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 relationship 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 2010.1 Several factors affect brand choice, such as price and packaging,2,3 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,4 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.5 The larger pack sizes (>25) have been used mainly in brand bands. 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.6 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.7 Tobacco products are now required to be concealed at POS in all states,8 which has been associated with reduced levels of spontaneous purchasing.9 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,2 reactions shown to be associated with increased quitting.10 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.11 Most of this research is US-based, and mostly from the late 1980s to early 1990s.12,13 The 1991 ‘Philip Morris Switching Book’14 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
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, a figure consistent with the earlier data, suggesting no major change in brand switching.

The majority of independent brand-switching research has focused on the US market, and suggests that over the period 1986–1993 around 10% of smokers switched brands in any given year. 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. 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.

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. 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. Another Philip Morris document from 1990 stated that at least 33% of smokers shifted brands annually in Australia; 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. and Thompson et al.


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 3, 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).

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. 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
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 3.1.6.25 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 (≥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 ≥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 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 ≥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 ≥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,
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 ≥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 0.43). GEE showed no significant relationship between HSI and ≥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*; 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
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 ≥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 ≥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 ≥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. 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%). 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 25s, 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...
CONCLUSION

This study provides a picture of brand loyalty in Australia. The measures used here all suggest that brand loyalty has remained relatively stable in the Australian market. The nature of the cigarette market differs markedly from Australia's increasingly restrictive market. Similarly, the apparent ceiling effect in regular brand switching found elsewhere, particularly where the culture or the tobacco brand loyalty, showing its relative stability even in a market with a reduction in daily consumption. As Mexico.

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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.
Contributors  RB, FJC and GTF were involved in the design of the ITC Four Country Survey. RB conceived the topic of this paper with input from GAC and ES, who both contributed to the data analysis and interpretation, assisted by RB. GAC drafted the paper with contributions from ES; comments and amendments were provided by all authors.

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Competing interests  None.

Patient consent  Obtained.

Ethics approval  The ITC Surveys were cleared for ethics by Research Ethics Boards at the University of Waterloo (Canada), The Cancer Council Victoria, and the Cancer Ethics approval.

REFERENCES  


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

<table>
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<tr>
<th>Brand Family</th>
<th>Classification for analysis</th>
<th>Price/cig (max ¢)</th>
<th>2002 band</th>
<th>Price/cig (max ¢)</th>
<th>2006 band</th>
<th>Price/cig (max ¢)</th>
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**Note.** D: discount, M: mainstream, P: premium


* 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

Genevieve A Cowie,1 Elena Swift,2 Ron Borland,3 Frank J Chaloupka,4 Geoffrey T Fong5,6

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以及这些选择的社会人口因素。澳大利亚14岁以上的人口吸烟率在这期间有所下降，由2001年的19.4%下降到2010年的15.1%[1]。有几种因素会影响卷烟品牌的选择，比如价格和包装[2,3]，以及吸烟者对品牌的认知。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。

澳大利亚逐渐成为限制越来越严格的卷烟市场之一。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[4]。现在所有的州都要求卷烟产品在零售点隐藏起来，这减少了与之相关的随机购买[5]。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与健康相关的反应[6,7]，而这些反应被证实与戒烟相关[8]。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，在零售点是否明显（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。


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%的吸烟者更换品牌[11,17]。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[18]。

一项1994年的美国研究发现，大部分的普通成人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[19]。


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五年的市场营销研究中品牌转换率有着明显的不同，但是品牌间的差异可能降低品牌忠诚度，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、选择和品牌忠诚度的原因和其他关于忠诚度的指标。本文详细描述了几个评估品牌忠诚度的方法，以比较它们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）包含位于澳大利亚。加拿大的研究。本文使用了1985年到2011年的烟草数据，研究对象为18-24岁，并且在每个时间段，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A1）。


由于这是一项队列调查，访员从同一抽样人群中补充且年轻的吸烟者有较高的失访率，导致在后期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

三种评估品牌忠诚度的指标：（1）使用时间大于等于1年，吸烟者在每一轮调查中被问及“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：定义为在同一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。这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：为“你有常用的卷烟品牌和品牌吗？”，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，他们会被询问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，因此品牌稳定性使用他们最近一次购买的品牌来计算。对于第5-9轮调查，当某品牌的被提及，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小于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）。烟草依赖度用烟度指数评估（HSI：分为七个等级，0表示烟度程度最低，6表示烟度程度最高）。

品牌价格的分类依据为在不同版本的《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）。对每个时间段，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）。

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被划分在“低价”类，尽管2011年它的价格属于“主流”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，这些差异将进一步使用$\chi^2$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[25]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（不包括那些在任何一次性调查中戒烟的人）。

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%）。这表明了相隔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次的增加有增加的趋势（从只参加两轮调查的稳定性60.1%，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=0.07）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，与其他年龄组相比，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）

