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**Review of Evidence on the introduction of Plain
Packaging of Tobacco Products in Australia**

SLG Economics Ltd

June 2015

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Review of Evidence on the introduction of Plain Packaging of Tobacco Products in Australia

1 Introduction

This report has been commissioned by British American Tobacco (BAT). Its aim is to review the evidence on the effectiveness of the introduction of plain packaging in Australia to inform the discussion and debate around introducing the measure in other jurisdictions. It includes evidence from four surveys:

- The Australian Drug Strategy Household Survey (ANDSHS);
- The Cancer Institute New South Wales Tobacco Tracking Survey (CITTS);
- The National Tobacco Plain Packaging Tracking Survey (NTPPTS); and
- Roy Morgan Research (RMR).

2 Executive Summary

This report provides a wide range of direct evidence from four independent surveys comparing smoking prevalence, attitudes to smoking, quitting and smoking behaviour before and after the introduction of plain packaging in Australia in December 2012. It shows that in terms of the prevalence and appeal of smoking and the effectiveness of graphic health warnings, there is a significant body of evidence to show that plain packaging did not achieve its objectives. The evidence from the different surveys either moved in the opposite direction to what was sought, there was little or no change in the indicator, or it remained on the previous long-term trend. Many of the indicators showed a stronger response to the 12.5% increase in excise duty in December 2013 than to the introduction of plain packaging.

Overall, the evidence from the four surveys points to the ineffectiveness of plain packaging as a policy measure and strongly challenges the preconceptions of advocates of plain packaging. The direct evidence from the Australian experience suggests that even when combined with other tobacco regulation measures, introducing plain packaging is unlikely to be an effective policy for meeting public health objectives in other jurisdictions.

3 SLG Economics

SLG Economics is an economics consultancy set up in 2011 by Stephen Gibson providing specialist micro-economic policy advice to regulated companies, regulators and government. Mr Gibson has over 25 years' experience of leading major economic and strategy projects across a broad range of industries from both sides of the regulatory fence.

Mr Gibson has been Chief Economist at Postcomm – the independent regulator of postal services in the UK, Principal Economist at Ofcom – the communications sector regulator and Head of Economics at Network Rail – the UK rail infrastructure owner, as well as a number of other senior economics positions.

Mr Gibson has been a lecturer at City University, London on their MSc in Competition and Regulation and is a lecturer at Birkbeck University on their undergraduate and postgraduate Industrial Economics courses. He has lectured widely on economic regulation at national and international industry conferences and seminars and is regularly interviewed on the BBC TV and Radio, ITV and Sky News about economic issues. He was the external supervisor for a PhD in rail regulation at Cambridge University. He has an MA in Economics and Management Studies from Sidney Sussex College, Cambridge University and postgraduate qualifications in Computer Science, Accounting and Finance and Corporate Finance. He has published papers on regulatory and competition economics issues in peer reviewed books and journals.

4 Evidence from the Australian National Drug Strategy Household Survey

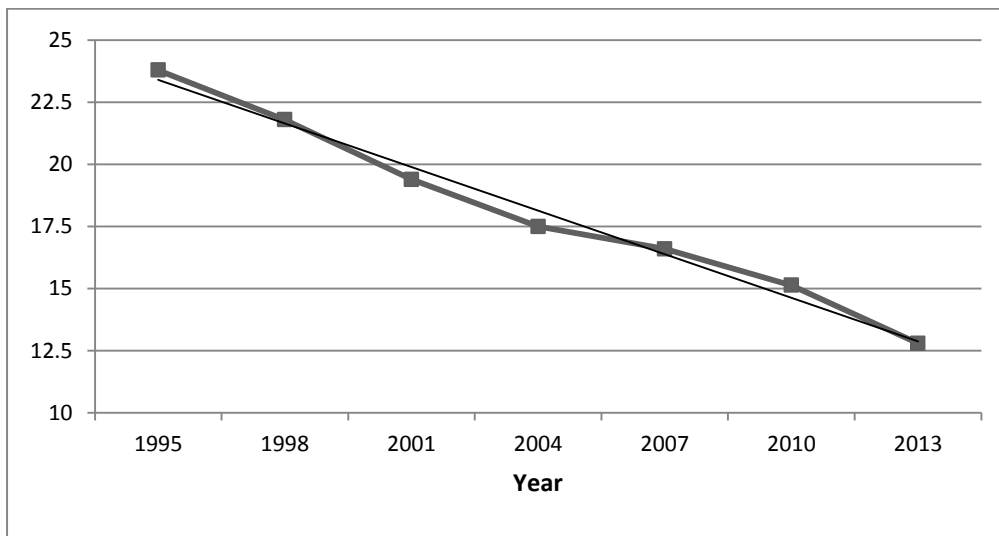
The Australian National Drug Strategy Household Survey ('**ANDSHS**') is conducted by the Australian Government every 3 years and collects data from 23,855 people selected by multistage stratified random sample design from across Australia. The most recent survey was carried out in 2013¹ after the introduction of plain packaging in December 2012.

