

# Cigarette brand loyalty in Australia: findings from the ITC Four Country Survey

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## ABSTRACT

**Background and aim** There is little academic research on tobacco brand loyalty and switching, and even less in restrictive marketing environments such as Australia. This paper examines tobacco brand family loyalty, reasons for choice of brand and the relation between these and sociodemographic variables over a period of 10 years in Australia.

**Methods** Data from current Australian smokers from 9 waves of the International Tobacco Control Policy Evaluation 4-Country Survey covering the period from 2002 to early 2012. Key measures reported were having a regular brand, use for at least 1 year, brand stability (derived from same reported brand at successive waves), and reasons for choosing brands.

**Results** Measures of brand loyalty showed little change across the period, with around 80% brand stability and 95% reporting a regular brand. Older adults were more brand-loyal than those under 25. Young people's brand choice was influenced more by friends, whereas older adults were more concerned about health. Price was the most reported reason for brand switching. Those in the higher income tertiles showed more loyalty than those in the lowest. The least addicted smokers also showed less brand loyalty. We found no clear relationship between brand loyalty and policies that were implemented to affect tobacco use.

**Conclusions** Levels of brand loyalty in Australia are quite high and consistent, and do not appear to have been influenced greatly by changes in tobacco control policies.

## INTRODUCTION

This paper documents aspects of tobacco brand loyalty, including rates of switching and reasons for brand choice, among Australian smokers over the period 2002 to early 2012. Smoking rates in Australians aged 14 years and older have declined over this period, from 19.4% in 2001 to 15.1% in 2010.<sup>1</sup> Several factors affect brand choice, such as price and packaging,<sup>2 3</sup> and to the extent that smokers value their brand of cigarettes, they should be reluctant to shift unless they have the opportunity to use brands with even more of the qualities they desire.

Australia is a unique market for tobacco in several respects. Although about 99% of the market is dominated by three major market companies,<sup>4</sup> there are a wide variety of brands available and a lower concentration of market share for any one brand than in other countries such as the USA. Pack sizes vary between 20 and 50 cigarettes as a result of the historical practice of taxing tobacco by weight up until 1999, when price per stick taxation

was introduced.<sup>5</sup> The larger pack sizes (>25) have been used mainly in budget brands. The market is organised by the industry into three broad price band segments: premium, mainstream and budget.

Australia has also become an increasingly restrictive market for tobacco.<sup>6</sup> By the year 2000, advertising was banned in all settings excepting point of sale (POS) and on packs, with very limited exemptions for some forms of sponsorship until 2006. On a state by state basis, displays of cigarettes at POS were progressively prohibited between 2009–2011, preceded in some states by bans on POS advertising and restrictions on display size.<sup>7</sup> Tobacco products are now required to be concealed at POS in all states,<sup>8</sup> which has been associated with reduced levels of spontaneous purchasing.<sup>9</sup> In 2006, misleading variant terms like 'Light' and 'Mild' were banned and text only health warnings on packs were replaced by graphic warnings marginally larger on the front of the pack (30% compared with 25%), but much larger on the back (90% compared with 30%). These warnings increased smokers' health-related reactions to packs,<sup>2</sup> reactions shown to be associated with increased quitting.<sup>10</sup> Finally, in 2010, there was a 25% tax increase on top of the regular consumer price index-based increases.

None of the abovementioned policies were designed to influence brand choice, all being either targeted at consumer awareness, increasing cessation and/or reducing uptake overall. However, it is possible that a policy affecting the appearance of brands such as graphic warnings on the pack, their salience at POS (not being visible might reduce switching) and price increases (downshifting to cheaper brands) could all conceivably influence brand choice, potentially in ways that could at least in part undermine the intended effects.

The tobacco industry has a direct commercial interest in researching brand switching—some of this research is now publicly accessible through litigation in the USA and Canada in the early 1990s.<sup>11</sup> Most of this research is US-based, and mostly from the late 1980s to early 1990s.<sup>12 13</sup> The 1991 'Philip Morris Switching Book'<sup>14</sup> extensively describes switching across demographics, type of cigarette, company and brand, based on telephone interviews with 34 117 US smokers over a 12-month period. 'Switchers' are defined as those smoking their current brand for 1 year or less in cross-sectional surveys, although the methods are not known. Though sources of earlier data are unspecified, this document additionally lists the annual incidence rate of brand switching from 1981 (the highest rate, at 11.0% of smokers) to

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1991, with the lowest rate of switching in 1987 (6.2%). Most recently, a short market research summary from 2000 indicated US brand family switching of around 14% over the preceding 2-year period across four major brand families,<sup>15</sup> a figure consistent with the earlier data, suggesting no major change in brand switching.

The majority of independent brand-switching research has focussed on the US market, and suggests that over the period 1986–1993 around 10% of smokers switched brands in any given year.<sup>16–17</sup> Independent research concerned with the effect of tobacco advertising on youth has shown that brand choice is related to both peer influence and exposure to brand advertising.<sup>18</sup> Furthermore, one 1994 US study found that among regular adult smokers, the vast majority nominated their first brand smoked as their later regular brand, implying immediate and lasting brand loyalty.<sup>18</sup>

Research on tobacco brand loyalty and switching in Australia is sparse. One analysis of industry documents between 1990 and 2001 suggests that compared with the US market, Australian smokers are perceived as less brand loyal and more likely to smoke more than one brand or switch between brands.<sup>11</sup> An industry report on the Australian market suggests brand family switching of around 15%, derived from six monthly telephone interviews of smokers from 1985 to 1988, questioning their main brand smoked, and whether this changed in the previous 6 months.<sup>19</sup> Another Philip Morris document from 1990 stated that at least 33% of smokers shifted brands annually in Australia;<sup>20</sup> however, because of the lack of details on the methods used, this high incidence rate might have included variant switching. A search of publicly available documents revealed no newer relevant industry documents. On the presumption that the industry has accurate estimates of brand switching, this suggests that at least at that time Australian smokers exhibited lower brand loyalty than their US counterparts. The restrictive marketing environment for tobacco in Australia is now markedly different to that in the USA and to that of the previous Australian research. The reduced differentiation between brands may reduce brand loyalty; however, equally there may be fewer incentives for smokers to change brands.

This paper aims to describe tobacco brand family switching, reasons for brand choice and other indicators of loyalty over a period of 10 years, among Australian smokers. It also explores several different methods of estimating brand loyalty to see if they provide similar results. We explore the possibility that brand loyalty may be reduced in poorer smokers as a result of price differentials forcing some downshifting to less desired cheaper brands, and more generally explore whether policy changes have a detectable impact on brand loyalty.

## METHODS

### Sample

The International Tobacco Control Policy Evaluation (ITC) Project includes a longitudinal study of smokers from Australia, Canada, the USA and the UK (ITC Four Country Project). This paper uses the nine waves of data collected from the Australian arm of the study, and only that from current (at least monthly) smokers (factory made or roll-your-own). The survey was conducted using computer-assisted telephone interviewing, and more recently, partly online. Cohort members lost to attrition were replenished at each wave from the same sampling frame to maintain sample size. Methods are further described by Fong *et al.*<sup>21</sup> and Thompson *et al.*<sup>22</sup>

Sample sizes of smokers were 2272 at Wave 1 (2002), 1974 at Wave 2 (2003), 1851 at Wave 3 (2004), 1714 at Wave 4 (2005–6), 1801 at Wave 5 (2006–7), 1791 at Wave 6 (2007–8), 1372 at Wave 7 (2008–9), 1111 at Wave 8 (2010) and 1104 at Wave 9 (2011–12). Of those recruited at Wave 1, 356 completed all successive waves.

As a result of it being a cohort survey replenished from the same sampling frame with a higher dropout rate among younger smokers, the average age of the cohort has increased across waves, from 38.9 years (SD=13.6) to 50.0 years (SD=12.8).

### Brand loyalty measures

There were three measures of brand loyalty: (1) *≥1 year use*: at each wave, smokers were asked, ‘What brand of cigarettes do you smoke more than any other?’. Those reporting a brand were then asked how long they had been smoking this brand (Waves 1–5), or for Waves 6–9, simply if it was at least a year. (2) *Brand stability*: defined as the brand family (ignoring variant) reported at one wave being the same as that reported at the next wave. This measure was based on adjacent wave intervals; therefore, participants who quit at any wave were missing/excluded on the two related intervals. (3) *Regular brand*: ‘Do you have a regular brand and variety of cigarettes?’ asked only in Waves 5–9. Where participants said they had a regular brand and what brand it was, this answer was used in the above brand measures. In Wave 5, those without a regular brand were not asked which brand they smoked most; instead their brand stability was derived from brand last purchased. For Waves 5–9, when the *regular brand* question was introduced, those without a regular brand were not asked about *≥1 year use*, we assumed less than 1 year use.

### Reasons for brand choice measures

Reasons for brand choice were only asked of all smokers at Wave 9, 2011, with yes/no answers to: ‘Was part of your decision to smoke this brand based on any of the following: The tar and nicotine levels for the brand?; It may not be as bad for your health?; As a way to help you quit?; The price?; How they taste?; How satisfying they are?; The look and feel of the pack?; Your friends smoke them?’

### Other measures

Sociodemographic measures included sex, age category (18–24, 25–39, 40–54 and 55 years and over) and income category (from annual household income: low, <\$30 000; moderate, \$30 000–\$59 999; and high, \$60 000+). Tobacco addiction was assessed by the Heaviness of Smoking Index (HSI; 7 levels, 0=least addicted to 6=most addicted).<sup>23</sup>

Brands value categories were based on recommended retail prices (RRP) listed in editions of The Australian Retail Tobacconist from the beginning (December 2002–January 2003), middle (October–November 2006) and end (November–December 2011) of the study period. Brands were ordered by maximum price per stick in each time period (see online supplementary appendix A); natural cut-off points were then found for each market segment using the listing of key brands by market segment from *Tobacco in Australia*, which allocated all the top-selling brands into the appropriate category.<sup>24</sup> Price per stick cut-offs for discount, mainstream and premium classification, respectively, were ≤34c, 35–37c, 38c+ in 2002; ≤40c, 41–44c, 45c+ in 2006; and ≤59c, 60–69c, 70c+ in 2011. Brands that changed classification between these three periods were classified into the category that they appeared two out of three times or in mainstream where brand crossed all three

categories (one brand only, used by only one participant). Among brands with market share above 1%, Alpine was classed as mainstream, having started at premium in 2002. Longbeach was classified as discount, although it was in the mainstream price range in 2011.

