Tobacco Policy Modelling in New Zealand

Robert Y Cavana

Victoria Business School, Victoria University of Wellington, PO Box 600, Wellington, New Zealand. Email: bob.cavana@vuw.ac.nz

Summary

In this presentation I will discuss some of my collaborative system dynamics research related to tobacco policy modelling in New Zealand.

The first paper[1] summarises a system dynamics pilot study analysing the relationship of New Zealand Customs Service (NZCS) outputs to desired government outcomes, in relation to the collection of tobacco excise duties and cigarette smoking in New Zealand. The study was done to demonstrate the utility of system dynamics in answering some questions of a type common in the New Zealand public sector during policy development and review. Group model-building workshops addressed the organising question: "How does price influence the use and consequences of tobacco in New Zealand?" A prototype system dynamics simulation model using the *iThink* dynamic simulation software was developed. The model simulates values of the model variables on an annual basis from 2000 to 2010. Policy experiments with the model include examining the effects of changes in excise duties.

The next two papers[2] [3] provide an overview of the system dynamics model that has been developed to assist the Ministry of Health to evaluate the dynamic consequences of tobacco control policies in New Zealand. The model is simulated for 20–50 years into the future, and the simulation package used is *iThink*. A range of illustrative scenarios are provided, including: business as usual; fiscal strategies involving less affordable cigarettes; harm minimization strategies involving either less addictive cigarettes or less toxic cigarettes and combinations of the above policies. The main output variables (performance measures) include current smoking prevalence, tobacco consumption and tobacco attributable mortality. The model generated reliable estimates of the effects on health and on tobacco use of interventions designed to enhance smoking cessation. These results informed a decision announced in May 2007 to increase funding for smoking cessation by NZ$42 million over 4 years.

[1] Cavana RY, Clifford LV. 2006. Demonstrating the utility of system dynamics for public policy analysis in New Zealand: the case of excise tax policy on tobacco. *System Dynamics Review*, **22**(4): 321-348.

[2] Cavana RY, Tobias M. 2008. Integrative system dynamics: analysis of policy options for tobacco control in New Zealand. *Systems Research & Behavioral Science* **25**(5): 675-694.

[3] Tobias M, Cavana RY, Bloomfield A, 2010. Application of a system dynamics model to inform investment in smoking cessation services in New Zealand. *American Journal of Public Health* 100(7): 1274-1281. [Special issue on tobacco control].