

# PostScript

## LETTER

### The economic impact of smoke-free legislation on sales turnover in restaurants and pubs in Tasmania

Tasmania has a population of approximately 473 400—about 4% of the population of Australia—and around 320 bars (known in Australia as “pubs”) and licensed clubs and 400 restaurants and cafes. Legislation came into force there on 1 September 2001 to mandate smoke-free enclosed work and public places, with exemptions for bar and gaming areas where meals are not served or consumed.

Our study assessed the economic impact of introducing smoke-free polices in Tasmania on sales in bars, licensed clubs, restaurants, and cafes. We used seasonally adjusted monthly sales data from January 1990 to September 2002 and statistically controlled for trends and random fluctuations. Three distinct hypotheses about the nature of the economic impact are examined. Firstly, the impact was abrupt and permanent; it resulted in a sudden and permanent shift in the level of sales. Secondly, the impact was gradual and permanent; it resulted in a gradual change in sales and this accumulated effect was permanent. Thirdly, the impact was abrupt and temporary; it resulted in a sudden change, but this change disappeared in a short time.

We obtained data on restaurant sales from the Australian Bureau of Statistics Retail

Trade Survey.<sup>1</sup> Following Glantz and Smith<sup>2,3</sup> to account for underlying economic trends, unemployment, and population changes, we computed the following four ratios for the period January 1990 to September 2002:

- ratio of monthly turnover for pubs and licensed clubs to total monthly retail turnover (minus pubs and licensed clubs turnover) for Tasmania
- ratio of monthly turnover for pubs and licensed clubs in Tasmania to monthly turnover for pubs and licensed clubs in Australia
- ratio of monthly turnover for restaurants and cafes to total monthly retail turnover (minus restaurant and café turnover) for Tasmania
- ratio of monthly turnover for restaurants and cafes in Tasmania to monthly turnover for restaurants and cafes in Queensland and the Northern Territory.

New South Wales, Victoria, South Australia, West Australia, and the Australian Capital Territory restaurant and café sales data were omitted from computation of the final ratio since smoke-free policies were introduced in these jurisdictions during the period under analysis and could have influenced total Australian sales figures.

We used interrupted time series analysis (also known as intervention analysis) and autoregressive integrated moving average (ARIMA) modelling to estimate the effect on the four ratios (the time series) of the smoke-free legislation (the intervention) in Tasmania. This statistical technique was explained in detail in the report of our study on the impact of policies in restaurants in South Australia.<sup>4</sup>

Table 1 provides parameter estimates for the impact of smoke-free legislation on the ratio of sales in Tasmanian pubs to Tasmanian retail sales. None of the three hypotheses were supported. Results for the ratio of Tasmanian pubs to Australian pubs is omitted, since it provides the same conclusion. Thus, we conclude that the smoke-free law had no impact on the ratio of sales in Tasmanian pubs to Tasmanian retail sales.

Table 2 provides parameter estimates for the impact of smoke-free legislation on ratio of monthly turnover for restaurants and cafes to total monthly retail turnover in Tasmania. None of the three hypotheses were supported. Results for the ratio of Tasmanian restaurants to Queensland and Northern Territory restaurants is omitted, since it provides the same conclusion. Thus, the smoke-free law had no impact on ratio of monthly turnover for restaurants and cafes to total monthly retail turnover in Tasmania.

Decision makers introducing smoke-free policies in hospitality venues can be more confident there will be no negative impact on sales.

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**Table 1** Conditional least squares ARIMA and transfer function estimates for the intervention model explaining the ratio of Tasmanian pubs/clubs to Tasmanian retail turnover

Parameters	The model of abrupt and permanent impact*		The model of gradual and permanent impact†		The model of abrupt and temporary impact‡	
	Coefficient	p Value	Coefficient	p Value	Coefficient	p Value
$\theta_0$	-0.000	0.187	-0.000	0.215	-0.000	0.256
$\theta_1$	0.227	0.004	0.219	0.005	0.221	0.005
$\theta_{16}$	-0.291	<0.001	-0.283	0.005	-0.275	0.001
$\omega$	0.007	0.118	0.007	0.106	0.008	0.081
$\delta$			-0.231	0.697	0.734	0.104
$Q_6$	6.03	0.197	6.95	0.138	6.79	0.147
$Q_{12}$	16.53	0.085	17.60	0.062	17.19	0.070
$Q_{18}$	18.56	0.292	19.98	0.221	20.04	0.218
$Q_{24}$	29.43	0.133	30.40	0.109	30.15	0.115

\* $(1-B)Y_t = \theta_0 + (1-\theta_1 B - \theta_{16} B^{16})a_t + \omega I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before intervention” and “1 = thereafter”.

