



Smoking, Plain Packaging and Public Health

By Julian Morris

Executive Summary

Smoking is one of the leading preventable causes of death in the world. In most wealthy countries, smoking has been declining for decades.

Public health experts and anti-smoking groups have for many years advocated for restrictions on the marketing of tobacco products in general and cigarettes in particular. In response, governments in wealthy countries have banned most or all advertising, and many have banned sponsorship and other explicit forms of marketing of cigarettes.

Many public health advocates say these restrictions do not go far enough and have called for the elimination of brand identifiers such as logos and colours on cigarette packs. Some experimental evidence suggested that such plain packs would encourage smokers to perceive cigarettes less favorably, which might lead them to quit.

However, this optimism was tempered by evidence that even restrictions on advertising have had at best a small influence on the decline in smoking (most of the decline can be traced to a better understanding of the risks of smoking, in large part a result of public information campaigns, and taxes on cigarettes).

In 2011, Australia's government introduced legislation mandating that cigarettes be sold in "plain packages" (i.e., without brand logos and colours). The legislation came into effect in late 2012. (Australia had already banned practically all tobacco advertising and other forms of marketing. In 2006, it had

introduced a requirement that cigarette packs display graphic health warnings on a substantial proportion of their surface area.)

Some studies (such as a survey carried out when plain packaging was being introduced, an analysis of calls to a smoking cessation hotline, and a survey of outdoor smoking habits) suggest that plain packaging has indeed, made cigarettes less desirable to smokers and has increased thoughts of quitting.

However, an online survey of smokers carried out in two phases, the first a month before and the second six to eight weeks after the introduction of the plain packaging rules, suggest that the impact of the rules on quitting tendencies is probably small. Moreover, many smokers engaged in defensive behaviors such as covering up health warnings, and did not report changing brands or a significant increased tendency to quit. This finding was corroborated by another survey that found that in the year to July 2013 the proportion of smokers in Australia had not declined since the introduction of plain packaging.

A study looking at discarded packs and other data suggests that consumption of cigarettes in the year to July 2013 remained at the same level as in 2012, but found that the proportion of illicit cigarettes had increased substantially. This is corroborated by the most recent Annual Report of Australia's Customs and Border Protection Service, which indicates that the number of illicit cigarettes entering Australia has indeed risen dramatically in the past three years.

The discarded pack study concluded that contraband—much of which is in the form of finished cigarettes that are not legally sold anywhere in the world, known as “illicit whites”—now accounts for more than half of illegal sales and about 7.5% of all sales. Part of the blame for the increased availability of illicit whites lies with a 25% increase in excise tax on tobacco introduced in 2010. But, since most of the increase in their market share occurred in the past 18 months, part of the blame almost certainly rests with the plain packaging rules.

The wide availability of illicit whites in Australia means it is highly likely that adolescents now have greater access to cigarettes than previously—and at lower prices. Moreover, these “illicit whites” have no health warnings. Given the contribution of plain packaging in Australia to the rise of the illicit white, it seems reasonable to conclude that it has been counterproductive.

While motivated by the best of intentions, plain packaging's effects appear to have been less than desirable. Other countries contemplating the introduction of plain packaging would be well advised to postpone any decision until its effects in Australia are better understood.

Introduction

We have known for decades that smoking can be harmful. And for decades governments have been trying to persuade smokers to kick the habit. From taxes to mandatory warning labels to advertising bans to multibillion dollar lawsuits to outright bans on smoking in “public places,” governments have seemingly gone through the gamut of tools that might persuade smokers to quit. Yet still many people continue to smoke—and every day some take up the habit.

In response, public health advocates have pushed for further restrictions on the marketing of tobacco products. In particular, they have pushed for the elimination of most brand information on packs of cigarettes and, simultaneously, for mandatory graphic images on those packs. On December 1, 2012, Australia became the first country in the world to require cigarettes to be sold in such “plain” packs. Other countries, including the U.K. and Ireland, are now considering similar legislation.

This brief, the first in a series that seeks to analyze policies toward tobacco harm reduction, seeks to assess the effectiveness of such “plain packaging” policies. Following an overview of the history of concerns about the health impacts of tobacco consumption and policy responses thereto, it reviews the trajectory of tobacco consumption in various countries and summarizes research relating tobacco consumption to government policies and other factors. It then assesses the evidence for and against plain packaging, including recent data from Australia.

