Tobacco outlet density and social disadvantage in New South Wales, Australia

There is evidence to suggest a possible association between ease of access to tobacco and uptake of smoking,[1] [2] and the likelihood of cessation.[3] A recent analysis of tobacco outlet density (TOD) in the USA found that TOD was higher in areas where a higher proportion of Hispanics and African–Americans live, and in areas where a higher proportion of families live in poverty.[4] The authors concluded that higher TOD may contribute to disparities in smoking prevalence. This sort of evidence has led to proposals that control of TOD be considered in tobacco control efforts.[5] [6]

In the Australian state of New South Wales (NSW), a requirement to notify the state government of intention to sell tobacco products became mandatory under the Public Health (Tobacco) Act 2008. The notification data was then acquired by the Cancer Council NSW under a Government Information (Public Access) request in 2011. Using these data, we aimed to examine possible associations between TOD and socioeconomic status and remoteness across NSW.

Of the 12 451 current tobacco retailers registered, 811 were excluded because addresses were incorrectly entered, or were unable to be matched to a local government area (LGA). The outcome of interest was TOD, defined as the number of tobacco retailers per 100 000 people. Socioeconomic disadvantage was measured for each LGA (n=138) using Socio-Economic Indexes for Areas (SEIFA).[7] SEIFA is calculated by the Australian Bureau of Statistics using census data, including level of education, employment status and household income. LGAs vary significantly in size (from less than 10 km² to more than 50 000 km²) and population (from less than 20 000 to more than 300 000), so a measure of geographical remoteness was included using the Accessibility/Remoteness Index of Australia (ARIA) in order to account for this.[8] Data on the LGA smoking prevalence was taken from the NSW Population Health Survey.[9] The TOD was log-transformed, and the proportion of smokers in each LGA, SEIFA Score and ARIA mean were all standardised to adjust for differences in scale and mean. TOD was then regressed on the other variables. The median TOD was 21.72 per 100 000 people (table 1).

A statistically significant relationship was found between TOD, social disadvantage (SEIFA; p=0.025) and remoteness (ARIA scores; p<0.0001), independent of smoking prevalence (table 1).

Our results strongly suggest that tobacco outlets are concentrated in areas of higher disadvantage, and that are at greater risk of poor health outcomes. That the association was evident even after controlling for smoking prevalence may reflect a deliberate strategy by the tobacco industry, rather than being a response to higher demand. Further, they are consistent with the recent US study.[4]

The strengths of this study lie in the comprehensive coverage of all types of tobacco retailers and in our ability to control for smoking prevalence, both identified as limitations in earlier studies.[4] Further, to our knowledge, no other studies of this kind have been conducted in Australia.

More research is required to determine if different types of retail outlets are more concentrated in disadvantaged areas, as there is evidence that particular types of retail outlets decrease the likelihood of cessation.[10] Additionally, longitudinal studies are needed to assess associations between TOD and smoking uptake and cessation.

This study suggests that greater attention needs to be devoted to monitoring TOD, so that tobacco control efforts can be appropriately targeted.

What this paper adds

- Our findings indicate that there is an association between tobacco outlet density and social disadvantage and remoteness, after controlling for smoking prevalence, in New South Wales, Australia.
- This suggests that outlet density may reflect a deliberate strategy by the tobacco industry, and that further research should be conducted to explore the effects of outlet density on smoking behaviours.

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Table 1 Tobacco outlet density in NSW and associations with smoking prevalence, social disadvantage and remoteness

	Tobacco outlet density per 100 000 population†			
	Coefficient	Lower 95% CI	Upper 95% CI	p Value
Intercept	−5.67	−5.78	−5.55	<0.0001
Smoking prevalence[9]	−0.05	−0.18	0.08	0.47
Social disadvantgae (SEIFA Score)[7]	−0.17	−0.32	−0.02	0.025
Remoteness (ARIA mean[8])	0.50	0.36	0.65	<0.0001
R squared	0.43			
Group p value	<0.0001			

†1st quartile: 6.503; Median: 21.720; Mean: 64.090; 3rd Quartile: 71.680.
ARIA, Accessibility/Remoteness Index of Australia; SEIFA, Socio-Economic Indexes for Areas.

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