### Analyses

Simple bivariate relationships were evaluated using  $\chi^2$  tests. Generalised Estimating Equation (GEE) modelling allowed testing for demographic differences collapsed across the survey period and overall longitudinal trends, and by treating waves as categorical, possible effects of major policy changes in the waves immediately following implementation. Where GEE showed evidence of subgroup differences, these were examined using further  $\chi^2$  tests. All GEE models included interwave interval (continuous, days) as control, with demographic variables entered individually to test independent categorical effects. Overall variable significance was calculated with postestimation (composite, linear) Wald tests. Multivariate relationships between sociodemographics and reasons for brand choice were tested with logistic regression. Critical effect sizes for the logistic regressions (as all of the GEE) were determined using G\*Power 3.1.6.<sup>25</sup> This analysis indicated that with the sample size of 1000,  $\alpha$  at 0.05 provides power of 0.8 to detect effects of magnitude OR <0.62 or >1.52.

## RESULTS

### How consistent are smokers in their brand choice?

Figure 1 shows that the three brand loyalty measures ( $\geq 1$  year use, brand stability and regular brand) remained remarkably constant across the survey period. Percentages shown in figure 1 are adjusted for interwave interval with unadjusted percentages reported in table 1. Between 94.5% and 95.1% reported a regular brand (Waves 5–9 only). Assuming that smokers with no regular brand (at Waves 5–9) had been using their nominated brand less than 1 year, a reasonably stable number (83.1–88.4%) of smokers reported  $\geq 1$  year use. Brand stability was consistently lower, with between 77.6% and 82.3% reporting the same brand at successive waves (excluding those currently quit at either wave).

Figure 1 also shows the declining proportion of smokers who have never switched from their first nominated brand among those retained over the 10-year survey period. By Wave 9 (N=254), this was quite low (39.8%), indicating that the switching recorded at adjacent waves is not solely the result of continual switching among a small group of smokers. To examine the relative stability of the retained sample, smokers present in Waves 1 to 2 were grouped based on total number of waves participated in (2 waves only, 3–4, 5–6, 6–7, or all 9 waves). Resultant groups were not significantly different on brand stable for wave 1 to 2 ( $\chi^2(4)=6.28$ ,  $p=0.18$ ), though the trend was increasing brand stability with increasing survey participation (2 waves=80.1% stability to 9 waves=84.8% stability).

Finally we looked for effects by survey wave to identify any trends and to see if waves associated with interventions had different levels of stability. After controlling for interwave interval, GEE analysis showed no significant linear ( $p=0.11$ ) or non-linear (quadratic;  $p=0.87$ ) trends in brand stability across waves.

### Sociodemographics of brand loyalty

GEE analysis showed that females were more likely to report having a regular brand (OR=1.53, 95% CI 1.16 to 2.03,  $p=0.003$ ), but the other two measures showed no significant differences ( $p=0.32$  for  $\geq 1$  year use;  $p=0.21$  for brand stability).

Compared with the oldest age category (55+), the youngest age group was less likely to be brand stable (OR=0.61, 95% CI 0.48 to 0.77,  $p<0.001$ ), with no evidence of difference for the other groups (25–39 years, OR=1.00, 95% CI 0.84 to 1.19,  $p=0.97$ ; 40–55 years, OR=1.16, 95% CI 0.99 to 1.36;  $p=0.07$ ). Similarly, compared with the oldest smokers, the youngest group were less likely to report  $\geq 1$  year use (OR=0.45, 95% CI 0.32 to 0.63,  $p<0.001$ ), with no apparent difference with the other groups (25–39 years, OR=0.82, 95% CI 0.64 to 1.05,  $p=0.12$ ; 40–54 years, OR=1.14, 95% CI 0.90 to 1.44,  $p=0.27$ ). Regular brand showed a different pattern, with both middle age groups more likely to report having a regular brand (40–55 years, OR=1.78, 95% CI 1.19 to 2.68,  $p=0.005$ ; 25–39 years, OR=1.64, 95% CI 1.01 to 2.66,

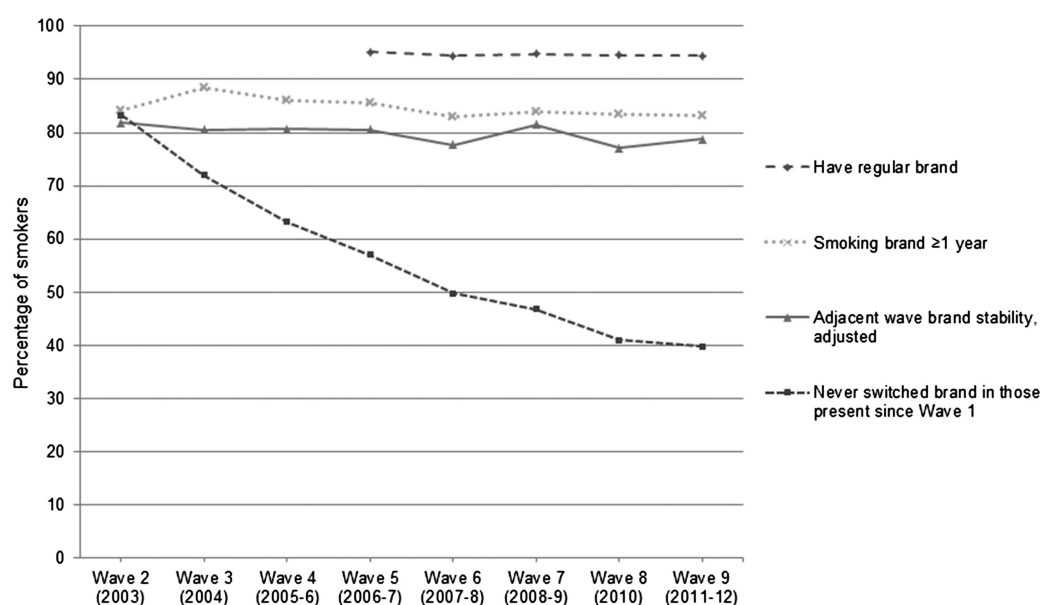


Figure 1 Stability of brand choice Wave 2 to Wave 9.

**Table 1** Percentage of smokers reporting same brand at adjacent waves by age and income

|                                     | Wave 1–2<br>2002–3 | Wave 2–3<br>2003–4 | Wave 3–4<br>2004–6 | Wave 4–5<br>2005–7 | Wave 5–6<br>2006–7 | Wave 6–7<br>2007–9 | Wave 7–8<br>2008–10 | Wave 8–9<br>2010–12 |
|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|
| Total % with same brand, unadjusted | 83.3               | 81.4               | 81.4               | 81.5               | 78.6               | 82.1               | 76.1                | 78.9                |
| Age                                 |                    |                    |                    |                    |                    |                    |                     |                     |
| 18–24 years                         | 75.4               | 69.2               | 69.2               | 71.2               | 72.2               | 62.2               | 42.9*               | 100.0†              |
| 25–39 years                         | 82.9               | 81.0               | 79.3               | 83.0               | 79.9               | 84.2               | 73.8                | 75.0                |
| 40–54 years                         | 85.9               | 82.5               | 85.7               | 84.1               | 81.3               | 83.3               | 76.0                | 81.0                |
| ≥55 years                           | 85.7               | 86.8               | 80.4               | 77.7               | 74.1               | 80.4               | 79.2                | 77.4                |
| $\chi^2(3)$                         | 14.52              | 17.58              | 16.41              | 9.21               | 7.71               | 12.07              | 10.43               | 5.07                |
| p Value                             | 0.002              | 0.001              | 0.001              | 0.044              | 0.070              | 0.007              | 0.015               | 0.166               |
| Income                              |                    |                    |                    |                    |                    |                    |                     |                     |
| Low                                 | 80.3               | 77.5               | 75.8               | 76.0               | 72.7               | 71.7               | 70.6                | 73.6                |
| Medium                              | 83.2               | 79.6               | 80.4               | 81.6               | 77.8               | 82.5               | 79.0                | 79.2                |
| High                                | 85.9               | 87.4               | 87.3               | 86.9               | 84.4               | 87.4               | 77.7                | 82.7                |
| $\chi^2(2)$                         | 5.44               | 13.55              | 17.46              | 13.66              | 15.35              | 30.24              | 5.39                | 6.28                |
| p Value                             | 0.066              | 0.001              | 0.0002             | 0.001              | 0.001              | <0.0001            | 0.067               | 0.043               |

\* Cell count=6.  
† cell count=10.

$p=0.04$ ) and no evidence of difference in the youngest group (18–25 years, OR=1.04, 95% CI 0.47 to 2.29,  $p=0.92$ ) when compared with those over 55 years.

Compared with the lowest income category, the middle (OR=1.37, 95% CI 1.11 to 1.70,  $p=0.004$ ) and highest categories (OR=1.77, 95% CI 1.41 to 2.23,  $p<0.001$ ) were significantly more likely to have smoked their brand for  $\geq 1$  year. *Regular brand* showed a similar pattern though it did not reach significance.

Similarly, *brand stability* was more likely in the middle income category (OR=1.29, CI 1.12 to 1.49,  $p=0.001$ ), and most likely in the highest income group (OR=1.74, CI 1.49 to 2.04,  $p<0.0001$ ). There was considerable variability of this between waves, see table 1. Notably, the income differential in *brand stability* disappeared in the two waves following the 2010 tax increase. Separate analyses on each income group found no effect of wave on *brand stability* for either low or medium income. In the high-income group, brand stability from Wave 2 decreased significantly in Wave 8 following the taxation increase (OR=0.27, 95% CI 0.10 to 0.73,  $p=0.009$ ), though this recovered somewhat at Wave 9 (OR=0.56, 95% CI 0.31 to 1.01,  $p=0.053$ ). We looked to see if this might be due to downshifting to cheaper brands; however, there was no evidence of differential category switching in the high-income group at wave 6–7 compared with 7–8. As this was the period with a large excise tax increase, we also looked at how prices changed over the period (see table 2). Percentage increases in reported price paid per cigarette between waves 7 and 8 were similar across value

categories, meaning greater absolute price increases in the premium category.