4.1 The proportion of daily smokers

Figure 1 shows the data for daily smokers aged 14 and over, together with a linear best-fit trendline. While there are not enough data points for detailed statistical analysis, it is clear that the proportion of daily smokers has been declining steadily over time and the proportion in 2013 is almost exactly on the trendline (despite a 25% tax increase on tobacco in 2010). This suggests that there has been no significant effect on daily smoking from the introduction of plain packaging in Australia.

¹ Data collected 31 July 2013 – 1 December 2013

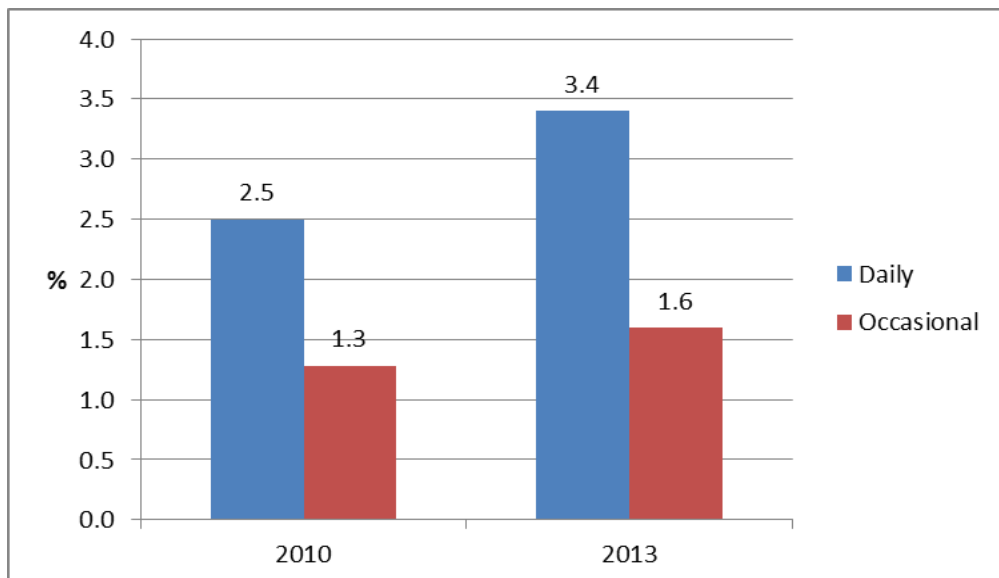
Figure 1: Daily smokers aged 14 years or older 1995-2013 (per cent)



4.2 Smoking frequency for 12-17 year old smokers

The ANDSHS also shows that the percentage of 12-17 year olds who smoked on a daily basis increased from 2.5% to 3.4% between 2010 and 2013 (the highest rate since the ANDSHS survey in 2004), and the percentage of occasional smokers aged 12-17 also increased from 1.3% to 1.6% over this period (Figure 2). While not statistically significant, this data is not supportive of plain packaging leading to fewer adolescents taking up smoking.

Figure 2: Daily and occasional smokers aged 12-17 years (per cent)

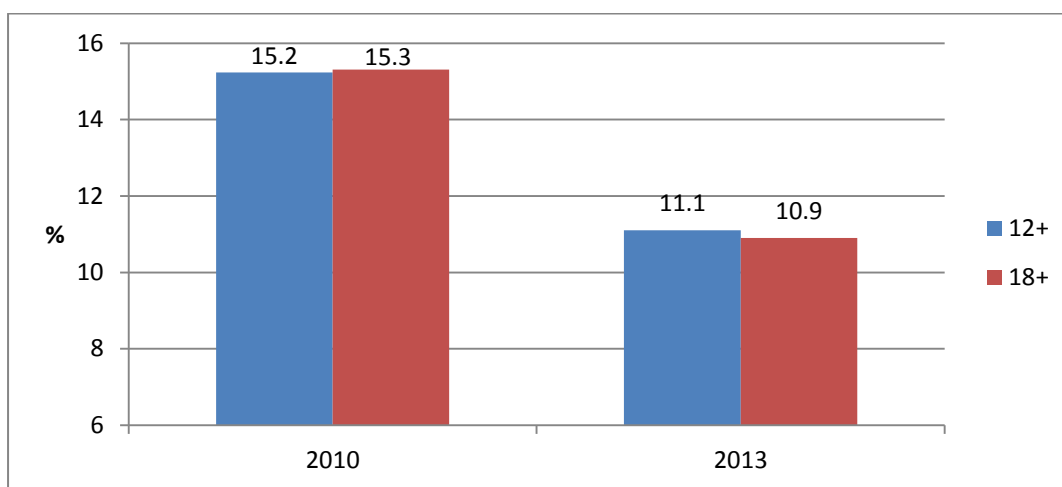


Note: Occasional smokers includes people who reported smoking weekly or less than weekly

4.3 The effectiveness of health warnings in motivating people to quit

The detailed report from the ANDSHS² examines the main reasons that smokers attempted to quit or change their smoking behaviour in 2013 compared to 2010. As shown in Figure 3, the percentage of smokers nominating health warnings on tobacco packets as the reason for trying to quit smoking reduced from 15.2% in 2010 to 11.1% in 2013 for all respondents (aged over 12) and from 15.3% to 10.9% for respondents aged over 18. This suggests that graphic health warnings were less effective in inducing smokers to quit after the introduction of plain packaging.

