

# TOBACCO CONTROL

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## Editorials

### Improving the measurement and use of tobacco control "inputs"

In recent years, countries such as the United States, Canada, and Australia have witnessed a slowing of the decline (or a levelling off or increase) in adult or teenage smoking prevalence.<sup>1-6</sup> Searching for convincing explanations as to why this has been occurring, one is struck by the paucity of monitoring data on tobacco control activity or "inputs". During the past decade, there has been a surge of interest in policy research, mostly examining the behavioural or economic consequences of such policies.<sup>7,8</sup> Despite this, it is notable that there have been few published accounts of the measurement of the comprehensiveness and strength of policies.<sup>9-12</sup>

The article by Alciati *et al*<sup>13</sup> in this issue of *Tobacco Control* is an exception. Alciati and colleagues report on the results of an attempt to rate each of the 50 states and the District of Columbia on the extensiveness of legislative provisions to reduce youth access to tobacco. By combining the components of youth access laws—six relating to specific tobacco control provisions and three relating to enforcement provisions—into a single rating scale, the paper shows that state scores fall far short of what might be considered to be optimum legislation and that there has been minimal progress from 1993 to 1996. For some, these results may be unsurprising, but the careful method used to analyse and rate each of the states in deriving an index is worth further consideration. Several previous studies have compared states with respect to minor's access to tobacco,<sup>12,14,15</sup> but we are aware of only one other attempt<sup>16</sup> to rate the stringency and comprehensiveness of each element of the provisions, or to arrive at a "summary score" to give an overall rating of the legislation. What is the potential value of such summary scores? And what are the pitfalls?

First, by constructing an index, one has a maximum value, indicating that all ideal aspects of a law are in place. Thus, an index can generate a goal to aspire to, and the method used by Alciati *et al* points to specific aspects of the law that require revision. Highest ratings in 1996 were achieved for provisions relating to minimum age. Other provisions, except perhaps those relating to statewide enforcement, scored well below the halfway point on the item rating scales. It is quite sobering to see just how far short of ideal even the most advanced states are in 1996 and it is evident that there is still a long way to go with all other elements of youth access laws.

Second, summary scores facilitate comparison among states. This can be a good thing. It is often the case in tobacco control that, as each state raises the bar, others "leapfrog" to provide for more than would have been the

case in the absence of the former states' progress. There are numerous examples of this in Australia. In the years leading up to August 1997, when states were able to impose licence fees on tobacco retailers (levied as a percentage of the wholesale value of tobacco and acting to increase the price of cigarettes), the variation in these fees resulted in different prices for cigarettes among states and territories. With pressure from tobacco control advocates, states leapfrogged each other to move from an average licence fee of 23% in 1986 (range 0-35%) to 97% in 1995 (range 75-100%).<sup>17</sup> There are similar examples of incremental progress across Australian states in the establishment of health promotion foundations and in the area of point-of-sale advertising.<sup>17</sup> By systematically upping the ante, legislators in progressive states can move the goalposts as to what might be feasible for other states to aspire to. Indeed, although undertaken for media advocacy purposes rather than scientific study, the Australian Medical Association and the Australian Council on Smoking and Health regularly publish a tobacco control scoreboard for each of the eight states and territories of Australia.<sup>18</sup> This scores each jurisdiction out of a total of 100 for their efforts in relation to tobacco advertising, youth access, health warnings, taxation, public education, school education, smoke-free workplaces and public places, health promotion foundations, and government commitment. The scoreboard is released on each World No-Tobacco Day (31 May) and congratulates progressive governments, while awarding a "dirty ashtray" to the lowest ranking state.<sup>19,20</sup>

Indexes of tobacco control policy inputs might also facilitate comparison among countries. There are some measures that are amenable to application across countries. For example, Scollo<sup>21</sup> proposed the use of *The Economist's* Big Mac index as a simple measure of cigarette affordability (the number of cigarettes that can be purchased for the price of one Big Mac hamburger). In addition, the World Health Organisation has a measure of the minutes of labour required to work at average wages to earn enough for a pack of cigarettes.<sup>22</sup> There have been some efforts to count restrictions on tobacco advertising and promotion for use in empirical analyses of the impact of advertising and promotion on demand across countries,<sup>23,24</sup> although these have not attempted to be as detailed in rating legislative provisions as the index proposed by Alciati *et al*. In the last issue of *Tobacco Control*, Laforge *et al*<sup>25</sup> reported on the further testing of a survey instrument across six countries, originally developed by Velicer *et al*,<sup>26</sup> demonstrating that the questionnaire may be useful for international comparisons of population

receptiveness to tobacco control policies. Tools that permit cross-cultural comparison can be important in testing the replicability of findings and in determining the robustness of associations between variables.