A Brief History of Concerns Regarding Tobacco’s Effects on Health and Policy Responses

Concerns about the health impacts of tobacco consumption go back to 1604, when King James I penned a polemic, *A Counterblaste to Tobacco*, filled with purple prose, which ends by asserting that smoking is, “A custome lothsome to the eye, hatefull to the Nose, harmefull to the braine, dangerous to the Lungs, and in the blacke stinking fume thereof, nearest resembling the horrible Stigian smoke of the pit that is bottomelesse.”¹

Empirical evidence regarding tobacco's health effects came first in 1761, when London physician John Hill warned that snuff may be causing nasal cancers he had observed in several patients.² Thirty five years later, physician and polymath Samuel Thomas von Sömmering noted that pipe smoking seemed to be causing

lip cancers among his patients.³ In 1836, Samuel Green warned “that thousands and tens of thousands die of diseases of the lungs generally brought on by tobacco smoking.”⁴ Fears that smoking might be causing an increase in lung cancer were heightened by a treatise on the subject by Dr I. Adler in 1912.⁵

However, convincing evidence remained elusive for many decades. In the early 1950s, Richard Doll and Bradford Hill in the U.K.⁶ and Ernst Wynder and Evarts Graham in the U.S.⁷ offered the most reliable research yet showing that smoking was associated with a significant increase in lung cancer. Doll and Hill also showed that smoking was associated with a range of other diseases,⁸ including various other cancers, emphysema and heart disease.⁹

By 1964, the evidence that cigarette smoking was responsible for a significant increase in both mortality and morbidity was considered sufficiently robust that the Surgeon General of the United States issued a report warning that “cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action.”¹⁰

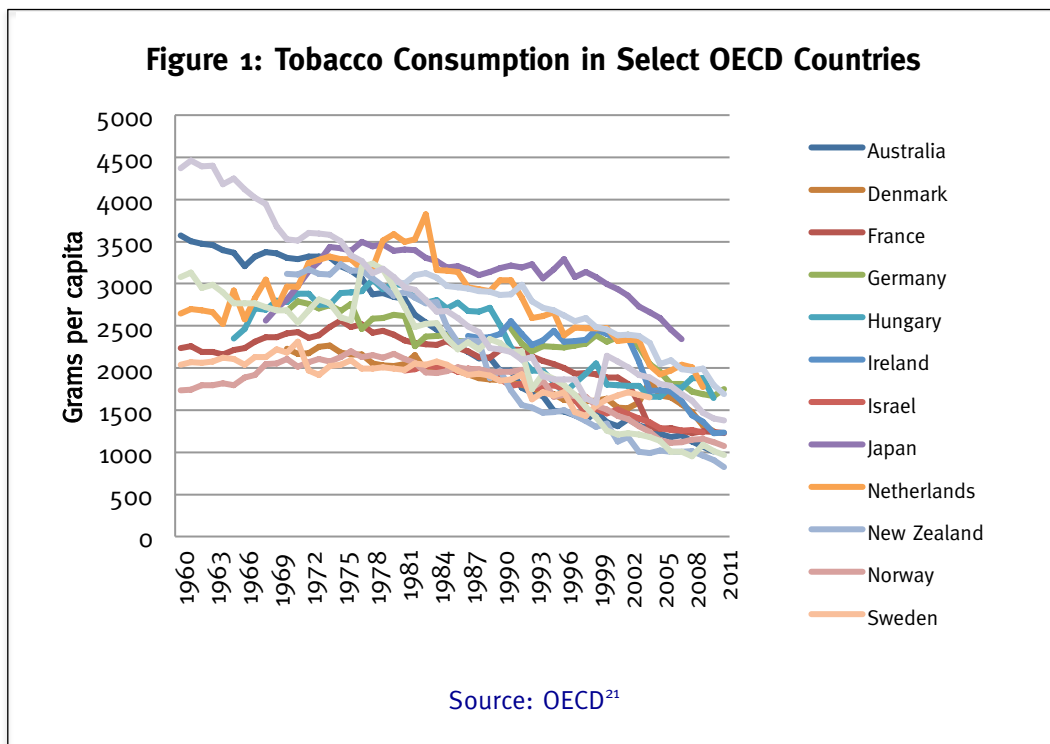
Policies seeking to limit the consumption of tobacco predate even concerns about the health effects, by a long way. Around 1600, the Pope banned smoking in holy places.¹¹ In 1604, King James I introduced a tax on imports of tobacco at the extremely steep rate of six shillings and eight pence per pound of tobacco (equivalent to about \$150 today).¹² In 1637, Plymouth Colony introduced a ban on smoking on streets, in outhouses, in barns or on highways; violators were to be fined twelve pence (presumably these measures were primarily intended to prevent fires, though the colony, which was clearly not very socially tolerant, also made adultery and sodomy offenses punishable by death).¹³

The first modern legislation restricting the sale of tobacco came in 1908, when the British Parliament passed the Children’s Act, which banned the sale of cigarettes to children younger than 16 years of age.¹⁴ Aside from taxes (whose purpose, as in King James’s time, was mainly to raise revenue), few other policies were introduced anywhere until the 1960s. Since then, however, there has been a progressive clamp down on advertising and marketing tobacco products in many countries around the world.