Figure 3: Proportion of respondents nominating health warnings on tobacco packs as the reason for trying to quit smoking



5 Evidence from Cancer Institute NSW Tobacco Tracking Survey

5.1 Analysis of CITTs data

The Cancer Institute NSW [New South Wales] Tobacco Tracking Survey ('CITTs') is a serial cross-sectional telephone survey of adult smokers and recent quitters (who have quit in the previous 12 months) that includes questions pertaining to smoking-related cognitions and behaviours, as well as responses to tobacco control media campaigns and policies. The CITTs sample obtained provides data from January 2009 to December 2014.

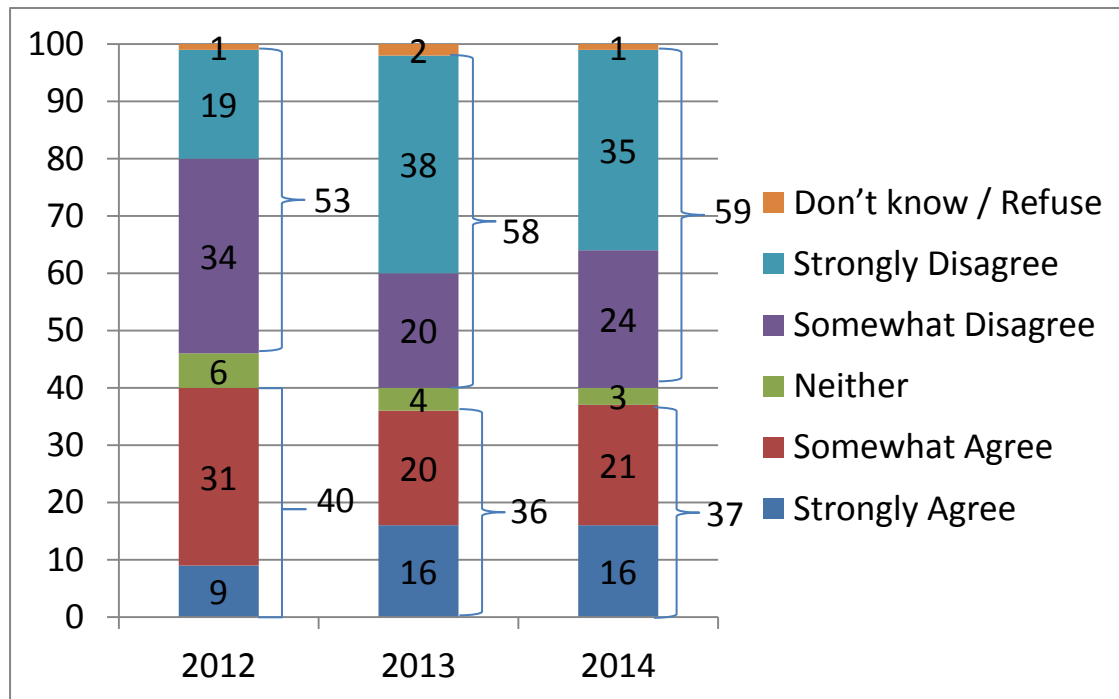
5.2 Evidence on encouraging smokers to quit

Figure 4 shows that when asked whether graphic warnings encouraged smokers to quit, the number of respondents strongly agreeing or somewhat agreeing reduced from 40% in 2012 to 36% in 2013 (after the introduction of plain packaging in Australia in December 2012)

² National Drug Strategy Household Survey detailed report: 2013, Drug statistics series no. 28, Australian Institute of Health and Welfare, Nov 2014 <http://www.aihw.gov.au/publication-detail/?id=60129549469>.

remaining at 37% in 2014. The number of respondents somewhat or strongly disagreeing increased from 53% to 58% between 2012 and 2013 and increased further to 59% in 2014 (and the number of respondents strongly disagreeing doubled from 19% to 38% between 2012 and 2013)³. This suggests that health warnings were less effective at encouraging smokers and recent quitters to stop smoking after the introduction of plain packaging.