Third, the use of an index permits tracking of change over time. In this case, Alciati *et al* have demonstrated how little progress has been made at a time when one might have expected progress to have been greater. Since the late 1980s, there has been a surge of interest and effort in enforcing and improving tobacco access laws at the state and local level.<sup>27</sup> In addition, the Synar Amendment, whose proposed regulations were first published in 1993 and finally issued by the Substance Abuse and Mental Health Services Agency in February 1996, has been thought to be a catalyst for action in at least some states during this period.<sup>12, 28</sup> One other potential catalyst was the regulation of tobacco sales to young people proposed by the United States Food and Drug Administration (FDA) in August 1995,<sup>29</sup> which was issued in final form in August 1996<sup>30</sup>; these rules have remained in force despite the fact that enforcement of other FDA provisions has been delayed by court challenge. On the other hand, progress has been severely undermined by state preemption clauses,<sup>31</sup> with many state laws quashing stricter local ordinances, which apart from their own value to the communities they serve, often act as a seedbed for new approaches or as a testing-ground for state laws.

Apart from assessing individual tobacco control policy activities, gross measures of tobacco control effort have involved detailing overall per capita expenditure on tobacco control programmes<sup>1, 5</sup> or the ratio of industry to state expenditure.<sup>1</sup> These measures are instructive in monitoring the changing commitment of governments to tobacco control and in providing insight into the promotional and other strategies used by the industry to counter more restrictive policies and mass-reaching information campaigns.

Finally, the use of summary scores or indexes makes it conceptually possible to relate tobacco control “inputs” to “outputs”. In the case of youth access laws, such output measures might be the success of young people in buying cigarettes, perceptions of ease of access by teenagers, and ultimately, tobacco use in young people (including initiation, prevalence, and consumption). Prior research has capitalised on the variation among states in tobacco control policies and programmes in efforts to evaluate the impact of various tobacco control activities on smoking in young people and adults.<sup>8</sup> A major difficulty in this research, however, is the quantification of tobacco control activities. The inclusion of a number of highly correlated indicators of various aspects of policies related to youth access, smoking in public places, and other tobacco control activities makes it difficult to evaluate the impact of these alternative approaches to reducing smoking in young people and adults. In such types of empirical analyses, indexes comparable to the one developed by Alciati *et al* can be invaluable in controlling for and estimating the impact of these activities. An index that adequately controls for the array of policies relating to youth access can help researchers isolate the impact of other factors, such as price, on young people’s smoking. In addition, this type of index can also allow researchers to determine whether or not more comprehensive approaches to youth access would lead to reductions in smoking in the young.

But all of these possibilities will not be able to be realised unless the method of quantifying the tobacco control input is valid and reliable. The National Cancer Institute, with its State Cancer Legislative Database, and the United States Centers for Disease Control and Prevention’s Office on Smoking and Health, with its effort to develop a state

policy surveillance system, are taking major steps towards providing the raw materials necessary for the construction of indexes of tobacco control activities. Other ongoing efforts by the Americans for Nonsmokers’ Rights Foundation and the Robert Wood Johnson Foundation are focused on collecting local policy and other relevant information that can be used to develop similar measures. The indexes that can be constructed from these data, although sacrificing some degree of accuracy and completeness, are likely to be practical measures that can be used for surveillance and evaluation purposes. Much care, however, needs to go into the construction of these indexes to ensure that they are valid and reliable measures of the tobacco control activities they are supposed to reflect.