Compared with the most addicted smokers (HSI=6), the least addicted (HSI=0) showed significantly lower *brand stability* on GEE analysis (OR=0.63, CI 0.41 to 0.96,  $p=0.032$ ); the other HSI groups were not significantly different ( $p=0.07$  to 0.45). GEE showed no significant relationship between HSI and  $\geq 1$  year use (overall variable  $\chi^2(6)=11.23$ ,  $p=0.08$ ).

However, there was a curvilinear relationship between HSI and having a *regular brand* (overall variable  $\chi^2(6)=17.08$ ,  $p<0.01$ )—this increased with increasing HSI up to HSI=5, then dropped sharply in the most addicted group to be non-significantly lower than HSI=0.

### Reasons for brand choice (Wave 9 only)

Reasons for brand choice surveyed and their relationship to *brand stability* are shown in figure 2. Smokers who chose their brand for tar/nicotine levels, taste or because they found their brand satisfying were more likely to be *brand stable* between Waves 8 and 9. Smokers who chose their brand for pack design, to have the same as their friends, or for price were less likely to be *brand stable*; price was the most frequently reported reason for switching.

Reasons for brand choice and relationships to sociodemographics are shown in table 3.

No sex differences were found.

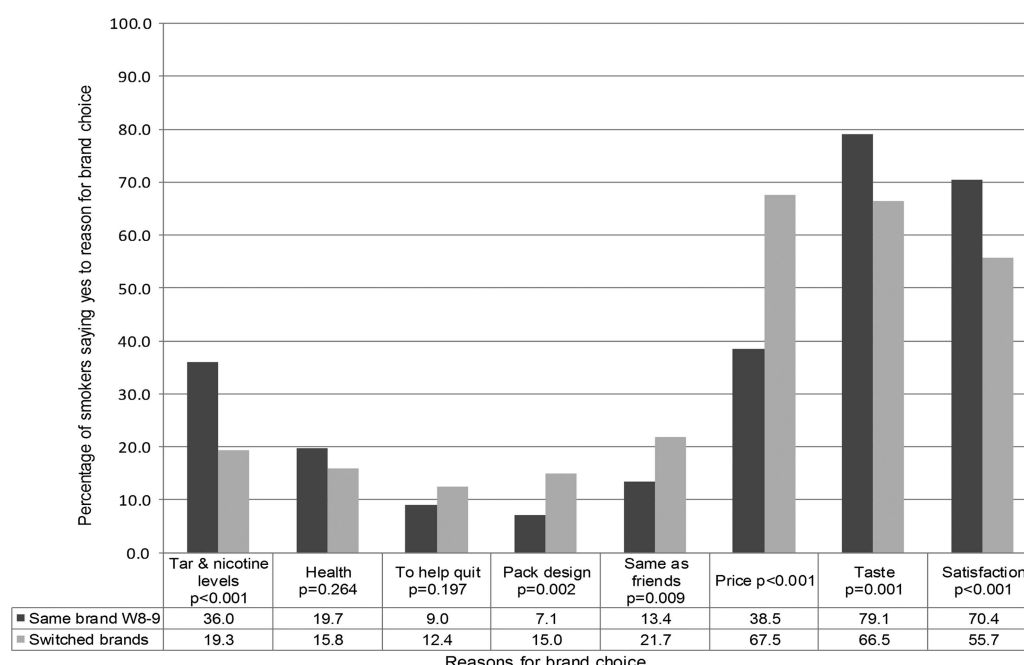
The older the age category, the more likely smokers were to choose their brand for health reasons. The younger the age

**Table 2** Absolute and relative price increases around the 2010 taxation increase as a function of market segment of brands

|                | 2009             | 2010/2011        |                   |            | 2011/12          |                   |            |
|----------------|------------------|------------------|-------------------|------------|------------------|-------------------|------------|
| Market Segment | Mean price/stick | Mean price/stick | Absolute Increase | % Increase | Mean price/stick | Absolute Increase | % Increase |
| Discount       | 39.2c            | 50.0c            | 10.8              | 27.5       | 53.5c            | 3.5               | 7.1        |
| Mainstream     | 44.4c            | 55.7c            | 11.4              | 25.6       | 60.3c            | 4.6               | 8.2        |
| Premium        | 48.2c            | 61.5c            | 13.3              | 27.6       | 66.4c            | 4.9               | 8.0        |
| Total          | 42.8c            | 54.0c            | 11.3              | 26.4       | 58.3c            | 4.3               | 8.0        |

Note. All prices refer to reported price paid by sample participants, not recommended retail prices.





**Figure 2** Reasons for brand choice at W9 and brand stability W8-9.

category the more likely smokers were to choose what their friends smoked. Choosing for satisfaction was highest in both extreme age groups.

The lowest income group was most likely to choose their brand on price, and the highest income group the least likely. This pattern was reversed for taste.

Choosing their brand for price was sharply associated with increased level of HSI. There were also non-linear relationships with choosing on basis of 'friends' and to help them quit.

## DISCUSSION

These data show that, at least for Australian smokers, both reporting having a *regular brand* and reporting  $\geq 1$  year use underestimate the extent of *brand stability* as indexed from longitudinal analyses of reporting smoking the same brand at successive surveys. All three of these measures were stable across the period of the study, with no clear evidence of any impact of policy changes.

These measures seem to assess somewhat different things. Having a *regular brand* showed greater differences to the other measures, which might be expected, given its more subjective nature. *Brand stability* and  $\geq 1$  year use showed similar patterns except among the least addicted group, which showed lower brand stability but were no less likely to report having smoked their current brand for  $\geq 1$  year.

The data from cumulative brand switching wave to wave show that over a period of 10 years most smokers have made at least one brand switch. That the small retained cohorts were, if anything, more brand loyal, makes the overall estimate of consistency of brand use likely conservative. That said, it may underestimate brand loyalty longer term, as some may have a preferred brand and return to it over time. However, it does show that there is considerable switching. In future work, we plan to look at whether stability of brand choice is related to interest in and actual quitting activity.

It is not possible to draw any clear conclusions as to whether brand stability might have changed from the period when cigarettes could be more actively promoted. The estimates found in industry documents would suggest there may have been an

increase in stability, as the rates of brand switching reported in the 1980s was much higher (about 33%).<sup>18</sup> It is not clear what the basis of this estimate is, but as it indicates greater switching than any of our measures and is likely to be based on cross-sectional data, it seems likely that switching may have declined, but is now stable.

The most important reasons for brand choice among switchers were price, to be the same as that of their friends and pack design. Satisfaction and taste were the major reasons in those who were brand stable. For consciously mediated choice, those aspects of cigarettes that are intrinsic seem more important for those maintaining the same brand, while more external factors may be stimulating switching. Unfortunately, as these measures were only asked of all smokers in the last wave, we cannot explore prospective associations at this point.

It is notable that gender appears to have little effect on brand loyalty, and no relationship with reasons for brand choice.

The youngest age group (18-24 years) was generally the least brand loyal, with little difference between the other age groups. Young people were more likely to report peer influence as a reason for choice, whereas older people (55+ years) were more likely to report choosing for health concerns and satisfaction. As friendship groups probably change more in the young this is likely to contribute to the greater switching among this group. It should be noted that the under 25 s, are under-represented in this study.

As expected, low-income smokers were less brand loyal and report being more price-sensitive, although we found no impact of the large 2010 price increase in this group. The only evidence of any possible relationship between policy changes and brand loyalty was that this substantial taxation increase may have decreased *brand stability* in high-income smokers. However, given there was neither an overall change to *brand stability* nor an increase in downshifting to value categories, we are not sure that it can be attributed to the price change.

The least addicted were less brand loyal than all others and most likely to choose the same brand as their friends. Both could be because they are more likely to share packs, and thus, have their choices more determined by others. The consistent