In 1963, New Zealand became one of the first countries to ban tobacco advertising on radio and television. The U.S. followed suit in January 1971. In Australia, advertising on radio and television has been banned since September 1, 1976.¹⁵ By the early 1980s, all countries that were then members of the OECD, with the exception of Japan, had banned broadcast advertising of cigarettes.¹⁶

In addition to these broadcast bans, many countries imposed additional restrictions on tobacco advertisers, ranging from requirements to use a portion of the advertisement to display health warnings relating to smoking, to constraints on the kinds of imagery that could be used. Comprehensive advertising bans (i.e., bans on advertising in nearly all media, with few exceptions) were put in place in Singapore (1971), Iceland (1972), Norway (1976), Finland (1978), New Zealand (1991), Italy (1992), Canada (1993), France (1993), Australia (1994), Sweden (1995), South Africa (1999). The Tobacco Advertising Directive, which came into effect in 2005, banned all advertising of tobacco in the E.U.¹⁷

Smoking rates in most wealthy countries peaked between the 1950s and 1970s (typically, rates peaked earlier for men, later for women) and have been falling since then. Tobacco consumption in most wealthy countries followed the same pattern, as Figure 1 shows. Australia is typical: In 1945, approximately 72 percent of adult men and 26 percent of adult women in Australia smoked.¹⁸ By 1976, the proportion of male smokers had fallen to 43 percent, while the proportion of women smokers had risen to 33 percent. But since then the proportion of both sexes smoking has fallen, with approximately 22 percent of men and 20 percent of women reporting that they smoked in 2010.¹⁹ Similar patterns are seen in most OECD countries: on average rates of smoking in OECD countries fell by about 30 percent between 1990 and 2010 (only in Russia did smoking increase).²⁰



But while wealthy countries have seen significant reductions in rates of smoking, rates have been growing in poorer countries. A recent survey of tobacco use in 16 of the largest poor and middle income countries published in *The Lancet* found that approximately 41 percent of adult men and five percent of adult women in those countries smoke.²²

The World Health Organization estimates that smoking was responsible for 12 percent of all deaths globally in 2004.²³ Such concerns motivated the establishment of a Framework Convention on Tobacco Control (FCTC) in 2003,²⁴ the objective of which is:

*... to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke by providing a framework for tobacco control measures to be implemented by the Parties at the national, regional and international levels in order to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke.*²⁵

The FCTC includes various measures intended to reduce demand for tobacco products, including: tax and price policies (Article 6), restrictions on smoking in public places (Article 8), regulations concerning the contents and emissions of tobacco products (Article 9) and requirements concerning manufacturers/importers obligations to disclose these contents and emissions (Article 10), labelling requirements (Article 11); public education concerning the impact of tobacco consumption (Article 12), bans on tobacco advertising (Article 13) and smoking cessation programs and other measures intended to reduce habitual tobacco use (Article 14). It also includes various actions intended to reduce the supply of tobacco, including: actions to reduce illicit sales of tobacco (Article 15), prohibitions on sales to minors (Article 16) and provision of support for economically viable employment alternatives (Article 17).

Plain Packaging

Over the course of the past decade, activists called for further restrictions on the appearance of cigarette packs, going well beyond what is required by the FCTC.²⁶ In particular, they have argued for a combination of graphic images (showing diseased lungs, mouth cancers and the like) and reduced prominence for brands—known as “plain packaging”.

The use of graphic images has been mandated by the governments of Australia, Belgium, Brazil, Canada, Chile, Egypt, Jordan, Latvia, Malaysia, Mongolia, Peru, Romania, Singapore and Turkey and the United Kingdom. So far, however, only Australia's government has gone so far as to require that no brand identifiers be permitted other than the name, which may appear only in a small, standardized font. Section 3 of Australia's Tobacco Plain Packaging Act 2011 sets out its objects and intentions:

- (1) The objects of this Act are:
 - (a) to improve public health by:
 - (i) discouraging people from taking up smoking, or using tobacco products; and
 - (ii) encouraging people to give up smoking, and to stop using tobacco products; and
 - (iii) discouraging people who have given up smoking, or who have stopped using tobacco products, from relapsing; and
 - (iv) reducing people's exposure to smoke from tobacco products; and
 - (b) to give effect to certain obligations that Australia has as a party to the Convention on Tobacco Control.
- (2) It is the intention of the Parliament to contribute to achieving the objects in subsection (1) by regulating the retail packaging and appearance of tobacco products in order to:
 - (a) reduce the appeal of tobacco products to consumers; and
 - (b) increase the effectiveness of health warnings on the retail packaging of tobacco products; and
 - (c) reduce the ability of the retail packaging of tobacco products to mislead consumers about the harmful effects of smoking or using tobacco products.²⁷

Given the harm caused by consumption of tobacco products, those seem like noble goals and good intentions. But noble goals and good intentions are not enough to justify the introduction of a policy; there must also be strong evidence (at the least a balance of probabilities) that the policy will achieve the stated objectives in a proportionate way and without excessive adverse effects.