Measures of the stringency and comprehensiveness of policy inputs also need to encompass measures of actual enforcement. There is a view suggesting that laws that are not enforced, or perceived not to be, have much the same effect as having no law.<sup>32</sup> Although this probably applies to some laws more than others,<sup>28</sup> there is some evidence that poorly enforced youth access laws have little impact on the availability of cigarettes to young people and so would be unlikely to influence consumption.<sup>27, 32</sup> It is likely that enforcement needs to be comprehensive and aggressive, resulting in high levels of retailer compliance, to significantly reduce smoking in the young.<sup>33–35</sup> There are, of course, difficulties in measuring enforcement activities, as Alciati *et al* recognise—and their index attempts to capture this to some extent, by including the provisions for enforcement in the state laws.

Apart from measuring tobacco policy inputs, assessment of the extensiveness and strength of educational inputs, and measurement of tobacco industry activities and other environmental influences, may also be important. Although measures of overall campaign expenditure, or amount allocated to paid media advertising, are useful as surveillance tools,<sup>1</sup> there may be benefit in measuring more detailed components of these mass-reaching media. The evaluation of the Australian National Tobacco Campaign,<sup>36</sup> for example, will include composite indexes of campaign television advertising and indexes of unpaid print media coverage on tobacco, along with measures of other environmental influences on tobacco use such as records of tobacco policy change, event records (a timeline of major events that might influence tobacco control activity or quitting behaviour), and measures of reported and actual price paid for cigarettes (as opposed to recommended retail price).<sup>37</sup> Tabulated over weeks and months, these measures can be related to fluctuations in quitting activity and tobacco use.

Measuring and systematically monitoring what we do in tobacco control can help us to more clearly see from where we have come, can assist us to take additional steps, can allow us to evaluate the impact of what we have been doing, and can furnish data to determine where we may be going in future. The study by Alciati *et al* represents an important step towards achieving these aims.