**Table 3** OR (95% CI) of sociodemographics predicting proportion of smokers nominating reasons for brand choice

|                            | % of Wave 9 sample    | Tar/nicotine levels  | Price                   | Same as friends         | Health                 | To help quit           | Taste                 | Satisfaction           | Pack design         |
|----------------------------|-----------------------|----------------------|-------------------------|-------------------------|------------------------|------------------------|-----------------------|------------------------|---------------------|
| Sex                        | Female (54.5%) REF    | 1                    | 1                       | 1                       | 1                      | 1                      | 1                     | 1                      | 1                   |
|                            | Male (45.5%)          | 0.91 (0.69 to 1.19)  | 0.87 (0.67 to 1.13)     | 1.06 (0.76 to 1.48)     | 1.19 (0.86 to 1.65)    | 1.06 (0.72 to 1.57)    | 1.05 (0.78 to 1.41)   | 1.10 (0.84 to 1.45)    | 1.45 (0.96 to 2.20) |
| Age                        | 18–24 years (2.8%)    | 0.39 (0.14 to 1.07)  | 0.72 (0.31 to 1.67)     | 9.33 (3.99 to 21.85)*** | 0.098 (0.01 to 0.74)*  | 1.19 (0.42 to 3.35)    | 1.11 (0.40 to 3.07)   | 0.95 (0.39 to 2.36)    | 1.35 (0.43–4.19)    |
|                            | 25–39 years (19.3%)   | 0.87 (0.59 to 1.29)  | 1.28 (0.88 to 1.86)     | 2.91 (1.83–4.63)***     | 0.38 (0.28 to 0.64)*** | 0.68 (0.37 to 1.24)    | 0.80 (0.51 to 1.24)   | 0.46 (0.31 to 0.69)*** | 1.03 (0.56 to 1.88) |
|                            | 40–54 years (42.7%)   | 0.85 (0.62 to 1.16)  | 1.08 (0.80 to 1.46)     | 1.25 (0.82 to 1.91)     | 0.56 (0.39 to 0.81)**  | 0.88 (0.56 to 1.39)    | 0.78 (0.55 to 1.11)   | 0.61 (0.44 to 0.85)**  | 0.90 (0.55 to 1.48) |
|                            | ≥55 years (35.2%) REF | 1                    | 1                       | 1                       | 1                      | 1                      | 1                     | 1                      | 1                   |
| Income                     | Low (27.9%) REF       | 1                    | 1                       | 1                       | 1                      | 1                      | 1                     | 1                      | 1                   |
|                            | Moderate (28.5%)      | 1.22 (0.85 to 1.77)  | 0.61 (0.44 to 0.87)**   | 0.68 (0.43 to 1.09)     | 0.81 (0.82 to 1.26)    | 0.71 (0.43 to 1.19)    | 1.57 (1.06 to 2.36)*  | 1.40 (0.96 to 2.03)    | 0.70 (0.39 to 1.24) |
|                            | High (43.6%)          | 1.31 (0.93 to 1.86)  | 0.43 (0.31 to 0.60)***  | 0.76 (0.50 to 1.17)     | 0.94 (0.63 to 1.41)    | 0.64 (0.39 to 1.04)    | 1.70 (1.17 to 2.46)** | 1.21 (0.86 to 1.71)    | 0.83 (0.50 to 1.40) |
| Heaviness of Smoking Index | 0 (12.4%) REF         | 1                    | 1                       | 1                       | 1                      | 1                      | 1                     | 1                      | 1                   |
|                            | 1 (10.1%)             | 1.61 (0.92 to 2.81)  | 1.12 (0.65 to 1.96)     | 0.24 (0.12 to 0.49)***  | 0.74 (0.38 to 1.45)    | 0.64 (0.31 to 1.32)    | 0.81 (0.43 to 1.51)   | 1.22 (0.70 to 2.13)    | 0.70 (0.29 to 1.69) |
|                            | 2 (16.4%)             | 0.93 (0.55 to 1.56)  | 1.47 (0.89 to 2.40)     | 0.48 (0.28 to 0.83)**   | 0.78 (0.44 to 1.43)    | 0.67 (0.35 to 1.27)    | 1.09 (0.61 to 1.96)   | 1.41 (0.85 to 2.33)    | 1.21 (0.60 to 2.46) |
|                            | 3 (30.0%)             | 1.04 (0.66 to 1.66)  | 1.82 (1.17 to 2.84)**   | 0.34 (0.21 to 0.57)***  | 0.69 (0.40 to 1.18)    | 0.31 (0.16 to 0.58)*** | 0.73 (0.44 to 1.23)   | 1.12 (0.72 to 1.75)    | 0.61 (0.30 to 1.24) |
|                            | 4 (19.4%)             | 1.18 (0.71 to 1.93)  | 1.73 (1.07 to 2.80)*    | 0.42 (0.24 to 0.71)**   | 0.60 (0.33 to 1.10)    | 0.55 (0.29 to 1.03)    | 0.93 (0.53 to 1.62)   | 1.62 (0.98 to 2.65)    | 0.75 (0.36 to 1.58) |
|                            | 5 (8.6%)              | 2.00 (1.12 to 3.56)* | 1.85 (1.05 to 3.28)*    | 0.31 (0.15 to 0.64)**   | 0.69 (0.34 to 1.40)    | 0.51 (0.23 to 1.12)    | 0.96 (0.49 to 1.87)   | 1.68 (0.92 to 3.10)    | 1.14 (0.50 to 2.61) |
|                            | 6 (3.1%)              | 1.28 (0.54 to 3.06)  | 5.72 (2.22 to 14.74)*** | 0.34 (0.11 to 1.05)     | 0.42 (0.13 to 1.33)    | 0.13 (0.02 to 0.98)*   | 0.89 (0.34 to 2.34)   | 1.23 (0.51 to 2.98)    | 0.50 (0.11 to 2.37) |

Note. Logistic regressions were conducted separately for each reason, and included all predictors entered as a single block. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

increase in price as a determinant of brand choice with increasing HSI is notable and unsurprising as greater consumption equals greater cost. This finding should not be confused with actual price sensitivity as measured by economists, as heavier smokers are likely more addicted and thus may be more resistant to the effects of price on consumption. They may prefer to use brand switching as a means of minimising costs rather than reducing consumption or quitting.

Our study has some limitations, which should be noted. Sample sizes are modest, and the study is not well powered to find small effects, particularly if they only occur among subgroups. While we have not estimated power for GEE analyses, given that the 5% change in brand stability across waves did not reach significance in estimating trends, if the interventions resulted in changes of <5%, we would not have power to detect them. Power is especially relevant for age, with differential dropout resulting in greatly reduced proportion of younger smokers at later waves. Given this is a cohort sample, it is not ideal for estimating long-term prevalence of the measures in the population. There is some suggestion of decreased brand loyalty in those dropping out (possibly related to age-related dropout), suggesting the estimates of loyalty over nearly 10 years may be inflated slightly.

Importantly, we only consider brand family switching; we have not attempted to assess variant switching within a brand family. The main reason for this is the 2006 banning of misleading descriptors, which resulted in most brand variants being renamed. We have not yet fully solved the problem of matching variants across this change. We also do not consider the issue of downshifting as a function of pack size.

Similarly, the apparent ceiling effect in *regular brand* combined with the long interwave intervals may indicate a lack of sensitivity to find real differences in the measures used, especially in the period immediately following policy interventions.

Finally, the data analysed here only come from one country: Australia. Nothing should be concluded as to the patterns to be found elsewhere, particularly where either the culture or the nature of the cigarette market differs markedly from Australia. The finding of no systematic brand switching associated with the price increases is consistent with a study from Mexico, which also found a reduction in daily consumption.<sup>26</sup> In contrast, Cornelius *et al*<sup>27</sup> found downshifting in a US sample following a large price increase there in 2009.

## CONCLUSION

This study provides a picture of brand loyalty in Australia. The measures used here all suggest that brand loyalty has remained relatively steady in the Australian market this century and have been relatively unaffected by the policy innovations over that period.

### What this paper adds

- This paper contributes to the sparse academic literature on tobacco brand loyalty, showing its relative stability even in Australia's increasingly restrictive market.

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# Appendix A: Classification of brands into market segments over survey period

| Brand Family     | Classification for analysis | Price/cig (max ¢) | 2002 band | Price/cig (max ¢) | 2006 band | Price/cig (max ¢) | 2011 band |
|------------------|-----------------------------|-------------------|-----------|-------------------|-----------|-------------------|-----------|
| Albany           | P                           | 40                | P         | -                 | -         | -                 | -         |
| Alpine*          | M                           | 38                | P         | 44                | M         | 67                | M         |
| American Spirit  | P                           | 43                | P         | 52                | P         | 63                | M         |
| Ardath           | P                           | 47                | P         | -                 | -         | -                 | -         |
| Benson & Hedges  | P                           | 38                | P         | 46                | P         | 70                | P         |
| Brandon          | D                           | 33                | D         | 37                | D         | 57                | D         |
| Cambridge**      | P                           | 35                | M         | 45                | P         | 72                | P         |
| Camel            | P                           | 43                | P         | 51                | P         | 75                | P         |
| Cartier Vendome  | P                           | 48                | P         | -                 | -         | -                 | -         |
| Choice           | D                           | -                 | -         | 37                | D         | 59                | D         |
| Craven           | P                           | 42                | P         | 51                | P         | 78                | P         |
| Davidoff         | P                           | 87                | P         | 50                | P         | 73                | P         |
| Double Happiness | D                           | 31                | D         | 33                | D         | 50                | D         |
| Dunhill          | P                           | 46                | P         | 60                | P         | 76                | P         |
| Escort           | M                           | 35                | M         | 41                | M         | 61                | M         |
| GT               | D                           | -                 | -         | -                 | -         | 57                | D         |
| Gudang Garam     | P                           | 60                | P         | 68                | P         | 96                | P         |
| Holiday          | D                           | 34                | D         | 38                | D         | 59                | D         |
| Honeyrose        | D                           | 25                | D         | 25                | D         | 25                | D         |
| Horizon          | D                           | 33                | D         | 39                | D         | 59                | D         |
| John Player      | M                           | 35                | M         | 41                | M         | -                 | -         |
| JPS              | D                           | -                 | -         | -                 | -         | 59                | D         |
| Kent             | P                           | 41                | P         | 46                | P         | 71                | P         |
| Kool             | P                           | 41                | P         | 51                | P         | 79                | P         |
| Longbeach*       | D                           | 34                | D         | 40                | D         | 62                | M         |
| Lucky Strike     | P                           | 39                | P         | 46                | P         | -                 | -         |
| Marlboro         | P                           | 40                | P         | 46                | P         | 70                | P         |
| Mild 7           | P                           | 42                | P         | -                 | -         | -                 | -         |
| More             | P                           | 47                | P         | 55                | P         | 79                | P         |
| Next             | P                           | -                 | -         | 84                | P         | 84                | P         |
| Pall Mall        | M                           | -                 | -         | 41                | M         | 60                | M         |
| Peter Jackson    | M                           | 36                | M         | 44                | M         | 65                | M         |
| Peter Stuyvesant | P                           | 40                | P         | 47                | P         | 70                | P         |
| Raison           | D                           | -                 | -         | -                 | -         | 54                | D         |
| Rothmans         | P                           | 41                | P         | 50                | P         | 81                | P         |
| Silkcut          | P                           | 46                | P         | -                 | -         | -                 | -         |
| Special Mild     | M                           | 35                | M         | -                 | -         | -                 | -         |
| St Moritz        | P                           | 47                | P         | 57                | P         | -                 | -         |
| Stradbroke       | D                           | 32                | D         | 38                | D         | 59                | D         |
| Superkings       | D                           | 34                | D         | 40                | D         | -                 | -         |
| Superlights      | M                           | 35                | M         | -                 | -         | -                 | -         |
| Vogue            | P                           | 42                | P         | 55                | P         | 80                | P         |
| Wills**          | P                           | 36                | M         | 45                | P         | 73                | P         |
| Winfield         | M                           | 37                | M         | 44                | M         | 67                | M         |
| Zhong Hua**      | M                           | 39                | P         | 43                | M         | 57                | D         |

Note. D: discount, M: mainstream, P: premium

Price/cig cut-offs: **2002:** D ≤34¢, M 35-37¢, P ≥38¢; **2006:** D ≤40¢, M 41-44¢, P ≥45¢; **2011:** D ≤59¢, M 60-69¢, P ≥70¢

\* Brands with >1% market share that changed market segment category over survey period

\*\* Brands with <1% market share that changed market segment category over survey period

- brand was not currently being sold, or was not listed as preferred brand by any participant



# 澳大利亚的卷烟品牌忠诚度：源自国际烟草控制政策评估项目四国调查的结果

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► 更多资料仅于网上公布，如需参考请浏览在线杂志。（<http://dx.doi.org/10.1136/tobaccocontrol-2013-051071>）