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<td>79.3</td>
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<td>79.9</td>
<td>84.2</td>
<td>73.8</td>
<td>75.0</td>
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<td>82.5</td>
<td>85.7</td>
<td>84.1</td>
<td>81.3</td>
<td>83.3</td>
<td>76.0</td>
<td>81.0</td>
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<tr>
<td>≥55岁</td>
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<td>74.1</td>
<td>80.4</td>
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<tr>
<td>X²(3)</td>
<td>14.52</td>
<td>15.58</td>
<td>16.41</td>
<td>9.21</td>
<td>7.71</td>
<td>12.07</td>
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<td>p值</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>0.044</td>
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<td>0.007</td>
<td>0.015</td>
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<td>低</td>
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<td>75.8</td>
<td>76.0</td>
<td>72.7</td>
<td>71.7</td>
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</tr>
<tr>
<td>中</td>
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<td>80.4</td>
<td>81.6</td>
<td>77.8</td>
<td>82.5</td>
<td>79.0</td>
<td>79.2</td>
</tr>
<tr>
<td>高</td>
<td>85.9</td>
<td>87.4</td>
<td>87.3</td>
<td>86.9</td>
<td>84.4</td>
<td>87.4</td>
<td>77.7</td>
<td>82.7</td>
</tr>
<tr>
<td>X²(2)</td>
<td>5.44</td>
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<td>17.46</td>
<td>13.66</td>
<td>15.35</td>
<td>30.24</td>
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<tr>
<td>p值</td>
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<td>0.001</td>
<td>0.0002</td>
<td>0.001</td>
<td>0.001</td>
<td>&lt;0.0001</td>
<td>0.067</td>
<td>0.043</td>
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</tbody>
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*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，尽管差异并不显著。

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2-3轮调查的品牌稳定性在增税后（第8-9轮调查）显著下降（OR=0.27，95%CI 0.10-0.73，p=0.009），但是这种下降趋势在第9轮调查中有所回升（OR=0.56，95%CI 0.31-1.01，p=0.053）。

与最高烟瘾程度的吸烟者相比（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差（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显示当烟瘾程度超 过6分无显著性相关。GEE的x²(6)=11.23，p=0.008。

然而，烟瘾程度与有常用品牌之间存在曲线关系（整体的x²(6)=17.08，p<0.001）。烟瘾程度在0-6分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至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说明了在调查中品牌选择的原因和品牌稳定性之间的关系。

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，尽管差异并不显著。

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### 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

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>低价</td>
<td>39.2c</td>
<td>50.0c</td>
<td>10.8</td>
<td>27.5</td>
<td>53.5c</td>
<td>3.5</td>
<td>7.1</td>
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<tr>
<td>主流</td>
<td>44.4c</td>
<td>55.7c</td>
<td>11.4</td>
<td>25.6</td>
<td>60.3c</td>
<td>4.6</td>
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<td>高端</td>
<td>48.2c</td>
<td>61.5c</td>
<td>13.3</td>
<td>27.6</td>
<td>66.4c</td>
<td>4.9</td>
<td>8.0</td>
</tr>
<tr>
<td>合计</td>
<td>42.8c</td>
<td>54.0c</td>
<td>11.3</td>
<td>26.4</td>
<td>58.3c</td>
<td>4.3</td>
<td>8.0</td>
</tr>
</tbody>
</table>

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。

### 品牌选择原因

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

品牌稳定性在最低吸烟者中相对较低，但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率的存在。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。

品牌转换率在最低吸烟者中相对较低，但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率的存在。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。

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提及，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化，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年价格大幅上升对整个品牌的影响。唯一可以说明政策变化和品牌忠诚度之间可能相关性的证据是，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。
与其他烟草成瘾程度者相比，成瘾程度最低者
的品牌忠诚度较低，他们更可能选择与朋友
一样的品牌。二者都可以被归因为他们更可能
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
难理解随着吸烟程度的上升，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市场价格的敏感
性混淆，因为更重度的吸烟者可能会有更大的
消费，这可能抵消价格对其消费的影响。他们
也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%，我们的数据没有足够的敏感度来发现这个
变化。变化尤其和年龄有关，因为不同程度的
失访导致后继调查中的年轻 吸烟者的人口
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
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。

最重要的，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
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变可能造成降档的问题。

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。品牌转换率与价格相关
性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[28]。相比之下，Cornelius等人[27]发现继美
国2009年卷烟价格大幅上涨后，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。
《原创论文》

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，品牌忠诚度也相对较稳定。

致谢

对来自 Cancer Council Victoria 的 Hua-Hie Yong 和 Timea Partos 的关于统计学的建议表示衷心感谢。

贡献

RB、FJC 和 GTF 参与了 ITC 项目调查的设计。RB 在接受 GAC 和 ES 的协助下进行了数据收集和解释。GAC 起草了文章，ES 也对文章起草做出了贡献。ES 和 GAC 在 FJC 和 GTF 提出的建议后构思了本文的主题。I TC 接受 FJC 和 GTF、RB 提出的四国调查的设计。参与了 ITC 的工作。对统计学的建议表示衷心感谢。

Hua-Hie Yong 致谢 Cancer Council Victoria 和 Timea Partos 的协助与支持。

利益冲突

无。

知情同意

已获得。

伦理审核

ITC 调查通过了 University of Waterloo（加拿大）、Cancer Council Victoria （澳大利亚）和 Monash University（澳大利亚）的研究伦理委员会/国际评审委员会的伦理审批。

出处和同行审查

未开展；外部同行已评审。

参考文献