Did smokers shift from small mixed businesses to discount outlets following the introduction of plain packaging in Australia? A national cross-sectional survey

Opponents of plain packaging (PP) in Australia[1–4] and elsewhere[5–8] have claimed that the legislation would create confusion for retailers attempting to locate packs of uniform appearance. This, it was claimed, would result in increases in pack retrieval and overall serving times,[9 10] impatience with queuing among customers, and a consequent shift in patronage, sales and profits from small mixed businesses to large discount outlets such as supermarkets.[10 11] Surveys of retailers funded by tobacco industry groups reported perceived negative effects among retailers shortly after implementation of the legislation.[12] However, studies of retail outlets conducted across Australia over the period of implementation of legislation found no lasting effects on retail serving time[13] and a study conducted in the Australian state of Victoria 1 year before (2011) and 1 year after (2013) introduction detected no changes among current smokers in usual place of purchase of tobacco products.[14] We aimed to repeat and extend this analysis using a large national data set.

We used data from continuous national cross-sectional telephone surveys conducted between 9 April 2012 and 30 March 2014 with about 100 respondents per week aged 18–69 years, described fully in Wakefield *et al*[15] (this volume).

All respondents were asked 'Do you currently smoke factory-made (FM) cigarettes only, roll-your-own (RYO) cigarettes only, both, or neither of these?' Cigarette smokers (FM and RYO) were asked, 'Where did you buy or get the cigarettes or tobacco you are currently smoking?' For analyses, we coded store types into seven categories: supermarkets, tobacconists, small mixed businesses (including convenience stores, small grocery shops, milk bars, delis and newsagents/newsstands), petrol stations, the internet, duty free or from overseas and other (including informal sellers, bars and pubs, bottle shops and liquor stores, vending machines and 'given as a gift').

Data were weighted to the national smoker/recent quitter population by mobile phone status, gender, age by education and state of residence as described in Wakefield *et al*[15] (this volume). We undertook logistic regression analyses to assess changes in purchase channel between pre-PP (April–September 2012, n=2193), the transition to PP phase (October and November 2012, n=765) and the PP phase (December 2012–March 2014,

Table 1 Place of purchase of cigarette smokers' current packs–percentages and results of logistic regression models (n=7950)

	Differences between PP phases—unadjusted models†			Differences between PP phases—adjusted models†‡			Linear trend post-PP—adjusted models
Time period	Per cent	OR	95% CI	Per cent	OR	95% CI	OR
Supermarket							
Pre-PP	57.9	1.00		58.1	1.00		
Transition	55.9	0.92	0.76 to 1.11	55.9	0.91	0.75 to 1.11	
PP	57.4	0.98	0.88 to 1.10	57.4	0.97	0.87 to 1.09	1.00
Tobacconist							
Pre-PP	13.6	1.00		13.8	1.00		
Transition	13.8	1.01	0.78 to 1.32	13.7	1.00	0.76 to 1.30	
PP	14.2	1.05	0.89 to 1.23	14.1	1.03	0.87 to 1.22	1.00
Small mixed business							
Pre-PP	13.7	1.00		13.6	1.00		
Transition	15.7	1.17	0.90 to 1.54	15.6	1.17	0.90 to 1.54	
PP	15.4	1.15	0.98 to 1.35	15.5	1.16	0.99 to 1.37	1.01
Petrol station							
Pre-PP	10.9	1.00		10.7	1.00		
Transition	12.0	1.11	0.82 to 1.50	12.1	1.16	0.85 to 1.58	
PP	10.2	0.93	0.77 to 1.12	10.3	0.96	0.79 to 1.16	0.99
Internet							
Pre-PP	<0.1	1.00		–	–		
Transition	0	–	–	–	–	–	
PP	0.1	8.29	0.97 to 71.07	–	–	–	0.92
Duty free or overseas							
Pre-PP	1.9	1.00		1.8	1.00		
Transition	0.7	0.36*	0.14 to 0.90	0.7	0.38*	0.15 to 0.97	
PP	0.6	0.30***	0.18 to 0.51	0.6	0.32***	0.19 to 0.53	0.94
Other source							
Pre-PP	2.0	1.00		2.0	1.00		
Transition	2.0	1.04	0.55 to 1.98	2.1	1.05	0.55 to 2.00	
PP	2.0	1.02	0.69 to 1.52	2.0	1.03	0.69 to 1.52	0.99

***p≤0.001, **p<0.01, *p<0.05.
†Of n=8679 cigarette smokers, those who did not provide their current brand name (n=283) or their current pack size (n=195) were not asked about their place of purchase. We also excluded those who did not know where their current cigarettes/tobacco was purchased (n=61), refused to provide the source or responded not applicable (n=6), mistakenly skipped the question due to coding of previous brand or pack size responses (n=11) or did not have SES information (n=173). Analysed n=7950 (pre-PP n=2079; transition n=707; PP n=5164).
‡Models controlled for sex, age group, SES and education, with the exception of the model predicting 'Internet purchase' which did not control for respondent characteristics due to low cell sizes resulting in collinearity issues.
PP, plain packaging; SES, socioeconomic status.

n=5721). We also tested whether there were linear changes over the months during the PP phase, as unintended consequences of PP could occur gradually. We controlled for sex, age (18–29, 30–49 and 50–69 years), area-based socioeconomic status[16] and education.

As shown in table 1, odds of reporting purchase from major channels such as supermarkets, tobacconists, small mixed businesses and petrol stations did not change between the pre-PP and PP phases. The adjusted proportion whose latest pack was purchased duty free or overseas declined from 1.8% pre-PP to 0.7% in the transition phase and 0.6% during PP. Purchase of packs over the internet or from 'other sources' was negligible throughout the survey. No gradual changes in place of purchase were detected during PP (table 1).

Excise/customs duty on tobacco products in Australia increased by 12.5% on 1 December 2013. The resulting increases in prices may have prompted some consumers to shift from convenience outlets (where tobacco products tend to be sold at or close to recommended retail prices) to outlets such as supermarkets and tobacconists (where tobacco products tend to be more heavily discounted).[17] When we excluded data from cases collected after this tax increase, the percentage of respondents who reported purchasing from small mixed businesses *increased* significantly between pre-PP (13.6%) and PP year 1 (15.8%; adjusted OR=1.19, 95% CI 1.01 to 1.41, p=0.039) and increased linearly over the months during PP year 1 (adjusted OR=1.03, 95% CI 1.01 to 1.06, p=0.038)—results not in table.

This survey provides no evidence of a shift to overseas or duty-free purchase. This was to be expected given the reduction in the limit for import of duty-free cigarettes —from 200 to 50 cigarettes per person— that came into force in September 2012.[18]

The results of this large national study confirm those of our earlier study conducted in Victoria which also found no decline in percentages of smokers purchasing from convenience outlets following the introduction of PP.[14] Findings of our study corroborate sales data from international market research company, Euromonitor, which suggest no major shifts in channel of purchase between 2012 and 2013.[19]

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