Figure 4: Do you agree with the following statement? The graphic warnings encourage/d me to stop smoking⁴



5.3 Evidence on effectiveness of Graphic Health Warnings

In terms of the wider impact of graphic health warnings, the CITTs data strongly challenge the assumption that plain packaging increases the effectiveness of graphic health warnings as shown in Table 1. They show that since plain packaging was introduced:

- The proportion of smokers ignoring the health warning has increased;
- The proportion of smokers thinking health warnings are exaggerated has increased;
- The proportion of smokers thinking health warnings help them quit has decreased; and
- The proportion of smokers seeking to hide their cigarettes from others due to the health warnings has not changed.

³ This question was asked to respondents who noticed graphic health warnings in 2012 and to all respondents in 2013 and 2014. (2012 n=2314, 2013 n=1085, 2014 n=1986).

⁴ Based on SLG Economics analysis of the CITTs dataset obtained through Freedom of Information Requests.

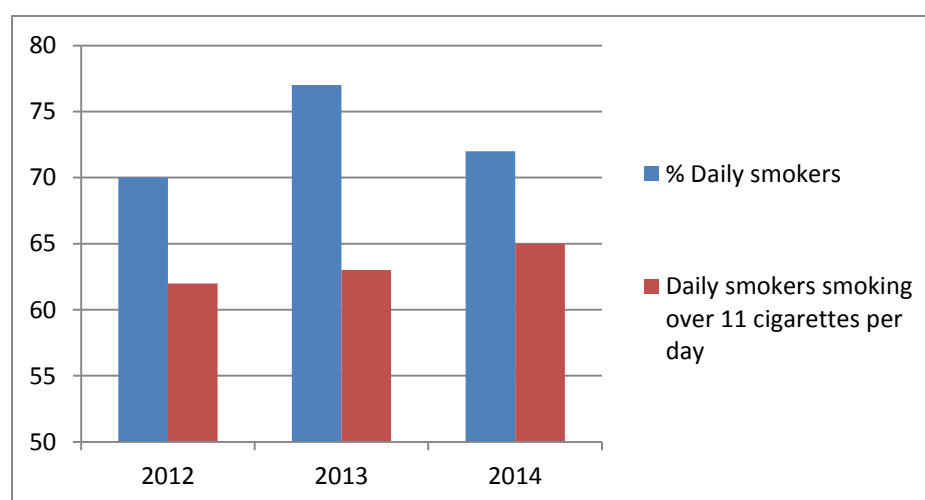
Table 1: Awareness of graphic warnings before and after plain packaging⁵

	2012	2013	2014
I don't look at warnings each time I get a cigarette	3.7%	3.8%	3.8%
The graphic health warnings are exaggerated	2.7%	3.2%	3.1%
The graphic warnings encouraged me to stop smoking	2.8%	2.6%	2.6%
They make me feel that I should hide my packet from the view of others	2.5%	2.6%	2.5%

5.4 Evidence on smoking frequency

The CITTs study also shows (Figure 5) that the proportion of smokers surveyed who smoked on a daily basis⁶ actually increased from 70% in 2012 to 77%⁷ in 2013 (after the introduction of plain packaging) and remained at 72% into 2014 – after the first of four 12.5% increases in tobacco duty was introduced on 1 December 2013. In addition there was a rise in the proportion of daily smokers who smoked over 11 cigarettes a day from 62% in 2012 to 63% in 2013 and 65% in 2014⁸.

Figure 5: CITTs data on consumer smoking behaviour⁹



⁵ Based on SLG Economics analysis of the CITTs survey dataset obtained through Freedom of Information Requests. The analysis in Table 4 is an average response score using a scale of 1 to 5 for each response, where 1 = “strongly disagree” and 5 = “strongly agree”. “Don’t know” and “refuse” responses were removed before calculating the average.

⁶ Question asked: And how often do you smoke cigarette, pipes or other tobacco products? 2012 (n=2,502), 2013 (n=2522), 2014 (n=2046).

⁷ Statistically significant at 95% level.