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## 摘要

**背景和目的** 目前很少有关于卷烟品牌忠诚度及品牌转换的学术研究，而针对在限制性营销环境（如澳大利亚）下的此类研究更少见。本文探讨了十年间澳大利亚吸烟者的卷烟品牌忠诚度、选择品牌的原因及其与社会人口变量之间的关系。

**方法** 数据来源于国际烟草控制政策评估项目（ITC）四国调查的前九轮中澳大利亚的吸烟者，调查跨度为2002年到2012年初。主要调查指标包括是否有常用品牌，是否使用该品牌至少一年，品牌稳定性（根据是否在接下来几轮调查中使用同一品牌导出），及品牌选择的原因。

**结果** 品牌忠诚度的调查指标在调查期间的波动很小，品牌稳定性在80%左右，并且大约95%的吸烟者表示有常用品牌。相对于25岁以下的吸烟者，年龄较大的吸烟者有更高的品牌忠诚度。年轻人的品牌选择更多受朋友影响，而年龄相对较大的人则更从健康考虑。价格是品牌变更的最主要原因。相比最低收入人群，较高收入的群体品牌忠诚度更高。烟瘾程度最低的吸烟者品牌忠诚度较低。我们没有发现品牌忠诚度与已执行的用来影响烟草使用的各项政策之间有明确的关联。

**结论** 澳大利亚吸烟者的卷烟品牌忠诚度相当高且稳定，卷烟品牌忠诚度并未随烟草控制政策改变而产生重大变化。

## 前言

本文记录了2002年到2012年初澳大利亚吸烟者在烟草品牌忠诚度的各个方面，包括品牌转换率和品牌选择的原因。澳大利亚14岁及以上的人群吸烟率在此期间有所下降，由2001年的19.4%下降到2010年的15.1%<sup>[1]</sup>。有几种因素会影响卷烟品牌的选择，比如价格和包装<sup>[2,3]</sup>，以及吸烟者珍视自己的卷烟品牌的程度。他们一般不轻易更换卷烟品牌，除非他们有机会使用更符合他们口味的品牌。

就某些方面而言，澳大利亚是一个独特的卷烟市场。尽管大约99%的市场份额被三大市场公司所占据<sup>[4]</sup>，澳大利亚还是有许多可供选

择的品牌种类，且品牌市场份额的集中度低于其他国家，如美国。卷烟包装规格从20支到50支不等，这归因于历史上卷烟是按照重量征税的，但从1999年以后卷烟开始按照每支价格征税<sup>[5]</sup>。大规格的包装（>25）主要用于低价品牌。烟草市场被烟草业划分为三个价格段：高端、主流、和低价。

澳大利亚逐渐成为限制越来越严格的卷烟市场之一<sup>[6]</sup>。到2000年，卷烟广告已禁止在卷烟零售点（POS）和卷烟包装以外的任何地方投放，烟草赞助只存在非常有限的几种形式并且截止于2006年。从州的角度看，各州在2009到2011年间逐渐禁止在卷烟零售点展示卷烟。在此之前，有些州就已经禁止了在卷烟零售点投放卷烟广告并限制卷烟展示的尺寸<sup>[7]</sup>。现在所有的州都要求烟草产品在零售点隐藏起来<sup>[8]</sup>，这减少了与之相关的随机购买<sup>[9]</sup>。2006年，如“淡味”、“柔和”这样的误导性的品种标识被禁止使用，而且包装上仅有文字的健康警示被包装正面稍微变大（由25%变为30%），背面大面积变大（由30%变为90%）的图形警示所替代。这些警示标识增强了吸烟者对包装的与健康相关的反应<sup>[2]</sup>，而这些反应被证实与戒烟相关<sup>[10]</sup>。最后，澳大利亚在2010年在常规消费者价格指数基础加价之上又加收了25%的税。

以上提到的任何一条政策都不是为了影响卷烟品牌选择而制定的。这些政策的目标都在于提高消费者的健康意识，增加戒烟和/或整体减少开始吸烟者。然而，有些影响品牌外观的政策，如包装上的图形警示，在零售点是否显眼（不可见可能会减少品牌转换），以及价格上升（导致更换为便宜的品牌），会明显影响品牌选择。这些选择的存在可能通过某些方式（至少部分）减弱政策的预期效果。

对品牌转换的研究与烟草行业的商业利益直接相关。二十世纪九十年代初在美国和加拿大的诉讼，其中的部分研究已经可以公开获得<sup>[11]</sup>。这些研究的大部分是在美国开展的，而且大多发生在八十年代末到九十年代初期间<sup>[12,13]</sup>。1991年的《Philip Morris Switching Book》<sup>[14]</sup>项目，在12个月内电话访问了34117名美国吸烟者。该研究广泛描述了品牌转换者的人口学特征、卷烟类型、公司和卷烟品牌。“品牌转换者”在此横向调查中被定义为那些吸当前使用品牌的卷烟不超过一年的人，但测量方法未

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知。尽管没有具体指明早期的数据源，这项文献额外列出了从1981年到1991年的品牌转换率（1981年最高，占吸烟者的11.0%；1987年最低，为6.2%）。最近，一项2000年的短期市场研究总结表明在过去的两年时间里美国四大主流品牌系列的品牌转换率在14%左右<sup>[15]</sup>。这与前期的数据一致，表明品牌转换趋势没有发生重大变化。

独立的品牌转换研究主要集中在美国市场。这些研究表明，在1986年到1993年间，每年都有大约10%的吸烟者转换品牌<sup>[16,17]</sup>。一些关于烟草广告对于青少年影响的独立研究显示，品牌选择与朋友的影响和与品牌广告的接触有关<sup>[18]</sup>。而且，一项1994年美国的研究发现，大部分的普通成年吸烟者都指定了他们第一次抽烟的品牌作为他们日后的常用品牌。这表现了当下的和持续的品牌忠诚度<sup>[19]</sup>。

在澳大利亚，关于卷烟品牌忠诚度和品牌转换的研究很少。一份1990年到2001年对烟草业文件的分析表明，与美国市场相比，澳大利亚吸烟者被认为品牌忠诚度较低，更可能吸多个品牌的卷烟或者在不同品牌间转换<sup>[11]</sup>。一项关于澳大利亚市场的烟草业报告显示品牌系列的转换率在15%左右。这些数据来源于1985年至1988年间每六个月对吸烟者的电话调查，询问他们使用的主要卷烟品牌 and 是否在过去六个月换过品牌<sup>[19]</sup>。Philip Morris在1990年的另一份文件表明，在澳大利亚至少有33%的吸烟者每年都转换卷烟的品牌<sup>[20]</sup>；然而，因为缺乏关于所采取研究方法的细节，如此高的发生率可能包含了品牌中不同品种的转换。对公开文献的搜索没有发现更新的相关烟草业文献。假设烟草业准确评估了品牌转换率，那么以上数据表明，至少在那个时候澳大利亚吸烟者比同期的美国吸烟者表现出了较低的品牌忠诚度。澳大利亚当前限制性的烟草营销环境与美国以及澳大利亚前期研究的营销环境有了明显的不同。品牌间差异的降低可能会降低品牌忠诚度，然而同时也会减少吸烟者转换卷烟品牌的动机。

本文旨在描述澳大利亚吸烟者在过去十年中卷烟品牌系列的转换、选择品牌的原因和其他关于忠诚度的指标。本文同样探索了几个评估品牌忠诚度的方法，以比较它们是否会得到相似的结果。我们探讨了在较贫困人群中品牌忠诚度降低的可能性（因价格差异而导致一些人被迫降低档次并选择低于个人期望的便宜品牌），并且更加广泛地探讨了政策改变是否会对品牌忠诚度产生明显的影响。

## 方法

### 样本

国际烟草控制政策评估项目（ITC）包含了一项对于澳大利亚、加拿大、美国和英国四国吸烟者的纵向研究（ITC四国项目）。本文使用了采集于澳大利亚的九轮数据，研究对象为当前（至少每月一次的）吸烟者（包括吸机制卷烟或手工卷烟）。该项调查使用电脑辅助的电话调查，以及近期的在线网络调查部分。每一轮队列研究样本中失访的受访者由在同一抽样框架中进行的补充抽样来保持样本大小一致。该方法的详细描述可参见Fong等人<sup>[21]</sup>和Thompson等人<sup>[22]</sup>的文章。

吸烟者的样本数第一轮（2002年）为2272，第二轮（2003年）为1974，第三轮（2004年）为1851，第四轮（2005-2006年）为1714，第五轮（2006-2007年）为1801，第六轮（2007-2008年）为1791人，第七轮（2008-2009）为1372人，第八轮（2011年）为1111人，第九轮（2011-2012年）为1104。第一轮受访者中有356名吸烟者

一直完成了所有后续轮次的访问。

由于这是一项队列调查，失访者从同一抽样人群中补充且年轻的吸烟者有较高的失访率，导致队列中样本的平均年龄随着轮次的增加而增加，从38.9岁（标准误差=13.6）增加到50.0岁（标准误差=12.8）。

### 品牌忠诚度的衡量指标

有三种评估品牌忠诚度的指标：（1）使用时间大于等于1年：吸烟者在每轮调查中被问及“你吸的最多的卷烟品牌是什么？”。回答了某一品牌的人会继续被问及他们吸这个品牌的卷烟有多久了（第1-5轮调查），或者只是简单问及他们是否吸该品牌的卷烟至少一年（第6-9轮调查）。

（2）品牌稳定性：定义为在某轮调查中报告的品牌系列（忽略不同品种）与在下轮调查中报告的一致性。该项指标是基于连续两轮调查的时间段；因此在任何一轮中戒烟的受访者，在其相邻的两个时间段都无法获得该项指标。（3）常用品牌：“你有常用的卷烟品牌和品种吗？”，此问题仅在第5-9轮调查中被问及。当调查对象回答他们有常用的卷烟品牌并告知何种品牌时，他们的答案将被使用到上述品牌评估指标中。在第5轮调查中，那些没有常用品牌的人，没有被问到他们吸的最多的是哪种品牌的卷烟；因此品牌稳定性用他们最近一次购买的品种来导出。对于第5-9轮调查，当常用品牌的问题被提及，那些没有常用品牌的人将不会被询问他们吸该品牌卷烟的时间是否超过一年，我们假定他们吸某一品牌卷烟的时间少于1年。

