

## Explaining recent trends in smoking prevalence

The *SimSmoke* Tobacco Control Policy Simulation Model, as described in the paper by Levy & colleagues (2005), does a useful job of using the extensive empirical evidence on the impact of tobacco control policies on cigarette smoking to explain trends in smoking prevalence in the United States from 1993 to 2002. At the same time, it illustrates clearly the limits of our understanding about the impact of other environmental influences on smoking, as well as the effects of tobacco control policies on smoking in important subpopulations, suggesting several avenues for future research.

To date, most tobacco policy research has focused on the impact of control policies on overall measures of cigarette smoking, typically overall cigarette sales or smoking prevalence. Studies of the effects of cigarette prices, smoke-free air laws and comprehensive tobacco control programs tend to be consistent in their estimates of how these influence smoking. Given that the findings from this extensive and consistent research have been incorporated into the model, it is no surprise that *SimSmoke* does well in explaining the role of changes in major tobacco control policies on overall cigarette smoking. The inclusion in the model of other major macro-level, non-policy influences on smoking behavior would further improve the model's performance. For example, adding a module capturing the impact of tobacco companies' marketing would help to close the gap between the model's predictions and observed behavior. The fact that the model's predicted decline in prevalence for the 1993–97 period is similar to the observed change in prevalence during this period is consistent with the fact that, overall, inflation-adjusted tobacco company marketing expenditures changed little during this period (Federal Trade Commission 2004). In contrast, the less than predicted decline in prevalence from 1997 to 2002 is likely to be explained at least partially by the sharp rise in industry marketing expenditures, mainly on price-related promotions, that helped to offset the impact of higher prices and stronger tobacco control policies on smoking (Keeler *et al.* 2004).

In contrast, *SimSmoke*'s predictions are less consistent with the actual changes in age, gender and racial/ethnic specific prevalence rates over time. This almost certainly results from the very limited research on and, consequently, greater uncertainty about, the impact of major tobacco control policies on cigarette smoking in these important subpopulations. With the exception of the

impact of price changes on youth smoking prevalence, very few studies have examined the differential effects of cigarette prices, smoke-free air laws and comprehensive tobacco control funding on smoking by men and women, teens and young adults and various racial/ethnic groups, and little is known about the differential impact of tobacco company marketing on smoking in these subgroups. Similarly, *SimSmoke*'s treatment of comprehensive program funding does not account for the significant differences in the types of activities supported by these programs and for differences in their target populations. In addition, there are several under-researched issues that would improve *SimSmoke*'s ability to explain the past and predict the future, both for the overall population as well as important subgroups. These range from research on the impact of large price increases on smoking behavior to research that examines the synergistic effects of different combinations of tobacco control policies. As new studies on these issues emerge, incorporating their findings in *SimSmoke* will improve the utility of the model in explaining changes in smoking prevalence over time and for informing the development of future tobacco control policy.

The bottom line is clear—while much is known about the impact of tobacco control policies on overall cigarette smoking, much remains to be learned about the role of other environmental influences as well as the differential impact of these factors on smoking in key population subgroups. The *SimSmoke* model provides a useful tool for synthesizing the findings from past, ongoing and future research, both in explaining past trends in smoking and in predicting the future impact of stronger tobacco control policies.

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