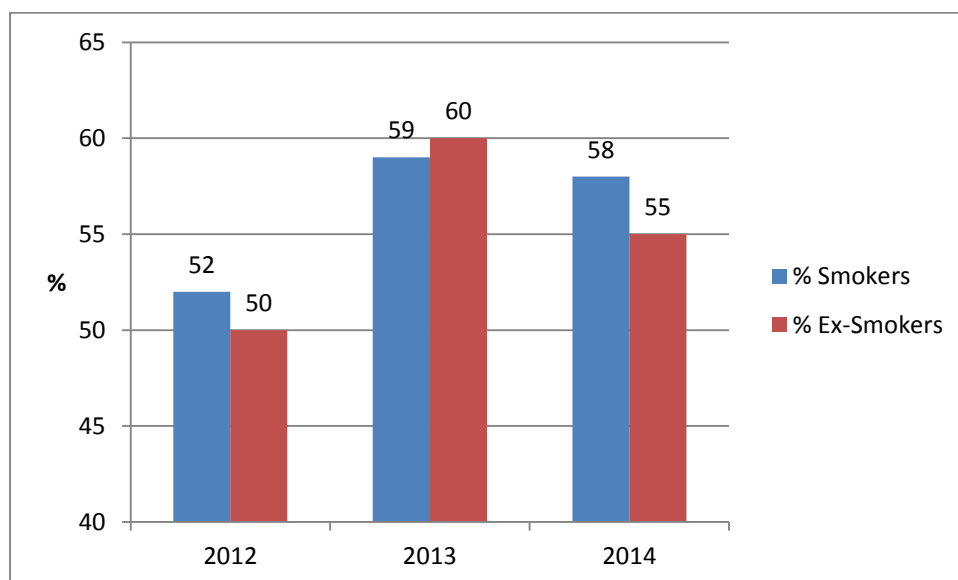
⁸ Question asked of daily smokers only: How many cigarettes, pipes or cigars per day would you smoke, on average? 2012 (n=1835), 2013 (n=1926), 2014 (n=1470).

⁹ Based on SLG Economics analysis of the CITTs survey dataset obtained through Freedom of Information Requests.

5.5 Evidence on the difficulty of quitting

The survey also asked questions about the difficulty of quitting smoking. Figure 6 shows that for both smokers and ex-smokers it was perceived as more difficult to quit after the introduction of plain packaging than before it (for smokers this increase was significant at the 95% level).

Figure 6: Smokers and Ex-smokers rating it difficult to quit smoking¹⁰



6 The National Tobacco Plain Packaging Tracking Survey

The Centre for Behavioural Research in Cancer was asked by the Cancer Council Victoria to conduct a national cross-sectional, monthly tracking survey of smokers and recent quitters to assess the short to medium term effects of plain packaging of tobacco. The National Tobacco Plain Packaging Tracking Survey ('NTPPTS') was conducted between 9 April 2012 and 30 March 2014¹¹ with 400 smokers and recent quitters surveyed every four weeks using computer-assisted telephone interviewing of both land-line and mobile phone random digit dialling samples.

6.1 Evidence on reducing the appeal of tobacco

A number of the NTPPTS survey questions relate to the appeal of tobacco – one of the objectives of the plain packaging measure. This sub-section considers responses related to respondents' thoughts about enjoying smoking; their thoughts and intentions about quitting

¹⁰ Question asked: How difficult or easy do you think it would be for you to quit smoking on a scale of 0 – 10? (responses of 8-10 were rated difficult). Based on SLG Economics analysis of the CITTTS survey dataset obtained through Freedom of Information Requests.

¹¹ Excluding 2 weeks over the December – January holiday period

and limiting their tobacco consumption and whether plain packaging has been effective in reducing smokers' average daily consumption of tobacco and the frequency and intensity of their smoking.

6.1.1 Thoughts about smoking

Table 2 shows that respondents' frequency of thinking about enjoying smoking was almost identical pre- and post- plain packaging. In contrast, Table 3 shows that smokers frequency of thoughts about money spent on smoking increased in 2014 – after the first of four 12.5% increases in tobacco duty was introduced on 1 December 2013 (with a large increase in respondents thinking about the cost of smoking 'many times' and a fall in those thinking about it 'once or twice' or 'never'). This suggests that the tax increases are a more effective measure to direct smoker concerns about smoking than plain packaging, and that plain packaging was ineffective in changing the frequency of smokers' thoughts about enjoying smoking.

Table 2: Smokers' frequency of thoughts about enjoying smoking (%)

	2012 (pre-PP)	2013 (post-PP)	2014 (post-PP)
Many times	15	15	15
Several times	19	19	20
Once or twice	32	30	30
Never	33	34	33

Table 3: Smokers' frequency of thoughts about money spent on smoking (%)

	2012 (pre-PP)	2013 (post-PP)	2014 (post 12.5 % tax increase)
Many times	41	41	47
Several times	22	20	20
Once or twice	18	17	15
Never	19	20	17

6.1.2 Thoughts and intentions about quitting

Another aspect of reducing the appeal of tobacco is the impact of plain packaging on quitting thoughts and intentions. Table 4 shows the proportion of smokers who did not think about quitting and the proportion who thought that quitting/staying quit was not important. In both cases these measures increased after the introduction of plain packaging

from an average¹² of 32.5% to 34.6% for those not thinking about quitting and from 11.5% to 14.4% for those thinking quitting unimportant.

Table 4: The proportion of smokers who did not think about quitting and who thought quitting was not important (%)

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
Didn't think about quitting	34	31	38	35	34	37	33	34
Thought quitting unimportant	12	11	16	14	13	16	14	15

Ave pre-PP (not thinking about quitting): 32.5% Ave post-PP (not thinking about quitting): 34.6%
 Ave pre-PP (quitting unimportant): 11.5% Ave post-PP (quitting unimportant): 14.4%

In terms of smokers' intentions to quit, Table 5 shows that the proportion of smokers with no intention to quit in the following month increased following the introduction of plain packaging from an average of 53% to 56.4%.