### 品牌选择原因的衡量指标

品牌选择的原因仅在2011年第9轮调查中被询问。通过选择是/否来回答下列问题：“你决定吸这个牌子是否基于以下任何一项：品牌的焦油含量和尼古丁含量？它可能对健康不太有害？作为一种戒烟的方法？价格？它们的味道？它们的满足度？包装的观感？朋友们吸用它们？”。

### 其他指标

社会人口学指标包括性别、年龄组（18-24岁、25-39岁、40-54岁和55岁及以上）和收入类别（来自家庭年收入：低收入，<\$30,000；中等收入，\$30,000-\$59,999；高收入，\$60,000及以上）。烟草依赖度用烟瘾程度指数评估（HSI；分为七个等级，0表示烟瘾程度最低，6表示烟瘾程度最高）<sup>[23]</sup>。

品牌价格的分类依据为列在不同版本的《澳大利亚烟草零售商》中的推荐零售价，版本分别为本项研究的初期（2002年12月到2003年1月），中期（2006年10月到11月），和末期（2011年11月到12月）。在每个时间段，品牌都按照每支卷烟的最高价格排列（详情见在线补充材料附录A）；对每段市场，自然分界点用《澳大利亚烟草》中列举的每个细分市场的主要品牌来划分，该文献将所有最畅销的品牌都分配了适合的类别<sup>[24]</sup>。单支卷烟价格分类为低价、主流和高端，分界点分别为，2002年：≤34c，35-37c，38c+；2006年：≤40c，41-44c，45c+；2011年：≤59c，60-69c，70c+。对在以上三个时间段中出现在不同分类中的品牌，若三个时间段中有两次出现在某一类，就被归为该类别；若三次分别出现在不同类别，则被归为主流类别（只有一个品牌在一个调查对象中出现这种情况）。在那些市场份额大于1%的品牌中，Alpine被划分为“主流”，尽管它在2002年出现在“精品”类中。Longbeach

被划分在“低价”类，尽管2011年它的价格属于“主流”的范畴。

## 分析

简单的二元关系通过 $\chi^2$ 检验进行评估。通过广义估计方程（GEE）建模能够评估贯穿于整个研究过程和整体纵向趋势的人口学差异，并通过将不同调查轮次作为分类变量，来衡量在紧随执行重大政策变化后的各轮调查中政策可能产生的影响。如果GEE证明了子样本之间有差异，这些差异则进一步使用 $\chi^2$ 进行了检验。所有GEE模型都包含了不同轮次调查之间的时间间隔（连续的，天数）作为控制变量，同时人口统计学变量被独立地代入了方程来分析各变量独立的分类影响。变量的整体显著性用评估后的（复合、线性）Wald检验进行计算。用logistic回归对社会人口学因素与品牌选择原因之间的多变量关系进行了分析。我们使用G\*Power3.1.6<sup>[25]</sup>分析了logistic回归的关键效应量。该分析表明当样本大小为1000时， $\alpha$ 为0.05对检测边际效应OR<0.62或>1.52的检验功效为0.8。

## 结果

### 吸烟者的品牌选择的持久性如何？

图1表明三种品牌忠诚度的评估指标（即使用时间超过1年，品牌稳定性和常用品牌）在研究期间内明显保持了稳定。图1所示百分比根据不同轮次调查的间隔进行了调整，而表1所示百分比未经调整。常用品牌的比例为94.5%-95.1%（第5-9轮调查）。假设那些没有常用品牌的吸烟者（第5-9轮调查）使用他们指定的品牌时间少于1年，则使用某种品牌超过1年的吸烟者比例保持了较稳定的值（83.1-88.4%）。品牌稳定性则持续偏低，后续几轮调查显示使用了同一品牌的人的比例在77.6%-82.3%之间（不包括那些在其中任意一次调查中戒烟的人）。

图1也显示了那些在过去10年的调查期间一直接受调查的人中，那些在自己第一次指定卷烟品牌后就没有变更过自己的卷烟品牌的人的比例在下降。到第9轮调查

（N=254），这些人的比例相当低（39.8%）。这表明了相邻两轮调查记录下的品牌转换不仅仅是由一小群吸烟者不断转换品牌导致的。为分析保留下来的样本的相对稳定性，参加了第1-2轮调查的吸烟者根据参加调查的次数进行分组（只参加了前2轮调查，3-4轮，5-6轮，6-7轮，或者9轮调查全部参与）。尽管品牌稳定性随着调查参与轮数的增加有增加的趋势（从只参加两轮调查的稳定性80.1%，上升到九轮都参加的稳定性84.8%），这些分组与第1-2轮的品牌稳定性在统计上无显著差异（ $\chi^2(4)=6.28$ ,  $p=0.18$ ）。

最后，我们通过观察各调查轮次的效应来确定可能的趋势，并观察与干预措施相关的调查轮次是否有不同等级的稳定性。在控制了不同轮次调查的间隔后，GEE分析显示不同轮次调查中品牌稳定性无显著线性（ $p=0.11$ ）或者非线性（二次； $p=0.87$ ）的趋势。

### 品牌忠诚度的社会人口学因素

GEE分析显示女性（比男性）更可能有常用品牌（OR=1.53，95%CI 1.16-2.03， $p=0.003$ ），但是其他两项指标则没有显著的性别差异（对于使用某品牌超过1年， $p=0.32$ ；对于品牌稳定性， $p=0.21$ ）。

与最高年龄组相比（55岁以上），最低年龄组更可能有较低的品牌稳定性（OR=0.61，95%CI 0.48-0.77， $p<0.001$ ），其与其他年龄组间的差别则无显著性（25-39岁，OR=1.00，95%CI 0.84-1.19， $p=0.97$ ；40-55岁，OR=1.16，95%CI 0.99-1.36； $p=0.07$ ）。同样的，与最高年龄组相比，最低年龄组使用一种品牌的卷烟超过1年的可能性更低（OR=0.45，95%CI 0.32-0.63， $p<0.001$ ），其与其他年龄组之间无明显差异（25-39岁，OR=0.82，95%CI 0.64-1.05， $p=0.12$ ；40-54岁，OR=1.14，95%CI 0.90-1.44， $p=0.27$ ）。不同于以上两项指标，对常用品牌而言，与最高年龄组相比，两个中等年龄组更可能有常用品牌（40-55岁，OR=1.78，95%CI 1.19-2.68， $p=0.005$ ；25-39岁，OR=1.64，95%CI 1.01-2.66， $p=0.04$ ），而最低年龄组和最高年龄组之间无显著性差异（18-25岁，OR=1.04，95%CI 0.47-2.29， $p=0.92$ ）。

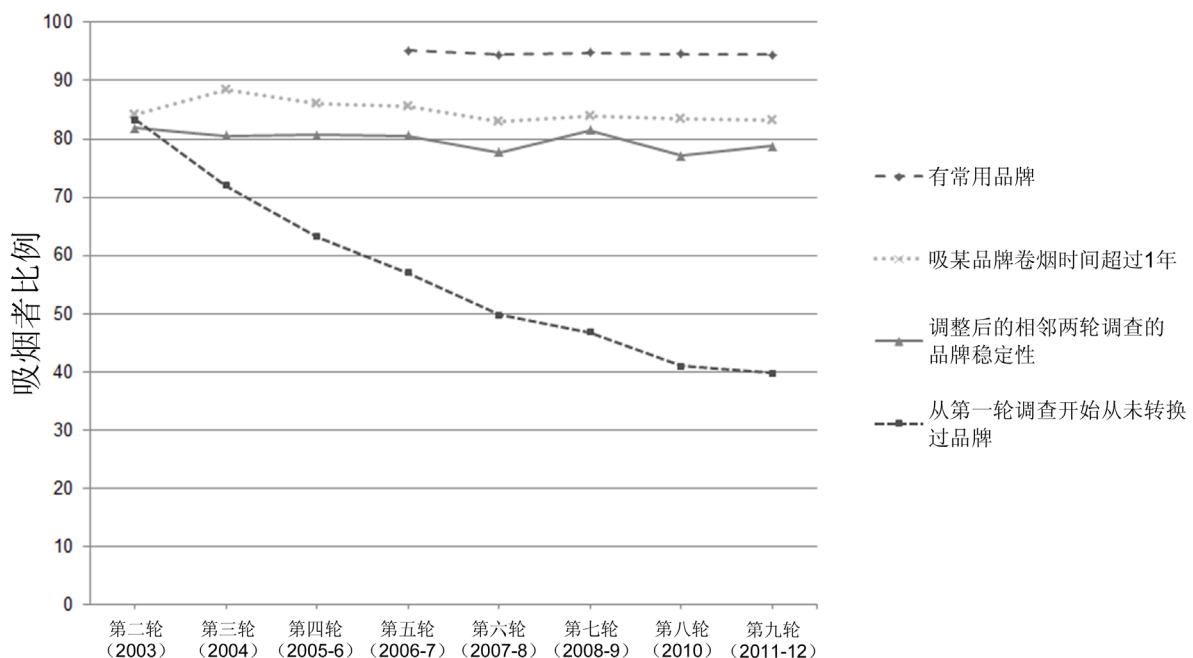


图1 第2轮到第9轮调查的品牌选择的稳定性



表1 在相邻两轮调查中吸相同品牌卷烟的吸烟者比例（按年龄和性别分组）

|                    | 第1-2轮<br>调查<br>2002-3 | 第2-3轮<br>调查<br>2003-4 | 第3-4轮<br>调查<br>2004-6 | 第4-5轮<br>调查<br>2005-7 | 第5-6轮<br>调查<br>2006-7 | 第6-7轮<br>调查<br>2007-9 | 第7-8轮<br>调查<br>2008-10 | 第8-9轮<br>调查<br>2010-12 |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| 吸相同品牌的总比例（未调整年龄）   | 83.3                  | 81.4                  | 81.4                  | 81.5                  | 78.6                  | 82.1                  | 76.1                   | 78.9                   |
| 18-24岁             | 75.4                  | 69.2                  | 69.2                  | 71.2                  | 72.2                  | 62.2                  | 42.9*                  | 100.0†                 |
| 25-39岁             | 82.9                  | 81.0                  | 79.3                  | 83.0                  | 79.9                  | 84.2                  | 73.8                   | 75.0                   |
| 40-54岁             | 85.9                  | 82.5                  | 85.7                  | 84.1                  | 81.3                  | 83.3                  | 76.0                   | 81.0                   |
| ≥55岁               | 85.7                  | 86.8                  | 80.4                  | 77.7                  | 74.1                  | 80.4                  | 79.2                   | 77.4                   |
| X <sup>2</sup> (3) | 14.52                 | 17.58                 | 16.41                 | 9.21                  | 7.71                  | 12.07                 | 10.43                  | 5.07                   |
| p值                 | 0.002                 | 0.001                 | 0.001                 | 0.044                 | 0.070                 | 0.007                 | 0.015                  | 0.166                  |
| 收入                 |                       |                       |                       |                       |                       |                       |                        |                        |
| 低                  | 80.3                  | 77.5                  | 75.8                  | 76.0                  | 72.7                  | 71.7                  | 70.6                   | 73.6                   |
| 中                  | 83.2                  | 79.6                  | 80.4                  | 81.6                  | 77.8                  | 82.5                  | 79.0                   | 79.2                   |
| 高                  | 85.9                  | 87.4                  | 87.3                  | 86.9                  | 84.4                  | 87.4                  | 77.7                   | 82.7                   |
| X <sup>2</sup> (2) | 5.44                  | 13.55                 | 17.46                 | 13.66                 | 15.35                 | 30.24                 | 5.39                   | 6.28                   |
| p值                 | 0.066                 | 0.001                 | 0.0002                | 0.001                 | 0.001                 | <0.0001               | 0.067                  | 0.043                  |