† $(1-B)Y_t = \theta_0 + (1-\theta_1 B - \theta_{16} B^{16})a_t + \omega / (1-\delta B) I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before intervention” and “1 = thereafter”.

‡ $(1-B)Y_t = \theta_0 + (1-\theta_1 B - \theta_{16} B^{16})a_t + \omega / (1-\delta B) I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before and after intervention” and “1 = at the moment of intervention”.

**Table 2** Conditional least squares ARIMA and transfer function estimates for the intervention model explaining the ratio of Tasmanian restaurant to retail turnover

Parameters	The model of abrupt and permanent impact*		The model of gradual and permanent impact†		The model of abrupt and temporary impact‡	
	Coefficient	p Value	Coefficient	p Value	Coefficient	p Value
$\theta_0$	-0.000	0.875	-0.000	0.885	-0.000	0.809
$\theta_1$	0.382	<0.001	0.382	<0.001	0.375	<0.001
$\omega$	-0.001	0.641	-0.001	0.640	0.000	0.672
$\delta$			0.344	0.832	-0.993	<0.001
$Q_6$	0.81	0.976	0.80	0.977	0.63	0.986
$Q_{12}$	2.24	0.998	2.24	0.998	2.29	0.997
$Q_{18}$	6.57	0.988	6.63	0.988	6.63	0.988
$Q_{24}$	25.78	0.312	25.71	0.314	26.62	0.272

\* $(1-B)Y_t = \theta_0 + (1-\theta_1 B)a_t + \omega I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before intervention” and “1 = thereafter”.

† $(1-B)Y_t = \theta_0 + (1-\theta_1 B)a_t + \omega / (1-\delta B) I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before intervention” and “1 = thereafter”.

‡ $(1-B)Y_t = \theta_0 + (1-\theta_1 B)a_t + \omega / (1-\delta B) I_t$ , where  $Y_t$  is the value of the ratio at time  $t$ , and  $I_t$  is intervention dummy variable coded “0 = before and after intervention” and “1 = at the moment of intervention”.

## References

- 1 Australian Bureau of Statistics. 8501.0 Retail Trade, Australia. Table 4. Retail Turnover (\$ Million), By State: All series(a). 1 November 2002. <http://www.abs.gov.au/ausstats/abs%40.nsf/lookupresponses/b75604c240fa9835ca25688d001cb9277?opendocument> [Accessed 18 Nov, 2002].
- 2 Glantz S, Smith L. The effect of ordinances requiring smoke-free restaurants on restaurant sales. *Am J Public Health* 1994;**84**:1081-5.
- 3 Glantz S, Smith L. The effect of ordinances requiring smoke-free restaurants and bars on revenues: a follow up. *Am J Public Health* 1997;**87**:1687-93.
- 4 Wakefield M, Siahpush M, Scollo M, et al. The effect of a smoke-free law on monthly restaurant retail turnover in South Australia. *Aust NZ J Public Health* 2002;**26**:375-82.

## BOOK REVIEWS

## Unfiltered: conflict over tobacco policy and public health

Edited by Eric A Feldman, Ronald Bayer. Harvard University Press, 2004, pp 394. ISBN 0-674-01334-4

## Tobacco policy and public health

With the cover befitting a crime thriller, *Unfiltered* delivers an honest, unfiltered discussion of contemporary policy debates in tobacco control. The book documents experiences from eight developed countries. These eight include tobacco control leaders Canada, Australia and USA, a mixed bag of European experiences (Denmark, France, and UK), and for contrast, Japan and Germany.

The editors offer several justifications for choosing these economically advanced democracies in that they share a broad commitment to liberal political values and demonstrate an interesting range of beliefs and practices with respect to privacy, autonomy, and paternalism. But there are examples of developing countries with liberal political values and autonomy such as India, the world's largest democracy, South Africa, and the Philippines which go unmentioned. This is a pity because the issues discussed are as relevant to low income countries as they are to developed nations.

The contributors unravel their countries' arduous journeys into tobacco control. A meticulous discussion is provided on how they confronted three key policy issues: advertising controls; restricting public smoking; and tobacco tax.

The tension between individual rights and public good is plain. Each country found its own way of framing tobacco control to gain public and political support. The USA's approach centred on the protection of children, innocent bystanders, and the public purse, a stance that steered clear of paternalism.

