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Retail Availability, Tobacco Purchase and Consumption by Smokers Attempting to Quit

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Abstract

There is evidence from many product categories that the level of retail distribution is associated with sales. However the extent to which widespread distribution of tobacco contributes to its use is unclear. Any effect is likely to be greatest for certain types of smokers (e.g. those attempting to quit) but there is no publicly available data on this aspect of the behaviour of different types of smokers. By use of a diary format survey aimed at smokers attempting to quit, this study provides the first evidence on retail outlet usage at an individual level. The results suggest that certain outlets with smaller market share are disproportionately used by lapsing quitters. The nature of these outlets suggests that purchases are being made on impulse, which in turn implies an effect of distribution on sales. Implications for further research and for government action to assist quit attempts and reduce smoking are discussed.

Introduction

Cigarette smoking is an established threat to health, which persists despite a variety of public health initiatives to decrease the prevalence of, and amount of, smoking. One factor which has received limited attention is the influence (if any) of ease of access to cigarettes on smoking activity or on attempts to quit. For adolescents, there is some evidence that restriction of tobacco supply is associated with lower rates of experimental and regular smoking. Studies have found drops in underage smoking ranging from 15.8% to 46% after restrictions to access, community education and enforcement of laws banning sales to minors (Altman et al., 1991; Bellew and Wayne, 1991; Bishai et al., 2005; DiFranza et al., 1992; Jason et al., 1991). The evidence is not unequivocal, however, as other studies have found that youths often substitute non-retail sources when retail supply is restricted (e.g. Levy et al., 2004). However there has been only very limited investigation of the extent to which ease of access contributes to the rate of adult smoking (Chuang et al., 2005), or to the failure of attempts to quit. Market theory holds that the number of distribution outlets is strongly associated with higher levels of sales (Farris et al. 1989). This is supported by strong evidence from a range of product categories including fast food, psychoactive drugs, and alcohol (Ashe et al., 2003; Goldstein and Kalant, 1990; Ashe et al., 2003; Jekanowski et al., 2001). However the direction of causation is unclear, and there is wide acceptance that the relationship between distribution and sales is likely to be bi-directional (Dubelaar et al., 2002; Reibstein and Farris, 1995).

While there is published data on the market share for tobacco purchases by different outlet types (e.g. Euromonitor, 2005), there is no published data on the extent to which individual smokers purchase from different outlets, or if they use different outlets at different times of the day or week. Market share data cannot be interpreted as representing individual purchase patterns, since there is good evidence from other product categories that consumers use a range of outlets, but frequently do not share their purchases proportional to market share data (Ehrenberg, 1988). Obtaining individual level data for tobacco sales across outlets (and for different times of the day/week) is therefore important, because it will help predict the potential impact of any restriction of sales on smoking behaviour, and thus have implications.
for government policy development. For example, if a large proportion of cigarette sales are made late at night from convenient outlets, then restricting sales at these outlets, or providing anti-smoking advertising at these outlets or at these times, may have a disproportionate impact on reducing smoking behaviour. Such measures might be particularly effective in preventing relapse by smokers actively attempting to quit if they are targeted at the outlets from which such smokers are most likely to buy tobacco. While it is likely that smoker characteristics (such as smoking frequency), stock in hand, and situational factors such as the presence of others smoking in the vicinity are also likely to influence purchase behaviour, no data have been found to test these various associations. Therefore this study collects data to investigate:

- the tobacco purchase patterns of smokers attempting to quit (differentiated by age, smoking status, gender and socio-economic level);
- share of purchases between different outlet types, across different times of the day;
- the relationship between social activity and smoking behaviour (purchases and number smoked per day) and
- the relationship between personal cigarette stock (the number of cigarettes that the smoker has at the time) and smoking activity.

The study provides the first individual-level data on the relative use of different cigarette outlets (e.g. supermarkets, tobacconists and bars) by smokers attempting to quit. By providing this data, and by investigating purchase activity across different time periods, the study has implications for predicting any impact of restriction of sales by outlet type and/or time of day.

Methodology

Data was collected by means of a survey sent to attempting quitters, defined as people who had requested a 'Quit Kit' from the phone line of a New South Wales government health service (the 'Quitline') in January and February 2007. The survey was enclosed with an information package (the 'Quit Kit') dispatched to callers by the Quitline operators. The total number of diaries initially dispatched was 700. This sample size was subsequently reduced by returns to sender (3), identification of duplicate mailings (21), and by the removal of a small number of non-respondents who phoned to advise that they had decided not to quit smoking after all (3). The final sample size was therefore 673.