Proponents of the new regulations, such as the Cancer Council of Victoria, argue that plain packaging has three principal benefits (which more or less coincide with the three stated aims of the regulation as given in paragraph (2) above):

- (1) It reduces the appeal of smoking to young people: “Research shows that when young people view packs stripped of colours and logos, they believe cigarettes: are less appealing; won’t taste as good; are of lower quality; are smoked by people who are less stylish and sociable.”²⁸
- (2) It reduces “deception about the harmfulness of cigarettes”: “research shows smokers believe cigarettes in lighter coloured packs taste smoother, deliver less tar and are safer than other cigarettes. This is not true. Plain packaging would stop tobacco companies being able to use these false associations to their advantage.”²⁹
- (3) It strengthens the impact of graphic health warnings, which “have been proven to help smokers quit but the tobacco industry uses pack design to undermine their impact. Plain packaging would ensure graphic health warnings remain prominent.”³⁰

But does plain packaging actually achieve these aims? The following sections examine each in turn.

Does Plain Packaging Reduce the Appeal of Smoking to Consumers in General and Young People in Particular?

There is good evidence that consumers associate the colors and logos on packages—of cigarettes and other consumer goods—with particular brands.³¹ And consumers associate particular brands with specific sets of attributes (such as taste, style and quality).³² So, if packages are stripped of colors and logos, the brand will be less readily identifiable to consumers and, hence, will be less likely to bring to mind its associated attributes.

It stands to reason, then, that consumers will have weaker associations with a brand if the colors and logos are not present. And it would not be surprising if consumers were to find cigarettes sold in packs without their usual colors and logos less appealing, as seems to be the case.³³ But one cannot necessarily infer from this that the removal of brand attributes from cigarette packages will make smoking itself less appealing.³⁴ That would only be true if the *main* reason for smoking is the consumer’s association with the particular brand and its attributes.

The primary purpose of a brand and associated marketing efforts is to differentiate and make distinctive one product from other similar products (as leading brand consultant Stuart Agres puts it, “A brand is a set of differentiating promises that link a product to its customers.”³⁵). Nonetheless, since the purpose of advertising is to increase public awareness of a product, it seems plausible that advertising of branded products might increase overall consumption of a class of products (i.e., it might increase not only the market share of the product but also the total size of the market). This is especially likely to be the case when consumers are not very familiar with a product class; by contrast, in mature markets where consumers are generally familiar with the product class, advertising primarily serves to differentiate and make distinctive one brand from another.³⁶

A number of studies have found evidence of a positive impact of advertising on aggregate demand for cigarettes, but work by economists John Bishop and Jang Yoo suggests that the effect is much smaller than the impact of changes in income and the price of cigarettes.³⁷ Specifically, Bishop and Yoo found that the main reasons for increased consumption of cigarettes in the United States after the 1920s were increases in personal income and reductions in the cost of cigarettes (due to improvements in the productivity of tobacco and cigarette manufacture). Meanwhile, they found that taxes on tobacco products had the effect of reducing consumption.

In an important and highly cited study, economists Khosrow Doroodian and Barry Seldon extended Bishop and Yoo’s analysis to show that while advertising had a net positive effect on overall tobacco consumption in the U.S. between 1952 and 1963, after that it had no statistically significant net effect.³⁸

This general result has been confirmed in numerous studies. For example, economists Craig Gallet and Rajshree Agarwal, using a more sophisticated methodology, found the effect of advertising on aggregate cigarette demand gradually turned from positive before 1961 to insignificant thereafter.³⁹

These findings from individual studies are reinforced by a very careful meta-analysis undertaken by economist Jon Nelson, which combined analyses from dozens of previous studies and found that the most important factors influencing the decline in smoking in the US were: health reports in 1953 linking smoking with lung cancer, the 1964 Surgeon General Report⁴⁰ (which concluded that tobacco increases the likelihood of dying from various diseases), and anti-smoking advertisements from 1967–70 that were broadcast without charge to the producers (which included the American Cancer Society) under the FTC’s

“fairness doctrine.”⁴¹ By contrast, Nelson found that the 1971 ban on broadcast advertising did not have a significant impact on rates of smoking.

In the Australian context, economists Peter Bardsley and Nilss Olekans noted in a 1999 paper on the subject that “Over the past 35 years, price (including tobacco taxes), real income, and demographic effects explain most of the variation in tobacco consumption [in Australia]. Advertising by tobacco companies has had a relatively small direct effect on consumption. Work-place smoking bans and health warnings on cigarette packs have had a relatively minor impact, while antismoking advertising and bans on electronic media advertising have had no detectable direct effect.”⁴²

The logical conclusion from this research on the economics of demand for cigarettes is that once the market for cigarettes matures and, more importantly, once the public becomes aware of the harm that could result from smoking cigarettes, the effect of advertising has mainly been to differentiate one brand from another.