Similarly in Canada the prevention of smoking by children formed the basis for legislation as early as 1908 and was reflected again in the 1997 Tobacco Act. Canada's experience shows substance control in liberal states is undeniably a complex phenomenon. However, there was general consensus that

extensive government regulation of tobacco was justified on public health grounds. This contrasts with the Japanese experience, which has similar protection for children, but the government retains its hands off posture toward individual behavioural choice while exercising its paternalistic public health powers in other areas.

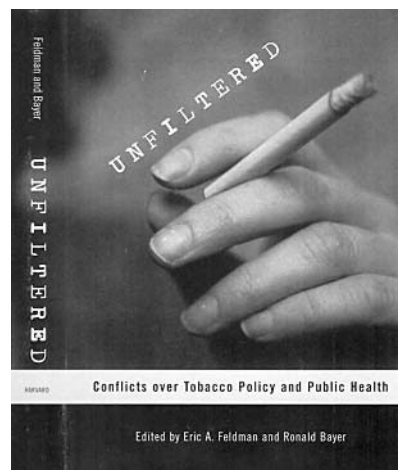
*Unfiltered's* cross-country cultural configuration of risk provides a fascinating discussion, contrasting the USA with European nations. In the USA, the risks of sidestream smoke shaped a radical reconfiguration of tobacco policy. In other countries these risks are measured against the perceived benefits of smoking, the role of the state as an appropriate protector of public health, and concerns about state intrusions on individual behaviour. Many Europeans found the USA policy "extremist" or, as the French put it, "too American". Hence in Europe, where 35% of the population smokes, countries have generally been slower to pass public smoking laws.

## "Smoke-free skies"

*Unfiltered's* account of "smoke-free skies" explains the successful internationalisation of regulations instituted by the corporate sector rather than governmental policy. Starting with United Airlines, the first carrier to segregate seating for smokers and non-smokers in 1971, it documents the widespread diffusion of airline bans on smoking, as the cross-national influence of anti-tobacco sentiment and advocacy took effect.

Two recent valuable tools for tobacco control have been the internal industry documents and the Framework Convention on Tobacco Control (FCTC). Using internal documents, a chapter on tobacco control policy in the European region provides a gripping account on how the industry subverted European tobacco control policy. This is an insightful account of how a public health treaty plays out in the context of trade.

Canada, which everyone quotes for its achievement, armed with its own authoritative evidence went through the experience of having industry self regulation defeat legislation. The authors conclude resistance to tobacco control has been most striking in Germany and Japan where almost universally accepted scientific facts on smoking continue to be disputed.



*Unfiltered* concludes that appropriate policy alone is rarely sufficient to bring about fundamental change in the social patterns that facilitate starting, continuing, or ceasing to smoke. Tobacco control advocates will be confronted with thought provoking questions on the relation between national policies and individual preferences, between legal regimens and social realities. All eight countries show declines in smoking prevalence. Nations that have most vigorous tobacco control policies have witnessed steep declines in smoking rates, but so have countries with weaker anti-smoking strategies.

A vivid analogy is offered: "like surfers, legislators and corporate officials who wish to change everyday social norms must wait for signs of a rising wave of cultural support, catching it at just the right time." Perhaps the FCTC is that global surfer's wave.

Verdict: a must read for public health advocates, researchers, and policymakers

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## Le tabac en France: Les vrais chiffres

Edited by Catherine Hill, Agnès Laplanche. Villejuif (Paris): Published by Institut Gustave Roussy, 2004, pp 140. ISBN 2-11-005616-9.

## Tobacco use in France

In this slim but ambitious volume, epidemiologists Catherine Hill and Agnès Laplanche have assembled all available French surveys on tobacco sales and consumption going back to 1860. The authors draw on data collected by three highly disparate organisations: SEITA (the government controlled conglomerate selling tobacco products and matches, now defunct after merger into the Franco-Spanish firm Altadis); the CFES (French Committee for Health Education); and INSEE (National Institute of Statistics and Economic Studies).

By combining such varied resources and going back over 140 years, Hill and Laplanche have managed to paint a very detailed portrait of tobacco use in a country where 66 000 people die each year from the consequences of smoking. They also highlight methodological weaknesses of certain surveys, debunk a number of myths about youth smoking, and emphasise the need for consistent terminology in defining current and former smokers.

Even for readers not comfortable in French, this is a useful text as its 120 figures, tables and survey summaries are dominated by numbers and graph points, leaving little text to decipher. Given the breadth and strength of their data, the authors might have done well to offer a little more analysis, but epidemiologists beyond France's borders should find that Hill and Laplanche have made a very useful contribution to the literature. A series of similar volumes covering other countries' historic surveys would make a helpful tool for a broad range of researchers.

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