Table 5: The proportion of smokers who do not intend to quit

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
%	53	53	58	53	55	60	57	57

Average pre-PP: 53%

Average post-PP: 56.4%

If plain packaging was effective at reducing the appeal of cigarettes, one would expect that smokers would attempt to quit more often (even if they were unsuccessful in doing so). Table 6 examines the proportion of smokers who have never attempted to quit and the proportion of those who had not attempted to quit in the last year. Both of these measures increased after plain packaging – from 20% to 21.6% for those who had never attempted to quit and from 47.5% to 50.4% for those who had not attempted in the last year.

¹² Note that in this and other comparisons of NTPPTS quarterly results, averages for pre-plain packaging cover the two quarters April – June 2012 and July – September 2012, and averages post-plain packaging cover the five quarters from January – March 2013 to January – March 2014. Data for October – December 2012 are not included in the comparison since it covers the transition period when some plain packs were being sold, but regular packs were also available.

Table 6: The proportion of smokers who have not attempted to quit and the proportion who have not attempted in over a year (%)

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
Never attempted to quit	20	20	22	21	21	22	24	20
Not attempted in last year	48	47	53	50	49	52	49	52
Average pre-PP (never quit): 20%				Average post-PP (never quit): 21.6%				
Average pre-PP (not in last year): 47.5%				Average post-PP (not in last year): 50.4%				

Table 7 shows that the proportion of smokers who thought it was relatively unimportant to quit and stay non-smoking increased following the introduction of plain packaging (to an average of 14.4%) and remains higher than before plain packaging levels (11.5%).

Table 7: The proportion of smokers who thought quitting / staying non-smoking was of low importance

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
%	12	11	16	14	13	16	14	15
Average pre-PP: 11.5%				Average post-PP: 14.4%				

6.1.3 Attempts to limit consumption

The survey also asks about daily smokers who rather than quitting, had attempted to limit their consumption of tobacco. The proportion responding that they had not tried to limit their consumption rose after plain packaging from 35% to 36.6% as shown in Table 8.

Table 8: The proportion of daily smokers not attempting to limit consumption

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
%	37	33	40	38	37	37	37	34
Average pre-PP: 35%				Average post-PP: 36.6%				

6.1.4 Impact on smoking frequency and consumption

The key measure of the effectiveness of plain packaging in reducing tobacco’s appeal is its impact on smoking frequency and consumption rates. As shown in Table 9, the frequency of smoking by existing smokers (the percentage of daily smokers compared to weekly, monthly or less frequent smokers) did not reduce after the introduction of plain packaging. While the quarterly numbers since plain packaging was introduced have varied above and below the pre-plain packaging level, the average was slightly higher (85.4%) after plain packaging than before it (85%).

Table 9: Smoking Frequency among Smokers (% daily smokers)

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
% Daily smokers	85	85	84	87	84	86	83	87
Average pre-PP: 85%				Average post-PP: 85.4%				

The average daily consumption of cigarettes increased after plain packaging from 14.25% to 14.46%, as shown in Table 10. Importantly, the average consumption levels increased (to 15.6%) immediately after plain packaging and only dropped back to lower levels (below the level before plain packaging) after a series of tobacco duty increases.

Table 10: Average daily consumption of cigarettes

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
No of cigarettes	14.0	14.5	14.2	15.6	14.5	14.5	14.2	13.5
Average pre-PP: 14.25 cigarettes				Average post-PP: 14.46 cigarettes				

6.1.5 Conclusions on reducing the appeal of tobacco

Therefore considering a number of different measures from the NTPPTS suggests that plain packaging was not successful in reducing the appeal of tobacco. In particular:

- Frequency of thoughts about enjoying smoking did not change;
- The proportion of smokers not thinking about quitting and thinking quitting unimportant increased;
- The proportion with no intention to quit increased
- The proportion who had not attempted to quit and who had not attempted in the previous year increased;
- The proportion thinking that quitting was of low importance increased;
- The proportion not attempting to limit their consumption increased;
- Smoking frequency increased (slightly); and
- The average daily consumption of cigarettes increased.

6.2 Increasing the effectiveness of health warnings

Many of the NTPPTS survey questions relate to the effectiveness of graphic health warnings ('GHW'). This sub-section considers responses related to the impact of GHWs on motivation to quit and concern about adverse health effects; it also considers the impact on smokers' behaviour including stubbing out cigarettes/cigar/pipe because of health concerns and the frequency of suppressing an urge to smoke a cigarette/cigar/pipe.