\*单元数=6。

†单元数=10。

与最低收入群体相比，中等收入群体（OR=1.37，95%CI 1.11-1.70，p=0.004）和最高收入群体（OR=1.77，95%CI 1.41-2.23，p<0.001）的吸烟者更可能使用他们的卷烟品牌超过1年，差异具有显著性。常用品牌的情况与之相同，尽管差异并没有显著性。

同样与最低收入群体相比，品牌稳定性更可能出现在中等收入群体（OR=1.29，CI 1.12-1.49，p=0.001）并最有可能出现在最高收入群体（OR=1.74，CI 1.49-2.04，p<0.0001）。不同调查轮次间的差异较大，具体情况见表1。值得注意的是，在2010年增税后，两轮调查中不同收入群体之间品牌稳定性的差异消失了。对各收入群体分别进行分析发现，调查轮次对中、低收入群体品牌稳定性无影响。在高收入群体中，第2轮调查的品牌稳定性在增税后（第8轮调查）显著下降（OR=0.27，95%CI 0.10-0.73，p=0.009），尽管这种下降趋势在第9轮调查中有所回升（OR=0.56，95%CI 0.31-1.01，p=0.053）。我们探讨了出现这种情况是否是因为人们降档选择比较便宜的品牌；然而，在高收入群体中第6-7轮调查的品牌转换率与第7-8轮调查相比无显著性差异。由于这一段时间内卷烟消费税有了大幅提高，我们还研究了卷烟价格在此期间的变化（见表2）。在第7轮调查和第8轮调查中每支卷烟价格增加的百分比在不同价格分类中是相近的，代表着高端卷烟价格的绝对增长量更大。

与烟瘾程度最高的吸烟者相比（HSI=6），GEE分析结果表明，烟瘾程度最低的吸烟者（HSI=0）的品牌稳定性明显较低（OR=0.63，CI 0.41-0.96，p=0.032）；其他烟瘾程度的吸烟者与之相比无显著性差异。GEE显示烟瘾程度与吸某品牌卷烟超过1年无显著相关（整体的 $\chi^2(6)=11.23$ ，p=0.08）

然而，烟瘾程度与有常用品牌之间存在曲线关系（整体的 $\chi^2(6)=17.08$ ，p<0.01）。烟瘾程度值在0-5之间有常用品牌的比例随着烟瘾程度的上升而上升，然后烟瘾程度最高者的比例骤然下降到低于烟瘾程度最低者的比例，尽管两者的

比例没有显著性差异。

#### 品牌选择的原因（仅限于第9轮调查）

图2说明了调查中品牌选择的原因和品牌稳定性之间的关系。那些因为焦油/尼古丁含量、味道或者觉得他们的卷烟品牌更能使他们满足而选择卷烟品牌的吸烟者，更可能在第8轮到第9轮的调查中保持品牌稳定性。那些因为品牌的包装设计、跟随朋友的选择、或者价格而选择品牌的吸烟者有较少的可能性保持品牌稳定性；价格是品牌转换最常见的原因。

表3说明了品牌选择原因与社会人口学因素之间的关系。

未发现性别间的差异。

年龄组越高，吸烟者越可能出于健康原因选择卷烟品牌。年龄组越低，吸烟者越可能选择他们朋友所吸卷烟的品牌。在两个极端的年龄组中出于满足的目的选择卷烟品牌的比例最高。

最低收入群体最可能根据价格来选择品牌，而最高收入群体最不可能。口味的情况与之相反。

因价格决定品牌选择与烟瘾程度指数密切相关，基于‘朋友’选择品牌和帮助他们戒烟有非线性的关联。

## 讨论

这些数据表明，至少对于澳大利亚吸烟者，根据连续调查中使用同一品牌卷烟吸烟者的纵向分析，他们自报的常用品牌和使用某品牌超过1年这两个指标都低估了品牌稳定性。这三个评估指标在整个研究期间都比较稳定，并且没有清晰的证据表明政策变化会对其产生影响。

这些选取的指标评估的内容似乎不近相同。有常用品牌的指标具有更加主观性的本质，这项指标因此与其它指标相比有着更大的不同，而且此不同是可预期的。除了对于最低烟瘾者，品牌稳定性和使用某品牌超过1年的趋势相似。

表 2 作为品牌细分市场功能的2010年增税前后绝对和相对的价格增长

| 市场分类 | 2009   | 2010/2011 |      | 2011/2012 |      | 绝对增长 | 相对增长 (%) |
|------|--------|-----------|------|-----------|------|------|----------|
|      | 平均价格/支 | 平均价格/支    | 绝对增长 | 平均价格/支    | 绝对增长 |      |          |
| 低价   | 39.2c  | 50.0c     | 10.8 | 53.5c     | 3.5  | 27.5 | 7.1      |
| 主流   | 44.4c  | 55.7c     | 11.4 | 60.3c     | 4.6  | 25.6 | 8.2      |
| 高端   | 48.2c  | 61.5c     | 13.3 | 66.4c     | 4.9  | 27.6 | 8.0      |
| 合计   | 42.8c  | 54.0c     | 11.3 | 58.3c     | 4.3  | 26.4 | 8.0      |

注意，所有的价格都是调查对象报告的购买价格，不是推荐零售价。

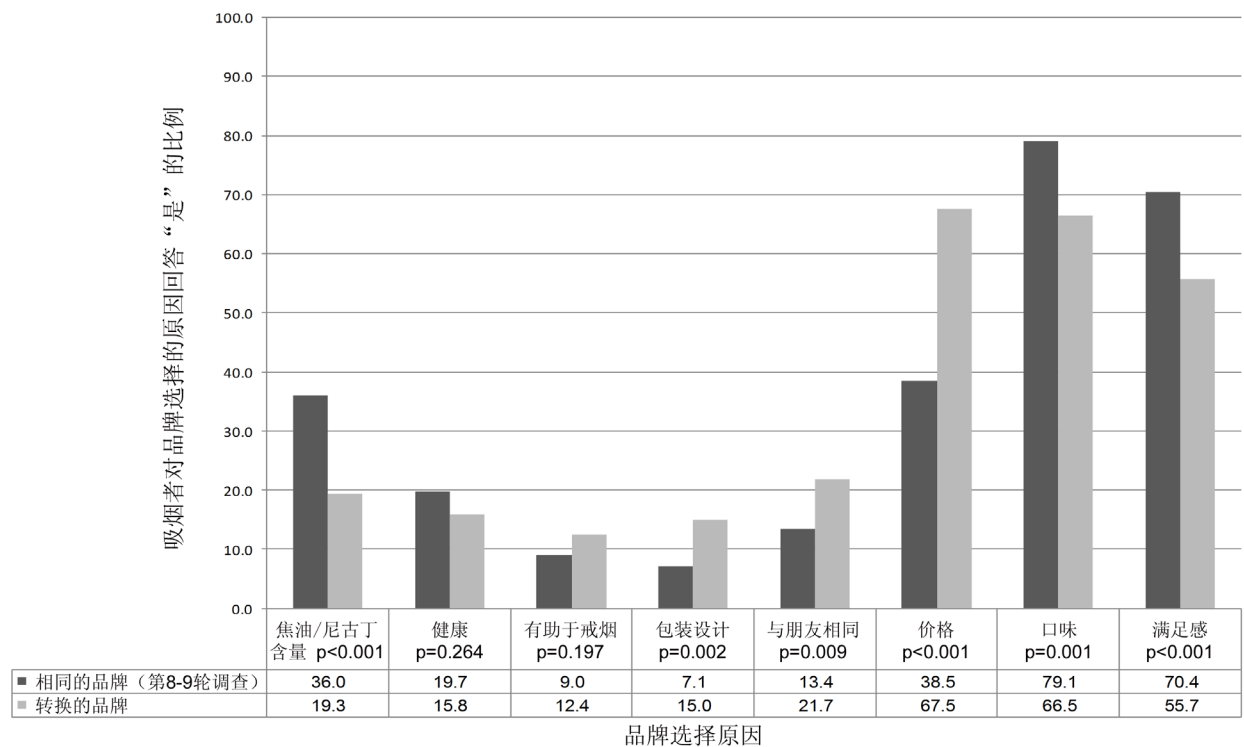


表2 第9轮调查品牌选择的原因和第8到第9轮调查的品牌稳定性。

品牌稳定性在最低烟瘾者中相对较低，但他们使用当前品牌卷烟时间超过1年的可能性并不低。

来自不同轮次调查的累计品牌转换数据显示，在过去的10年中，大多数吸烟者至少换过1次品牌。少部分保留下来的未转换品牌的研究群体（如果有的话）有更高的品牌忠诚度，这使得估计的品牌稳定性总体趋于保守。也就是说，这可能会低估长期的品牌忠诚度，因为某些人可能会有一个偏爱的品牌，并随着时间的推移又重新使用该品牌。然而，该方法确实表明了明显的品牌转换的存在。在今后的研究中，我们计划探讨品牌选择的稳定性是否与戒烟意愿和实际的戒烟行为有关。

