of age. The presence of a warning sign was not associated with lower sales rates. In a follow-up study, the CDC (1999b) compared illegal sales of cigarettes to minors on both sides of the Mexican border with the United States. Results showed that illegal sales rates to minors were higher in Ciudad Juarez, Mexico (98.1%) than in El Paso, Texas (18.0%) or Las Cruces, New Mexico (6.1%). The CDC noted that differences in the percentage of retailers willing to sell tobacco to minors between Ciudad Juarez and the two US border cities may reflect the efforts in the United States to enforce minors' access laws and to provide comprehensive retailer education programs.

Even in situations where the laws exist and are enforced, if the risk of prosecution is minimal or the fines are substantially less than the benefits from breaking the law, retailers will not comply with the law (Carruthers and McDonald 1995). In general, however, it appears that retailer compliance with laws prohibiting sales to minors can be increased through active enforcement, including fines or the threat of fines for violators (Jason *et al.* 1991; Difranza *et al.* 1992; Cummings *et al.* 1998; Forster and Wolfson 1998), educational interventions (Altman *et al.* 1991; Feighery *et al.* 1991; Gemson *et al.* 1998), and community involvement (Forster *et al.* 1998). The evidence on the impact of higher compliance on youth smoking, however, is more mixed.

Jason *et al.* (1991), for example, found that vendors' compliance in Woodridge, Illinois, was substantially improved by various measures, including: informing vendors of the law; conducting regular compliance checks with stiff fines and license suspensions for violations; fining youth smokers; enlisting strong community support; and attracting the attention of the news media. Using 12- and 13-year-olds for compliance checks, they found a 93% reduction in illegal over-the-counter sales 18 months after their intervention. In a follow-up study (Jason *et al.* 1996), they found that compliance was demonstrated 80% of the time for sales to adolescents under the age of 17, and 75% of the time to 17-year-olds. In addition, they found that there were significant reductions in youth smoking prevalence as a result of the retailers' increased compliance.

In contrast, in a 2-year controlled study in six Massachusetts communities, Rigotti *et al.* (1997) found that regular compliance checks with an escalating series of warnings and penalties significantly raised vendor compliance but did not affect youth smoking. Using 16-year-old girls for compliance checks, they found that average compliance rates rose from 35% to 82% in three experimental communities in Massachusetts, significantly more than the increase from 28% to 45% observed in three control sites. However, there was no difference in perceived access by youth to commercial sources of tobacco between the control and the intervention communities. Consequently, the researchers found that adolescent smoking was not reduced in the intervention communities.

More recently, however, Forster *et al.* (1998) found that minimum-age laws, active community support for reducing illegal sales to youth, and ongoing enforcement of

these laws, coupled with graduated fines for violators, resulted in a significantly slower rate of increase in youth smoking prevalence in intervention communities compared to control communities. Similarly, a recent longitudinal analysis of adolescents in Massachusetts by Siegel *et al.* (1999) examined the impact of limits on youth access to tobacco on the uptake of smoking by young people. They found little evidence that adolescents in communities with local tobacco sales ordinances perceived that cigarettes were less available than those living in communities with no policies. They did find, however, that adolescents in communities with a local tobacco sales ordinance at baseline were less likely to become regular smokers, suggesting that these policies may be effective in preventing adolescents from starting smoking. Similarly, Chaloupka and Pacula (1998), using nationally representative data on youth smoking in the United States, concluded that comprehensive state-wide efforts to enforce youth access laws that resulted in increased retailer compliance would significantly reduce youth smoking prevalence. In addition, they found that when states pre-empted more restrictive local policies, a higher proportion of adolescents were likely to smoke.

Forster and Wolfson (1998) summarized workable policies to restrict youth access to tobacco. They argued that strong limits on youth access should include the following provisions:

- (1) complete restrictions on promotional distribution through bans on free samples and coupons;
- (2) regulation of the means of sale through bans or locks on vending machines, placement of tobacco products behind service counters, and prohibitions on the sale of single/loose cigarettes; and
- (3) regulation of the seller through licensing requirements on tobacco products that include possible revocation and the passage of minimum age-at-sale laws whose violation results in stiff penalties and fines.