If, in the context of a mature market in which smoking is widely understood to be dangerous, advertising of cigarettes does not significantly affect aggregate demand, it seems implausible that other forms of marketing, let alone mere product brands could do so. This is emphatically *not* to say that even in mature markets, advertising and other product promotions have *no* effect on demand for cigarettes. Rather, it is that the effect on *aggregate* demand is insignificant compared to other factors, such as the social acceptance of smoking, the rebelliousness associated with doing something that is illegal (for underage youth), the pleasure associated with handling a tiny burning object, the desire to obtain a “hit” from nicotine, and so on.⁴³ (Some of those seeking to reduce the public health impacts of tobacco seem to assume cigarettes have no intrinsic appeal. Unfortunately, this is simply not the case, as anyone who has ever smoked will attest.) In other words, it is most unlikely that product brands are the main or even a significant reason people initiate or continue to smoke in OECD countries. And if brands are not an important reason why people smoke, it is unclear how efforts to diminish the appearance of brands on products—in and of itself—could result in a reduction in smoking.

So, it may well be true that forcing cigarette manufacturers to package their products in plain packs will result in consumers having fewer pleasant associations with the individual brands. But since people mostly don’t initiate or continue to smoke due to brand association, the main consequence will be that consumers will care less about which brand they smoke. Thus, consumers will

make choices based on other factors, especially price. Other things being equal, then, we would expect plain packaging laws to result in a shift away from higher-price brands towards lower-price cigarettes—including those sold illegally.

Does Plain Packaging reduce the “deception about the harmfulness of cigarettes”?

A survey in the U.K. found that Marlboro packs with a gold logo were rated as a lower health risk by just over half of adult respondents and easier to quit by just under a third of adult respondents compared to Marlboros with a red logo.⁴⁴ These associations likely result at least in part from the way such brands were marketed historically: it is noteworthy that among younger respondents, fewer than 30% thought that the gold packs had a lower health risk.⁴⁵

It is not obvious, however, that eliminating the differentiation between these brands would either reduce the number of people who take up smoking or increase the number who quit. The mere fact that people who consume certain brands of cigarette are under a particular misapprehension regarding that brand’s relative safety says nothing about their behavior were that brand to be eliminated. Would people quit more easily if they didn’t think there was a less risky option? Would fewer people initiate smoking because they no longer perceive that there is a brand that is less risky?

Unfortunately, incorrect beliefs about the characteristics of cigarettes cannot simply be legislated away. If cigarette producers are forced to remove color and logos from their packs (as they have been in Australia), some consumers might even believe that all cigarettes are safer. After all, if the government’s intention is to make a product less harmful, wouldn’t that be a logical inference? More likely—and more worryingly—smokers who continue to believe that cigarettes sold in light-colored packs are safer (and/or otherwise better) may seek out light-colored packs of cigarettes sold illegally—which would definitely be counterproductive.

Does Plain Packaging Strengthen the Impact of Graphic Health Warnings?

Some experiments seem to indicate that the removal of brands might increase the effectiveness of health warnings for light smokers and adult non-smokers. A 2011 study carried out in the U.K. presented images of plain and branded packs of cigarettes to adults on a computer screen and monitored their eye movements.⁴⁶ The researchers found that occasional (non-daily) smokers and non-smokers paid more attention to the health warnings on plain packs than on branded packs, while no difference was found for daily smokers. A follow-on study with youths aged 14–19 found that “weekly smokers” tended to pay more attention to the warnings when presented with plain packs than when presented with branded packs.⁴⁷ In that follow-on study, non-smokers paid more attention to the health warnings regardless of whether the packages were plain or branded. The authors note, this “may reflect their decision not to smoke”—though that does not explain why non-smoking adults paid more attention to the warnings on plain packages than on branded packs. By contrast, as with the study that involved adults, daily smokers tended to avoid looking at the health warnings on either pack.