6.2.2 Impact of GHWs on motivation to quit

Table 11 shows that plain packaging has not had a sustained impact on the effectiveness of GHWs on motivations to quit. More smokers said that they were strongly motivated to

quit/stay quit by GHWs immediately after the introduction of plain packaging than before it, however this effect was temporary and quickly reversed with far fewer being strongly motivated by the end of the survey period. This meant that the average of those strongly motivated to quit due to GHWs was very similar before PP (17%) as after it (17.2%). On the other side of the responses to this question, there were a higher proportion of respondents who were not at all motivated to quit by GHWs post-PP (55%) than pre-PP (53%).

Table 11: Impact of GHWs on motivation to quit (%)

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
Strong motivation	16	18	27	26	19	16	14	11
No motivation	47	59	47	46	50	61	58	60
Average pre-PP (strong motivation): 17%				Average post-PP (strong motivation): 17.2%				
Average pre-PP (no motivation): 53%				Average post-PP (no motivation): 55%				

6.2.3 Concern and awareness about adverse health effects

Under plain packaging, GHWs do not appear to have been more effective at making smokers concerned about the adverse health effects of smoking. The proportion of smokers who were not at all concerned about the adverse health effects of smoking, or only a little concerned increased to 38.8% post-PP from 37.5% pre-PP as shown in Table 12.

Table 12: Smokers' concern about the adverse health effects of smoking (%)

	Pre-PP	Pre-PP	Transition	Post-PP	Post-PP	Post-PP	Post-PP	Post-PP
3 months to...	Jun 12	Sep 12	Dec 12	Mar 13	Jun 13	Sep 13	Dec 13	Mar 14
A little concerned or not concerned	38	37	39	40	38	38	39	39
Average pre-PP: 37.5%			Average post-PP: 38.8%					

6.2.4 The impact on smoker behaviour

The survey includes questions on frequency of stubbing out cigarettes/cigars/pipes because of concerns about the harm of smoking and frequency of suppressing an urge to smoke.

Responses regarding the frequency of stubbing out cigarettes or cigars, or putting out a pipe as a result of thinking about the harm of smoking show that the number of smokers doing this frequently reduced after the introduction of plain packaging and continued to decline in 2014, as shown in Table 13. The proportion frequently suppressing an urge to have a cigarette/cigar/pipe reduced in 2013, but increased in 2014 (this may have been due to the 12.5% increase in excise duty in December 2013).

Table 13: Proportion of smokers frequently stubbing out cigarettes and frequently suppressing an urge to smoke

	2012 (pre-PP)	2013 (post-PP)	2014 (post-PP)
Frequently stubbing out cigarette /cigar / pipe	13%	11%	10%
Frequently suppressing urge to smoke	14%	13%	16%

6.2.5 Conclusions on the effectiveness of health warnings

Therefore in terms of increasing the effectiveness of GHWs, the evidence from the NTPPTS is rather mixed:

- The short-term increase in motivation to quit from GHWs immediately after the introduction of plain packaging quickly reversed to below pre-PP levels and there was an increase in smokers not motivated by GHWs after plain packaging.
- GHWs do not appear to have made smokers more concerned about the health risks of smoking after plain packaging with an increase in the proportion of smokers not concerned or only a little concerned about adverse health consequences.
- Plain packaging does not appear to have had a strong impact on smoker behaviour. The proportion of smokers stubbing out cigarettes/cigars/pipes due to thoughts about the health impact reduced and those frequently suppressing an urge to smoke fell slightly then rose slightly after plain packaging.

6.3 Reducing the ability of packaging to mislead

The final objective of plain packaging was to reduce the ability of packaging to mislead about the harm of smoking. The survey includes questions on: the level of agreement with the statement that ‘smokers can only get lung cancer in old age’; and the level of agreement with the statement ‘the dangers of smoking are exaggerated’. It should be noted that these questions really address respondents levels of knowledge / ignorance about the harmful effects of smoking, rather than misleading messages from packaging and there is no reason to suspect that changes in this data reflects the impact of plain packaging (as opposed to say, the level of public information available about the harmful effects of smoking).

Table 14 shows that there was little change in the proportion of respondents agreeing or strongly agreeing with the [incorrect] statement that ‘smokers can get lung cancer only in old age’. However, the proportion agreeing or strongly agreeing that ‘the dangers of smoking are exaggerated’ increased after the introduction of plain packaging.

Table 14: Smokers beliefs on lung cancer and the dangers of smoking

	2012 (pre-PP)	2013 (post-PP)	2014 (post-PP)
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Agree/strongly agree 'Smokers get lung cancer only in old age'	9%	8%	9%
Agree/strongly agree 'Dangers of smoking are exaggerated'	28%	30%	31%

6.3.1 Conclusions on reducing the ability of the packaging to mislead

The survey does not provide much information about the ability of packaging to mislead about the harm from smoking. The data that there are on this question do not point to a strong impact in either direction.