As youth access to commercial sources of tobacco grows more limited, non-commercial sources of tobacco—such as other adolescents, parents, older friends, and strangers—will become more important and pose greater intervention challenges (Forster and Wolfson 1998; Forster *et al.* 1998; Wolfson *et al.* 1997). Research shows that older adolescents are more likely than their younger peers to purchase tobacco products from commercial sources and that older adolescents are willing to share tobacco products with their younger peers (Wolfson *et al.* 1997). Eliminating illegal sales to under-age adolescents would, therefore, reduce access from this particular non-commercial source (Forster *et al.* 1997). However, other strategies to address the social availability of tobacco products would also need to be developed to close all avenues for under-age youth to acquire tobacco products.

11.3.3 The costs of youth access restrictions

Youth-restriction policies are relatively inexpensive to legislate, but costly to enforce. For example, based on their experiences assisting city inspectors, Radecki and Zdunich (1993) estimated the cost of quarterly tobacco compliance checks at \$35 per establishment per year. An annual licensing fee for retailers, they noted, could easily cover this cost. The CDC (1999a) recommended that US states should plan on spending

between \$0.43 and \$0.80 per capita for the enforcement of youth access restrictions, retailer licensure provisions, and non-sales policy areas. State costs vary depending upon the number of retail outlets selling tobacco, the proportion of outlets in rural areas, and the proportion of outlets found to be non-compliant and requiring follow-up visits.

11.4 Implications for low-income and middle-income countries

Both within and between regions around the world, there is considerable variation in the prevalence and comprehensiveness of clean indoor-air policies and youth access restrictions, as Table 11.1 shows. The table summarizes the results from a recent World Health Organization survey of tobacco control policies in 134 countries (WHO 1997). The vast majority of countries now have some form of restriction on smoking in public places, while relatively few have laws limiting youth access to tobacco products. High-income countries are more likely than low-income and middle-income countries to have enacted both types of laws. Among high-income countries, most have some provision for smoke-free public places, health establishments, and work-sites; however, fewer have laws creating smoke-free restaurants and cafes. Similarly, relatively fewer high-income countries have laws limiting youth access to tobacco products, with only a few countries, notably Ireland, the United Kingdom, Canada, Australia, and the United States, having any history of enforcing their age-at-sale laws.

Among low-income and middle-income countries, laws requiring smoke-free public places are most prevalent, although the coverage of these laws is limited in restaurants, cafes, worksites, and healthcare establishments. Youth access is minimally covered in the low-income and middle-income countries included in the survey, implying that the ability of minors to purchase tobacco products in most of these countries is unlimited. Table 11.1 is not comprehensive. A Medline search for missing countries and contacts with control programs and researchers in these countries generally found that they did not have any laws.

Several factors can influence the effectiveness of clean-air laws and youth access restrictions in low-income or middle-income countries. These include: the cultural acceptability of tobacco; the degree of enforcement or self-enforcement associated with the laws; the presence or absence of an informal economy; and youth involvement in selling tobacco products.

The evidence from high-income countries suggests that clean-air laws can be self-enforcing. This may not, however, be universally true. For example, the prevalence of smoking in males is about the same in New Delhi as it is in California, and both have a law banning smoking in public places. Whereas the California laws are self-enforced, the law in Delhi is largely ignored. The two key conditions for effective self-enforcement appear to be a sufficient demand for clean-air laws (arising, possibly, from information on the health consequences of smoking and ETS) and the comprehensiveness of the laws. Partial laws are not likely to be self-enforcing.