On the basis of this evidence, “plain” packs might be expected to induce some occasional smokers to reduce the amount they smoke, or even quit. But as psychologist and *Guardian* science correspondent Suzi Gage (a member of the same research group that undertook the eye tracking experiments) comments: “If plain packaging will lead teens who experiment with cigarettes to look at the health warnings more, it’s possible that this would translate in to them being less drawn to smoking. However, this is a slight leap from these findings, as participants were not asked about their views on warnings.”⁴⁸

Unfortunately, work by Dr Tim Holmes, an expert in visual perception and eye tracking, suggests that Gage’s tentative conclusion does go too far. Holmes sought to replicate the adult study as part of a research exercise with some of his third year psychology students at the University of London’s Royal Holloway College. Although his results have not been published in a peer-reviewed journal, they bear repeating, in part because Holmes is an expert in the field of visual perception and the use of eye-tracking devices, whereas the lead researchers who worked on the other studies are not,⁴⁹ and in part because his reported findings are so startlingly different from those of the other studies. In a blog post, Holmes notes, “we were surprised to observe two interesting results: the non-smokers looked at the warning messages much less than the other

participants, and there was no difference between plain and branded package designs in the amount of time spent looking at the warning message.”⁵⁰ He also notes that there was “no change in risk perception as a result of viewing the stimuli.”⁵¹ He concludes: “Now, it’s great that the right people are looking more at the warning message, but if this doesn’t result in an increased risk perception then surely the messages aren’t doing their job!”⁵²

Holmes offers some suggestions as to how the warning messages could be made more salient (e.g. by reducing the contrast of the brand images and moving the warning message to the top). But some experts have warned that poorly thought through packaging and labelling requirements could backfire on regular smokers. Noting that in surveys, a large proportion of regular smokers typically say that they intend to quit and many say they have tried to quit, Drs. Robert Ruiter and Gerjo Kok of the Experimental Health Psychology Group at the University of Maastricht point out, in a letter to the editor of the *European Journal of Public Health*, that “Smokers express a stronger intention to quit after a fear-arousing message compared to a non-fear arousing message. However, when asked about their priorities, quitting had actually become a lower priority compared with other health behaviours. Even more ... smokers allocated less attention to high as opposed to low threatening messages.”⁵³ Ruiter and Kok argue that smokers perceive the warnings as highly relevant but in light of their past failure to quit, react defensively to fear-arousing messages. These “[d]efensive reactions serve to get rid of the fear, not necessarily the threat,” according to Ruiter and Kok, and they conclude by arguing that “[p]olicy makers should thus be reluctant to introduce cigarette warning labels and should instead focus on more effective interventions and policies.”⁵⁴

What about former smokers? The evidence suggests that former smokers tend to relapse in response to stressful events, though to some extent this may confuse cause and effect; immediately after quitting, former smokers report higher levels of stress; over time, stress levels decline; meanwhile, relapsing itself appears to trigger stress.⁵⁵ A likely explanation for this is that quitting requires willpower, i.e., a conscious effort to overcome one’s impulses.⁵⁶ Over time, the impulse to smoke declines, so the willpower necessary to control it declines. Former smokers seem to be most susceptible to relapses in the early stages of quitting—i.e., when the willpower required to control their impulses is greatest. During that phase and especially at times when willpower is depleted (e.g. when a person is tired, inebriated or otherwise has low blood glucose),⁵⁷ affective triggers, such as a friend lighting up, tend to increase the likelihood of relapse.⁵⁸ But once an ex-smoker has effectively given in to temptation and decided to buy a pack of cigarettes, it is unclear how the presence or absence of branding on the pack

makes any difference. Nor is it clear what impact the graphic warnings will have; they might plausibly act to discourage relapse, or they might initiate a defensive response, reaffirming the decision to relapse (per Ruiter and Kok's observation).

On the basis of the foregoing, then, it could reasonably be said that prior to the introduction of Australia's Plain Packaging Act, it was unclear whether plain packaging would discourage youths who are experimenting with cigarettes from becoming more regular smokers; if such an effect exists, it would probably be weak. Meanwhile, to the extent that plain packaging increases the salience of the larger graphic warnings (if indeed it does), it is possible that the impact on current smokers might be counterproductive, as they may become less inclined to quit. Meanwhile, for former smokers who have given in to the urge to smoke, it is unclear whether the absence of brand imagery and color on cigarette packs would have any impact on their subsequent actions.

In addition, by reducing the saliency of brands to consumer decisions regarding the choice of cigarettes, the Plain Packaging Act is expected to have shifted demand toward less expensive brands, including those sold illegally.

The Impact of the Plain Packaging Act

So, what has actually happened in the year since the introduction of plain packaging in Australia? A study conducted during the initial phase-in of plain packaging in Australia corroborated earlier findings that smokers perceived cigarettes in plain packs to be less satisfying than cigarettes in branded packs. Encouragingly, as with some earlier similar studies,⁵⁹ it also found that smokers were more likely to think about and prioritize quitting.⁶⁰