The survey was in a diary format, recording (inter alia) tobacco purchase and consumption hourly or four hourly over a one or four day period. The diary method was chosen to avoid the well-known problems of recall data (Bernard et al., 1984). The study sought detailed data over a defined time period, but there was uncertainty as to whether participants would complete a survey which required significant effort over a one day (or longer) period. As a result, two different time periods for the diary method were used, to determine if it was feasible to collect data about smoking and tobacco purchase behaviour over a multiple day period. In addition, in order to collect data for all seven days of the week, the requested starting day was varied, asking participants to commence recording on the next (randomly assigned) day of the week. In order to encourage participation, respondents were offered the chance to win a $100 shopping voucher. To test the optimal reward for future versions of the survey, the stated odds of winning were also varied, between one in 10 and one in 20. Twenty-eight different variations of the survey were thus dispatched (n=25 for each planned variation), reflecting all possible combinations of the three variables:
one-day (with hourly data entry) or four-day diary format (with four hourly data entry)
– (two variations) · one in 10 or one in 20 chance of winning a $100 shopping voucher –
(two variations) · starting day randomised (Monday through Sunday) – (seven variations).

Depending on the variation that they received, recipients of the survey were asked to answer a
variety of questions for each one/four hour period that that they were awake: their physical location
(home, work, restaurant etc); presence of other smokers (yes/no); purchase (or borrowing) of
cigarettes (yes/no); outlet type of any tobacco purchase and number of cigarettes smoked, if any.
Demographic and behavioural characteristics were also collected,
e.g. age, gender, educational level, smoker status (number smoked per day, time of day of first
cigarette) and quit status (whether currently attempting to quit, type of previous quit attempts). A
reminder mailout with a duplicate survey was sent to all non-respondents approximately three
weeks after the initial mailout.

Results

Eighty-seven responses were received to the two waves of the survey, representing a response rate
of 13%, after allowing for returned mail and removal of a small number of duplicate addresses. The
response rates for the four different diary format/incentive combinations are shown in Table 1.
Overall response rates for the one-day (12.5%) and four-day (13.4%) diary formats were not
significantly different (p = 0.71); nor did response rates vary significantly across the two incentive
formats (one in ten or one in twenty chance of winning a $100 shopping voucher) (p = 0.2).

Table 1: Response Rates for Different Diary Formats

<table>
<thead>
<tr>
<th>Diary format</th>
<th>Response rate</th>
<th>Diary format</th>
<th>Response rate</th>
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</thead>
<tbody>
<tr>
<td>One day, 1 in 10 chance of $100</td>
<td>10.7%</td>
<td>Four day, 1 in 10 chance</td>
<td>11.9%</td>
</tr>
<tr>
<td>One day, 1 in 20 chance</td>
<td>14.3%</td>
<td>Four day, 1 in 20 chance</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

Overall the best response rate was for the four-day, 1 in 20 incentive format
(14.9%). While the response rate for this group was not significantly higher
than the other groups (p > 0.1), it does suggest that future data collection for
related studies is feasible over a four day period, while using the lower (and
thus more cost-effective) incentive (the one in twenty chance of winning a
$100 voucher).

Due to restrictions of space, this paper presents only some of the results from
the study, focusing on the frequency of relapse, and place and time of tobacco
purchase. Around half (54%) of all respondents recorded that they had
smoked during the diary period (56% of four-day diarists; 52% of one-day
diarists). Of those who smoked, 68% purchased cigarettes and 43% were
given cigarettes. Some individuals used both acquisition modes, and some
used neither, presumably using their existing stock. There were marked
differences in acquisition modes between the four-day and one-day diarists,
preumably reflecting the longer period of data collection; 84% of lapsing
four-day diarists purchased cigarettes compared to 50% for the one-day
diarists, while 60% of lapsing four-day diarists were given cigarettes compared
to 23% of the one-day diarists. More than half of all lapsing four-day diarists
acquired tobacco by both 'purchase' and 'given'; by contrast, 100% of lapsing
one-day respondents used only one of these acquisition methods or had
tobacco in stock (by deduction).
Of the individuals who purchased tobacco, 40% did so from supermarkets and 19% from petrol stations. The remaining outlet types (i.e. convenience stores; mixed businesses; tobacconists; liquor stores; newsagents; bar/pub/clubs) were each used by around 4-10% of purchasing smokers. Since some individuals purchased from more than one outlet type, a slightly different, but broadly similar picture emerges if all purchases are examined. An analysis of the site of all purchases is shown in Table 2.

Table 2: Purchase Site by Relapsing Quitters, as a Proportion of All Purchases Made

<table>
<thead>
<tr>
<th>Store Type</th>
<th>4 day</th>
<th>1 day</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super-Petrol</td>
<td>30%</td>
<td>69%</td>
<td>39%</td>
</tr>
<tr>
<td>Conven.</td>
<td>21%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Mixed Tobacco</td>
<td>12%</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Liquor</td>
<td>9%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>News</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Bar/Club</td>
<td>5%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Newsagent</td>
<td>7%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Supermarket</td>
<td>12%</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Of all tobacco purchases made, 39% were made between 6-10am, 25% between 10am–2pm, 20% between 2-6pm and 16% between 6-10pm. None were made outside this spread of hours (i.e. within the 10pm – 6am period). Due to the small sample size, this result must be interpreted with caution, but the finding does not appear to provide any justification for attempts to limit smoking by restrictions on late-night sales.