本研究不能就品牌稳定性是否从积极促销卷烟时期开始发生改变得出任何明确的结论。烟草业文件中所发现的评估结果认为品牌稳定性可能有所增强，因为在20世纪80年代的品牌转换率高出很多（大约33%）<sup>[18]</sup>。虽然尚不清楚该评估结果的依据，但是因为该结果比本研究中任一指标的转换率都高，并可能是基于横向研究的数据，这似乎表明品牌转换率可能已经下降，但现在趋于稳定。

对于品牌转换者而言，选择品牌最重要的原因有三个：价格、与朋友们的选择一样和包装设计。对于品牌稳定的吸烟者而言，品牌选择的主要原因是满足

程度和口味。对于自主选择而言，更多考虑卷烟的内在因素有助于维持品牌稳定，而更多考虑外在的因素则可能引发品牌转换。然而，这些指标仅在最后一轮调查中才被问及，我们不能在这一点上探索预期的相关性。

值得注意的是，性别似乎对品牌的忠诚度影响很小，并与品牌选择的原因没有任何关系。

最低年龄组（18-24岁）的品牌忠诚度最低，其他年龄组之间的差别很小。年轻人更易受同龄人的影响而做出选择，而年长者（55岁以上）更倾向于从健康和满足程度的考虑上做出选择。年轻人的朋友圈可能更常发生变动，这可能会增加这一群体的品牌转换率。值得注意的是，年龄低于25岁的人群在本研究中的代表性不足。

正如预期的那样，低收入吸烟者的品牌忠诚度较低且对价格更敏感，尽管我们并未发现2010年价格大幅上升对该人群的影响。唯一可以说明政策变化和品牌忠诚度之间可能关连的证据是，该大幅增税可能降低了高收入吸烟者的品牌稳定性。然而，既没有品牌稳定性的整体变化，也没有转向低价位卷烟的品牌转换，因此我们不确定它是否可以归因于价格的变化。



表3 不同社会人口特征的吸烟者选择卷烟品牌原因的预测比例的几率比 (OR (95% CI))

|        | 第九轮调查中所占比例       | 焦油/尼古丁含量          | 价格                   | 受朋友影响                | 健康                  | 有助于戒烟               | 口味                 | 满足程度                | 包装设计             |
|--------|------------------|-------------------|----------------------|----------------------|---------------------|---------------------|--------------------|---------------------|------------------|
| 性别     | 女性 (54.5%) 参考    | 1                 | 1                    | 1                    | 1                   | 1                   | 1                  | 1                   | 1                |
|        | 男性 (45.5%)       | 0.91 (0.69-1.19)  | 0.87 (0.67-1.13)     | 1.06 (0.76-1.48)     | 1.19 (0.86-1.65)    | 1.06 (0.72-1.57)    | 1.05 (0.78-1.41)   | 1.10 (0.84-1.45)    | 1.45 (0.96-2.20) |
| 年龄     | 18-24 岁 (2.8%)   | 0.39 (0.14-1.07)  | 0.72 (0.31-1.67)     | 9.33 (3.99-21.85)*** | 0.098 (0.01-0.74)*  | 1.19 (0.42-3.35)    | 1.11 (0.40-3.07)   | 0.95 (0.39-2.36)    | 1.35 (0.43-4.19) |
|        | 25-39 岁 (19.3%)  | 0.87 (0.59-1.29)  | 1.28 (0.88-1.86)     | 2.91 (1.83-4.63)***  | 0.38 (0.28-0.64)*** | 0.68 (0.37-1.24)    | 0.80 (0.51-1.24)   | 0.46 (0.31-0.69)*** | 1.03 (0.56-1.88) |
|        | 40-54 岁 (42.7%)  | 0.85 (0.62-1.16)  | 1.08 (0.80-1.46)     | 1.25 (0.82-1.91)     | 0.56 (0.39-0.81)**  | 0.88 (0.56-1.39)    | 0.78 (0.55-1.11)   | 0.61 (0.44-0.85)**  | 0.90 (0.55-1.48) |
|        | ≥55 岁 (35.2%) 参考 | 1                 | 1                    | 1                    | 1                   | 1                   | 1                  | 1                   | 1                |
| 收入     | 低 (27.9%) 参考     | 1                 | 1                    | 1                    | 1                   | 1                   | 1                  | 1                   | 1                |
|        | 中等 (28.5%)       | 1.22 (0.85-1.77)  | 0.61 (0.44-0.87)**   | 0.68 (0.43-1.09)     | 0.81 (0.82-1.26)    | 0.71 (0.43-1.19)    | 1.57 (1.06-2.36)*  | 1.40 (0.96-2.03)    | 0.70 (0.39-1.24) |
|        | 高 (43.6%)        | 1.31 (0.93-1.86)  | 0.43 (0.31-0.60)***  | 0.76 (0.50-1.17)     | 0.94 (0.63-1.41)    | 0.64 (0.39-1.04)    | 1.70 (1.17-2.46)** | 1.21 (0.86-1.71)    | 0.83 (0.50-1.40) |
|        | 0 (12.4%) 参考     | 1                 | 1                    | 1                    | 1                   | 1                   | 1                  | 1                   | 1                |
| 烟瘾程度指数 | 1 (10.1%)        | 1.61 (0.92-2.81)  | 1.12 (0.65-1.96)     | 0.24 (0.12-0.49)***  | 0.74 (0.38-1.45)    | 0.64 (0.31-1.32)    | 0.81 (0.43-1.51)   | 1.22 (0.70-2.13)    | 0.70 (0.29-1.69) |
|        | 2 (16.4%)        | 0.93 (0.55-1.56)  | 1.47 (0.89-2.40)     | 0.48 (0.28-0.83)**   | 0.78 (0.44-1.43)    | 0.67 (0.35-1.27)    | 1.09 (0.61-1.96)   | 1.41 (0.85-2.33)    | 1.21 (0.60-2.46) |
|        | 3 (30.0%)        | 1.04 (0.66-1.66)  | 1.82 (1.17-2.84)**   | 0.34 (0.21-0.57)***  | 0.69 (0.40-1.18)    | 0.31 (0.16-0.58)*** | 0.73 (0.44-1.23)   | 1.12 (0.72-1.75)    | 0.61 (0.30-1.24) |
|        | 4 (19.4%)        | 1.18 (0.71-1.93)  | 1.73 (1.07-2.80)*    | 0.42 (0.24-0.71)**   | 0.60 (0.33-1.10)    | 0.55 (0.29-1.03)    | 0.93 (0.53-1.62)   | 1.62 (0.98-2.65)    | 0.75 (0.36-1.58) |
|        | 5 (8.6%)         | 2.00 (1.12-3.56)* | 1.85 (1.05-3.28)*    | 0.31 (0.15-0.64)**   | 0.69 (0.34-1.40)    | 0.51 (0.23-1.12)    | 0.96 (0.49-1.87)   | 1.68 (0.92-3.10)    | 1.14 (0.50-2.61) |
|        | 6 (3.1%)         | 1.28 (0.54-3.06)  | 5.72 (2.22-14.74)*** | 0.34 (0.11-1.05)     | 0.42 (0.13-1.33)    | 0.13 (0.02-0.98)*   | 0.89 (0.34-2.34)   | 1.23 (0.51-2.98)    | 0.50 (0.11-2.37) |

注意, logistic 方程对每个品牌选择原因分别进行了回归, 并包含了作为整体代入方程的所有预测变量。\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

与其他烟瘾程度者相比, 烟瘾程度最低者的品牌忠诚度更低, 且他们更可能选择和朋友一样的品牌。二者都可以被归因为他们更有可能分享卷烟, 因此, 他们的选择更多地受他人影响。更多的消费等同于更大的花费, 因此不难理解随着烟瘾程度的上升, 以价格作为品牌选择依据的吸烟者的比例也稳步的提高。这一发现不应与经济学家所评估的实际价格的敏感性混淆, 因为更重度的吸烟者可能会有更大的烟瘾, 这可能抵消价格对其消费的影响。他们可能更愿意通过转换品牌的手段来减少花费, 而不是通过减少吸烟量或戒烟。

本研究具有一定的局限性, 应加以注意。样本量较小, 导致本研究不太具有发现一些小的效应的能力, 尤其当这些效应只在子样本中发生时。我们并未评估 GEE 分析的效力, 因为在趋势分析中在各轮调查间 5% 的品牌稳定性变化并没有显著性。但如果干预政策导致的变化小于 5%, 我们的数据则没有足够的效力来发现这个变化。效力尤其和年龄有关, 因为不同程度的失访导致后续调查轮中的年轻吸烟者的比例大幅下降。因为该调查为队列研究样本, 用该数据评估这些指标在整体人群中的长期流行率并不理想。有意见表明, 失访人群的品牌忠诚度有所降低 (可能与年龄相关的失访有关), 这意味着对近 10 年的品牌忠诚度的估计可能稍偏大。

重要的是, 我们只考虑了品牌系列之间的转换, 没有评估同一品牌系列中的不同品种的转换。其主要的原因是 2006 年颁布的对烟草误导性描述的禁令造成了大多数品牌的品种更名。我们还没有完全解决在这个变化过程中品种的匹配问题。我们也没有考虑包装尺寸的改变可能会造成降档的问题。

同样的, 常用品牌明显的封顶效应加上调查轮次之间的长期间隔, 可能会导致对发现指标间的真实差异缺乏敏感性, 特别是在随之而来的政策干预的时期。

最后, 本文分析的数据只来自一个国家: 澳大利亚。本文不能说明其他地方的情况, 特别是那些无论是卷烟文化或市场环境都明显区别于澳大利亚的地方。品牌转换率与价格上升之间没有相关性的研究发现与来自墨西哥的一项研究一致, 该研究同时发现了每日消费量的减少<sup>[26]</sup>。相比之下, Cornelius 等人<sup>[27]</sup>发现继美国 2009 年卷烟价格大副上涨后, 美国研究人群中出现了降档的现象。

## 结论

该研究提供了澳大利亚品牌忠诚度的概况。研究使用的所有指标都表明, 品牌忠诚度在本世纪澳大利亚市场一直保持了相对的稳定, 并在政策变革期间相对未受影响。

# 本文贡献

► 本文对很少被涉及的关于烟草品牌忠诚度的研究领域有一定的贡献, 研究结果表明即使是在澳大利亚越来越严格规管的市场下, 品牌忠诚度也相对稳定。

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## 贡献

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出处和同行审查 未开展; 外部同行已评审。

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