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- 1 Pierce JP, Gilpin EA, Emery SL, *et al*. Has the Californian Tobacco Control Program reduced smoking? *JAMA* 1998;**280**:893–9.
- 2 Johnston LD, O'Malley PM, Bachman JG. *National survey results on drug use from the Monitoring the Future Study, 1975–1997*. Washington, DC: US Government Printing Office, 1998.
- 3 Ialomiteanu A, Bondy SJ. *The Ontario Alcohol and Other Drug Opinion Survey (OADOS) 1992–1995*. Toronto, Canada: Addiction Research Foundation, Social and Evaluation Research Department, 1996.
- 4 Adlaf E, Ivis R, Smart R. *The Ontario Student Drug Use Survey 1977–1997*. Toronto, Canada: Addiction Research Foundation, 1997.
- 5 Hill DJ, White VM, Scollo MM. Smoking behaviours of Australian adults in 1995: trends and concerns. *Med J Aust* 1998;**168**:209–13.
- 6 Hill D, White V, Segan C. Prevalence of cigarette smoking among Australian secondary school students in 1993. *Aust J Public Health* 1995;**19**:445–9.
- 7 Davis RM. Tobacco policy research comes of age. *Tobacco Control* 1995;**4**:6–9.
- 8 Chaloupka FJ, Warner KE. The economics of smoking. In: Newhouse J, Culyer A, eds. *The handbook of health economics*. New York, North Holland: 1999. In press.
- 9 Emont SL, Choi WS, Novotny TE, *et al*. Clean indoor air legislation, taxation, and smoking behaviour in the United States: an ecological analysis. *Tobacco Control* 1993;**2**:13–17.
- 10 Rigotti NA, Pashos CL. No-smoking laws in the United States: an analysis of state and city actions to limit smoking in public places and workplaces. *JAMA* 1991;**266**:3162–7.
- 11 Glasgow RE, Boles SM, Lichtenstein E, *et al*. Tobacco policy rating form: a tool for evaluating worksite and tribal smoking control policies. *Tobacco Control* 1996;**5**:286–91.
- 12 Downey LA, Gardiner JA. *Reducing youth access to tobacco: a partial inventory of State initiatives*. Chicago, Illinois: University of Illinois at Chicago, 1996.
- 13 Alciati MH, Frosh M, Green SB, *et al*. State laws on youth access to tobacco in the United States: measuring their extensiveness with a new rating system. *Tobacco Control* 1998;**7**:345–352.
- 14 Cummings KM, Pechacek T, Shopland D. The illegal sales of cigarettes to US minors: estimates by State. *Am J Public Health* 1994;**84**:300–2.
- 15 Shelton DM, Alciati MH, Chang MM, *et al*. State laws on tobacco control—United States, 1995 (CDC Surveillance Summaries). *MMWR* 1995 Nov 3;**44**(No SS-6).
- 16 Choi WS, Novotny TE, Thimis AT. Restricting minors' access to tobacco: a review of state legislation, 1991. *Am J Prev Med* 1992;**8**:19–22.
- 17 Winstanley M, Woodward S, Walker N. *Tobacco in Australia: facts and issues*. Victorian Smoking and Health Programme, Australia, 1995.
- 18 Australian Medical Association and Australian Council on Smoking and Health. *Tobacco control scoreboard*. Perth, Western Australia: AMA & ACOSH, 1998.
- 19 Tasmania top State in tobacco controls. *The Canberra Times* 1998 Jun 1:3.
- 20 A gong's a gong, no butts about it. *The Australian* 1998 Jun 1:15.
- 21 Scollo M. The Big Mac index of cigarette affordability. *Tobacco Control* 1996;**5**:69–70.
- 22 World Health Organisation. *Tobacco or health: a global status report*. Geneva: WHO, 1997.
- 23 Laugesen M, Meads C. Tobacco advertising restrictions, price, income and tobacco consumption in OECD countries, 1960–1986. *Br J Addict* 1991;**86**:1343–54.
- 24 Stewart MJ. The effects on tobacco consumption of advertising bans in OECD countries. *Int J Advert* 1993;**12**:155–80.
- 25 Laforge RG, Velicer WF, Levesque DA, *et al*. Measuring support for tobacco control policy in selected areas of six countries. *Tobacco Control* 1998;**7**:241–6.
- 26 Velicer WF, Laforge RG, Levesque DA, *et al*. The development and initial validation of the smoking policy inventory. *Tobacco Control* 1994;**3**:247–55.
- 27 Forster JL, Wolfson M. Youth access to tobacco: policies and politics. *Annu Rev Public Health* 1998;**19**:203–35.
- 28 Jacobson PD, Wasserman J. *Tobacco control laws: implementation and enforcement*. Santa Monica, California: Rand, 1997.
- 29 US Food and Drug Administration. Regulations restricting the sale and distribution of cigarettes and smokeless tobacco products to protect children and adolescents; proposed rule analysis regarding FDA's jurisdiction over nicotine-containing cigarettes and smokeless tobacco products; Notice. *Federal Register* 1995 Aug 11: 41314–787, 21 CFR Part 801, *et al*.
- 30 US Food and Drug Administration. Regulations restricting the sale and distribution of cigarettes and smokeless tobacco to protect children and adolescents; final rule. *Federal Register* 1996 Aug 28: 44396–5318, 21 CFR Part 801, *et al*.
- 31 Siegel M, Carol J, Jordon J, *et al*. Pre-emption in tobacco control. *JAMA* 1997;**278**:858–63.
- 32 Chaloupka FJ, Grossman M. *Price, tobacco control policies and youth smoking*. National Bureau of Economic Research Working Paper, No 5740, 1996.
- 33 Forster JL, Murray DM, Wolfson M, *et al*. The effects of community policies to reduce youth access. *Am J Public Health* 1998;**88**:1193–8.
- 34 Chaloupka FJ, Pacula RL. *Limiting youth access to tobacco: the early impact of the Synar amendment on youth smoking*. Working Paper, Department of Economics, University of Illinois at Chicago, 1998.
- 35 Rigotti NA, DiFranza JR, Chang Y, *et al*. The effect of enforcing tobacco-sales laws on adolescents' access to tobacco and smoking behavior. *New Engl J Med* 1997;**337**:1044–51.
- 36 Hill D, Chapman S, Donovan R. The return of scare tactics. *Tobacco Control* 1998;**7**:5–8.
- 37 Centre for Behavioural Research in Cancer. *Evaluation of the 1997 national tobacco campaign*. Report prepared for the Australian Ministerial Tobacco Advisory Group. Melbourne, Australia: Anti-Cancer Council of Victoria, September, 1998.