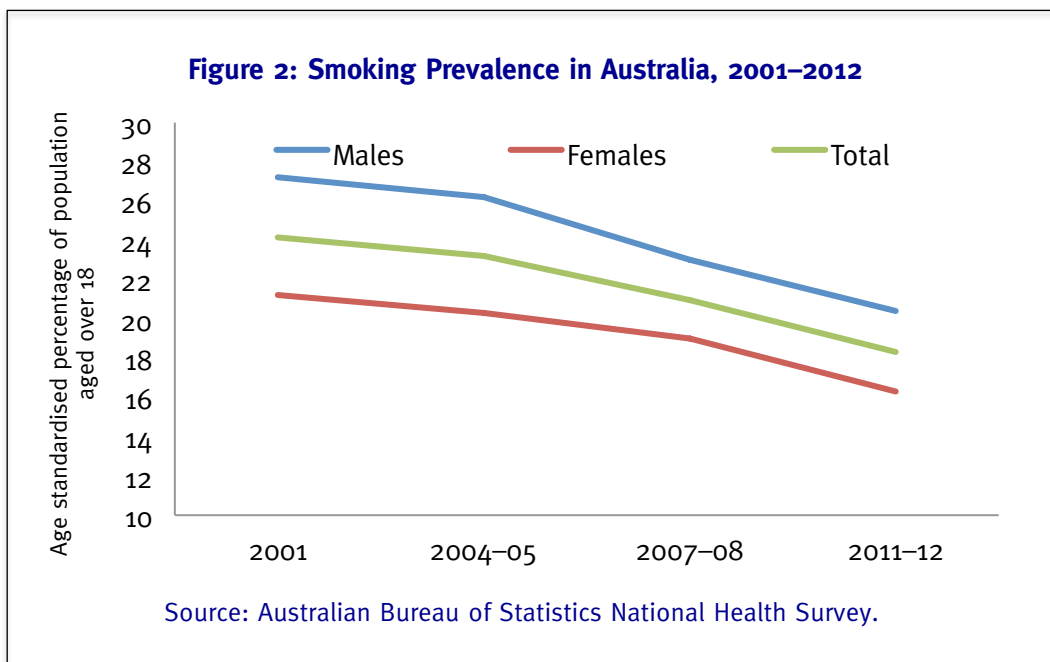
The good news is that there is some evidence of an increase in motivation to quit among some smokers: a recent study found that calls to Quitline, a free smoking cessation hotline, increased by nearly 80% after the introduction of plain packaging and have continued.⁶¹ Meanwhile, before and after surveys of smokers at outdoor cafes, restaurants and bars found that fewer packs were oriented face up and more were being hidden by other objects after the introduction of plain packaging than before.⁶²

Unfortunately, however, four other studies—two based on surveys of smoking habits, one an analysis of illicit tobacco, and one a report on tobacco seizures—offer a less sanguine picture.

The first study, by London Economics (with funding from tobacco company Philip Morris) looked at changes in smoking rates using data from a survey by Ipsos Observer that was undertaken in three waves.⁶³ The first wave occurred in July and October 2012, before the new packaging law came into effect. At that time, packs of cigarettes were still branded but were required (under a law dating to 2006) to have graphic health warnings on 30 percent of the front and 90 percent of the back. During that wave, 20.4 percent said they were daily smokers, 2.1 percent said they were weekly smokers, and 2.3 percent said they smoked but less than weekly; meanwhile, 29.6 percent said they were ex-smokers and 45.6 percent said they never smoked.

The second wave was conducted in March 2013, four months after the new packaging laws came into effect. During this wave, 19.5 percent of people said they were daily smokers, 2.0 percent weekly, and 1.9 percent less than weekly; meanwhile, 29.8 percent said they were ex-smokers and 46.8 percent said they had never smoked. In the third wave, conducted in July 2013, 20.0 percent said they were daily smokers, 2.1 percent weekly, and 2.2 percent less than weekly; meanwhile 29.1 percent said they were ex-smokers and 46.6 percent said they never smoked.

These surveys indicate that there has been no statistically significant change in smoking prevalence among adult Australians over the course of the year to July 2013.⁶⁴ That is worrying because it suggests that an almost continuous downward trend in smoking prevalence that began in the 1950s for men and 1970s for women may have slowed and possibly even paused. The figure below, based on data from the Australian Bureau of Statistics National Health Survey,⁶⁵ shows the decline from 2001 to 2011–12.⁶⁶