Discussion

When compared with market share data for tobacco sales, the results show intriguing differences in the use of different outlet types by lapsing quitters. Lapsing quitters apparently disproportionately patronise certain outlet types such as liquor stores, newsagents and bars/clubs/pubs, which respectively represented 11%, 5% and 7% of sales to survey respondents, but which based on Euromonitor (2005) market data, were each responsible for less than 2% of total cigarette sales in 2004. In contrast, supermarkets were used significantly less by lapsing quitters (39% of sales) than total market share data would suggest, since supermarkets were responsible for 49% of total cigarette sales in 2004 according to Euromonitor (2005). These differences in sales are unlikely to be accounted for by more recent changes in market share data, since 1997-2004 data show a steady increase in market share by supermarkets, and a decline in sales by liquor stores, newsagents and bars/clubs/pubs.

The nature of the outlet types disproportionately patronised by attempting quitters suggests that such purchases are more likely to have been made on impulse, rather than planned. This in turn implies an effect of distribution on consumption: if tobacco had not been available for purchase at these sites, the quitter's attempt to stop smoking may have been sustained for a longer time. The observation that quitters were less likely to purchase tobacco at supermarkets than market share data would suggest, also lends some support to this proposition. Tobacco purchases at supermarkets are arguably more likely to be planned than impulsive, for instance if they take place during the weekly shopping trip.

The differences between market share data and the results of this study must be interpreted with caution, however, since it is impossible to determine on the basis of this study alone whether the data collected represents a higher use of certain types of outlets by relapsing quitters, or whether the results represent instead a difference in sampling between this data.
and the Euromonitor sources (which may over-represent larger outlets). However the results suggest that further research in this area is warranted.

The results thus show that the tobacco purchase behaviour of attempting quitters does not mirror available market share data for cigarette sales, and thus provide some suggestions for future research, and possibly for policy development. In this study, certain small outlet types, such as pubs/clubs/bars, newsagents and liquor stores, were responsible for a much larger percentage of sales to relapsing quitters than their market share data would suggest. Policy initiatives aimed selectively at these outlets are unlikely to be popular with these retailers, but based on the data, would appear to be relatively efficient in targeting attempting quitters, and perhaps maximising the success of quit attempts. For marketing theory, the results suggest an individual-level explanation for the exceptions to the typical pattern of distribution of individual sales in line with market share patterns (Ehrenberg, 1988).

The results also suggest that quit attempts appear to commonly fail when individuals are given cigarettes by others; 43% of lapsing quitters acquired cigarettes by this method. This non-commercial 'distribution' source thus seems to play a significant role in resupply of the attempting quitter, as it does amongst youths when retail access is restricted (Levy et al., 2004), and suggests that quit smoking advice may benefit from inclusion of suggestions such as ’Tell your friends and family not to give you cigarettes, even if you ask for them’.

The study does show that data collection using a relatively onerous diary method over a four day period is feasible, and that this format did not decrease the response rate relative to a one day data collection period. A notable and surprising feature of the response rate, however, was a sharp increase in the response rate to the second wave, up from 2.9% to 13%, which is contrary to the experience reported in previous studies (e.g. Crompton & Tian-Cole, 2001). Follow up discussion with respondents revealed that a number had ’not yet started to quit’, or had delayed opening the Quit Kit, and so had not started the survey when requested. It is also likely that the instructions to start the survey on a particular day of the week decreased the response rate. For example, if a recipient received the survey on a Monday, but was instructed to start recording data on the following Sunday, the six day interval between receipt and commencement is likely to have led to some recipients forgetting to complete and return the survey. Inclusion of the survey with the Quit Kit may also have decreased the response rate due to the large amount of material dispatched to respondents, and future related work may benefit by sending the survey separate from the Quit Kit, and/or by using a three wave method (Schmidt et al, 2005).

**Conclusion**

The results provide the first data on patterns of individual purchase by smokers attempting to quit, and suggest that market share data cannot be extrapolated to individual level purchases. Since the sample size was small, and the response rate relatively low, the results from the study must be interpreted with caution. However, the results suggest that some outlet types (bars/clubs/pubs, newsagents and liquor stores) appear to be disproportionately used by relapsing quitters. Anti-smoking displays and/or restrictions aimed at these types of outlets may therefore be particularly effective in increasing the success of quit attempts.
References