In contrast, the empirical evidence indicates that youth access policies must be enforced in order to be successful in all countries. This implies that compliance checks must be carried out to ensure that laws are being followed, thus requiring funding to

Table 11.1 Distribution of youth access restrictions and smoke-free air policies, selected countries

	Smoke-free public places	Smoke-free restaurants	Smoke-free cafes	Smoke-free smoking restrictions	Workplace smoking restrictions	Smoke-free health establishments	Ban on sales to minors	Ban on vending machines	Minimum age restriction
High-income-OECD (27)	24	9	9	18	20	13	11	14	
Low/middle income (81)	74	19	11	32	23	30	6	15	
Africa (17)	17	0	0	2	4	4	1	1	
Asia (15)	12	5	3	8	3	3	2	4	
Europe (19)	15	7	6	9	4	11	1	5	
Latin America & Caribbean (19)	19	3	2	10	8	8	0	3	
Middle East (6)	6	1	0	2	1	1	0	0	
Pacific Islands (5)	5	3	0	1	3	3	2	2	

High Income-OECD: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Turkey, United Kingdom, United States.

Low/middle income:

Africa: Algeria, Benin, Botswana, Cote d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Namibia, Nigeria, Senegal, South Africa, Tunisia, Uganda, Zambia, Zimbabwe.
 Asia: Bangladesh, Cambodia, China, Hong Kong, India, Japan, Republic of Korea, Lao PDR, Mongolia, Myanmar (Burma), Nepal, Pakistan, Sri Lanka, Thailand, Vietnam.
 Europe: Albania, Armenia, Belarus, Bulgaria, Croatia, Estonia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.
 Latin America & Caribbean: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Panama, Paraguay, Peru, Puerto Rico, Trinidad & Tobago, Uruguay, Venezuela.
 Middle East: Iran, Israel, Jordan, Kuwait, Oman, Saudi Arabia.
 Pacific Islands: Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore.

Source: based on WHO 1997, and World Bank data 1998; total number of countries in parentheses.

ensure the success of youth access policies. In low-income countries, the necessary systems, infrastructure, and resources for implementing such restrictions and enforcing them are likely to be less widely available than in the high-income countries. It may be possible to finance compliance checks with licensing fees received from vendors and retailers, although the distortionary effects of such financing are not well studied. Finally, like clean-air laws, comprehensive legislation to restrict youth access is more likely to succeed than would be partial restrictions on access.

11.5 Conclusions and research priorities

Low-income and middle-income countries should include clean-air and youth access laws as integral components of a comprehensive strategy of tobacco control. Experience from the high-income countries suggests that comprehensive clean-air policies, which restrict smoking in public and private places, do protect the health of non-smokers and also lead to reductions in smoking prevalence and cigarette consumption among continuing smokers. Clean-air laws impose some costs on continuing smokers, but do not appear to cause economic harm to tourism, restaurants, bars, and employers in smoke-free workplaces.

Like clean-air policies, youth access laws are most effective when administered in a comprehensive manner. This means banning vending-machine sales, banning sales of single cigarettes, mandating minimum age-at-sale laws, limiting self-service, requiring vendor licensing, and imposing graduated fines on retailers who violate the law. However, the key condition needed to ensure the effectiveness of youth restrictions in reducing youth smoking appears to be strict enforcement. These enforcement costs can be substantial. In lower-income countries, the necessary systems, infrastructure, and resources for implementing such restrictions and enforcing them are likely to be less widely available than in the high-income countries. Despite the low effectiveness and high costs of intervening, however, youth access restrictions are valuable in any event, partly to ensure broad interventions, to build political support, and to refute arguments from the tobacco industry and others who argue that limits on youth access should be adopted before stronger policies, such as tax increases and limits on advertising.

Research priorities for the development of laws for clean air and youth restrictions on access to tobacco begin with the ongoing evaluation of the success of existing policies. Specific research topics include:

- (1) an assessment of the current tobacco-control environment in specific countries as this relates to clean indoor air and youth access regulation and laws; the number and type of laws, and pre-emption provisions, if any;
- (2) an assessment of the level of sales to adolescents in specific countries, of the degree of active enforcement, and consumers' and vendors' compliance with tobacco control laws;
- (3) a continuing assessment of the effectiveness of clean indoor air and youth access legislation in reducing the uptake of and prevalence of smoking, and in reducing average tobacco consumed by continuing users; and

- (4) an evaluation of the economic effects of clean-air laws on business revenue and survival and industry employment.

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