7 Roy Morgan Research data on tobacco consumption

Data on smoking is collected by Roy Morgan Research ('RMR') through monthly survey results from a nationally representative sample¹³. The RMR sample obtained provides monthly data from January 2009 to December 2013 on the percentage of respondents who smoke factory manufactured cigarettes ('FMC'), roll your own tobacco ('RYO'), pipes and cigars.

7.1 Analysis of Roy Morgan Research data for 14-17 year olds

The RMR dataset for 14-17 year olds has been analysed using least squares regression¹⁴ for each of the data series (FMC, RYO, pipes and cigars). The regression results (see Annex 1) show no systematic relationship or significant association between the surveyed levels of FMC, RYO, pipe or cigar smoking and the introduction of plain packaging¹⁵. None of the regression models show any statistically significant impact of the introduction of plain packaging on reported tobacco usage.

This data was also reviewed by Kaul and Wolf in a University of Zurich working paper¹⁶ who found the same result - that there is no statistically significant evidence of an effect of plain packaging on tobacco consumption. Kaul and Wolf also considered various variations to their analysis and showed that these would reinforce their conclusion that plain packaging has had no impact on smoking by 14-17 year olds.

¹³ Monthly sample sizes range from 161 to 267 participants per month with an average of 212.

¹⁴ The analysis used a linear time trend and a quadratic time trend. In the quadratic models, both time and time*time were included in the regression model.

¹⁵ In fact using a quadratic time trend suggests that plain packaging is associated with a 0.5 percentage point increase in FMC, although this effect is not statistically significant.

¹⁶ University of Zurich working paper (May 2014): *The (Possible) Effect of Plain Packaging on the Smoking Prevalence of Minors in Australia: A Trend Analysis*, A Kaul and M Wolf
<http://www.econ.uzh.ch/static/workingpapers.php?id=828>

A set of quarterly data for the real price of tobacco¹⁷ were added to the analysis to see whether this improved the fit of the model. However adding tobacco prices did not increase the explanatory power of the model and plain packaging is not statistically significant when either the time trend or tobacco prices or both are included in the regression.

7.2 Analysis of Roy Morgan Research data for adults

Kaul and Wolf have repeated their analysis of the RMR data for adults and failed to find any sustained impact of plain packaging on existing smoking prevalence trends.¹⁸

7.3 Summary of evidence from Roy Morgan Research data

This direct evidence of smoking prevalence in Australia pre and post the introduction of plain packaging does not find any statistically significant effect of plain packaging on reported tobacco usage by adults or 14-17 year olds.

8 Summary and Conclusions

This report provides a wide range of direct evidence from four independent surveys comparing smoking prevalence, attitudes to smoking, quitting and smoking behaviour before and after the introduction of plain packaging in Australia in December 2012. It shows that in terms of the prevalence and appeal of smoking and the effectiveness of graphic health warnings, there is a significant body of evidence to show that plain packaging did not achieve its objectives. The evidence from the different surveys either moved in the opposite direction to what was sought, there was little or no change in the indicator, or it remained on the previous long-term trend. Many of the indicators showed a stronger response to the 12.5% increase in excise duty in December 2013 than to the introduction of plain packaging.

Overall, the evidence from the four surveys points to the ineffectiveness of plain packaging as a policy measure and strongly challenges the preconceptions of advocates of plain packaging. The direct evidence from the Australian experience suggests that even when combined with other tobacco regulation measures, introducing plain packaging is unlikely to be an effective policy for meeting public health objectives in other jurisdictions.

SLG Economics Ltd

June 2015

¹⁷ Tobacco component of the Australian Consumer Price Index (16th series)
<http://stat.abs.gov.au/Index.aspx?DataSetCode=CPI#>

¹⁸ University of Zurich working paper (June 2014): *The (Possible) Effect of Plain Packaging on Smoking Prevalence in Australia: A Trend Analysis* <http://www.econ.uzh.ch/static/workingpapers.php?id=844>

Annex 1: Roy Morgan Research data for 14-17 year olds regression results

Factory Manufactured Cigarettes					
Plain Packaging + Linear Time Trend	-0.004	0.264	Plain Packaging+ Tobacco Prices + Linear Time Trend	-0.005	0.252
	0.007			0.008	
Plain Packaging + Quadratic Time Trend	0.005	0.269	Plain Packaging+ Tobacco Prices + Quadratic Time Trend	0.005	0.259
	0.011			0.011	

	RYO		PIPE		CIGAR	
Plain Packaging + Linear Time Trend	-0.002	-0.034	0.000	-0.032	0.001	0.029
	0.008		0.003		0.004	
Plain Packaging + Quadratic Time Trend	0.009	-0.027	0.004	-0.012	0.003	0.016
	0.012		0.004		0.006	

Legend

Coefficient	Adjusted R Squared
Std Error	

No results for plain packaging are statistically significant at 10% level