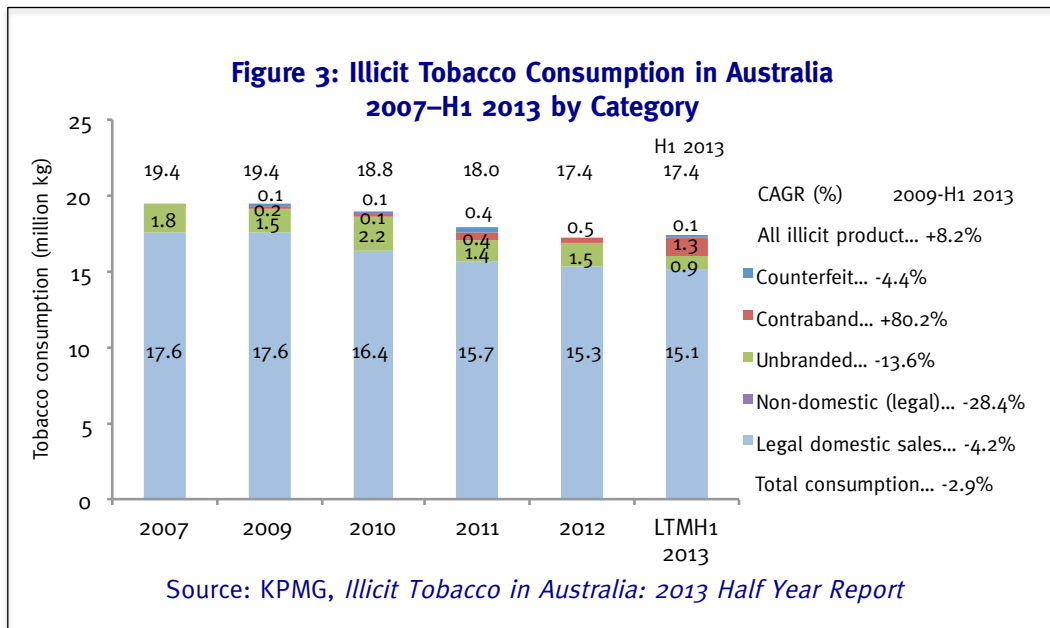
The second study was conducted by a group of psychologists led by Dr. Sarah Hardcastle, who sought to examine the impact of plain packaging on the behavior and beliefs of smokers. They undertook an online survey of 198 smokers one month before and then again 6-8 weeks after the introduction of plain packaging. The study has not yet been published but Prof. Simon Hagger, one of the study's co-authors summarizes the main findings as follows:⁶⁷

- Packaging had no effect on brand preference or taste. This contradicts research that plain packaging may reduce the appeal of cigarettes.
- Although threat was increased, participants denied or underplayed either the severity or susceptibility of the threat.
- Health warnings appeared to have the opposite effect: some were keen to smoke more in defiance.
- There was active avoidance of health warnings due to the threatening nature.
- Smokers became desensitized to the messages and images, with little effect on actual smoking.⁶⁸

So, on the basis of this research, it seems that plain packaging has made the health warnings more threatening to smokers, but—as predicted by Professors Ruiter and Kok—they have responded by engaging in defensive measures, including covering up the health warnings, with little if any impact on quitting (some have even indicated an intention to smoke more).

The third study, undertaken by KPMG (with funding from several tobacco companies), documents the amount of tobacco sold in Australia. From 2000 to 2012, legal sales of tobacco declined steadily, from 18.8 million kilos to 15.3 million kilos.⁶⁹ In the past year, the decline in legal sales has continued, albeit more slowly, to 15.1 million kilos in the year from July 2012 to June 2013.⁷⁰

But that is not the end of the story. KPMG then goes on to estimate the amount of tobacco sold illegally in Australia. Using a study of 12,000 discarded packs collected in 16 towns and cities across the country (undertaken by MSIIntelligence), combined with several forms of validation, KPMG inferred that illegal sales accounted for approximately 2.3 million kilos of tobacco in 2013, up from 2.1 million in 2012.⁷¹ As a result, KPMG estimates that total tobacco consumption has remained constant.



Moreover, KPMG estimates that the proportion of illegal sales coming from contraband—much of which is in the form of finished cigarettes that are not legally sold anywhere in the world, known as “illicit whites”—has increased by 80% since 2012 and now accounts for more than half of illegal sales and about 7.5% of all sales.⁷² Previously, most illegal sales were in the form of loose tobacco. At the same time, the price differential between legal cigarettes and illicit whites has risen dramatically since 2010, suggesting that the supply of illicit whites has increased. The obvious conclusion is that highly effective smuggling organizations are now bringing millions of kilos of finished cigarettes into the country.

KPMG’s assessment is corroborated by the fourth study: the 2012–13 annual report of Australia’s Customs and Border Protection Service, which details a significant shift in the types of smuggled tobacco being detected, as shown in Figure 3.⁷³ Detections of loose tobacco averaged 220 tonnes/year from 2006–7 to 2010–11, but in 2011–12 and 2012–13 were about 20% below that (averaging 180 tonnes/year). By contrast, detections of illicit cigarettes averaged about 70 million per year from 2006–7 to 2010–11, but in 2011–12 they were double that, and in 2012–13 they were nearly three times the previous average. Moreover, the number of seizures has increased, which may in part reflect additional efforts on behalf of the customs officials but probably also reflects increased effort on the part of smugglers. Given that the penalties for smuggling tobacco were increased in 2012,⁷⁴ smugglers would be expected to have taken additional measures to avoid detection, so the increase in amounts smuggled has likely increased at a higher rate than the increase in amounts seized.

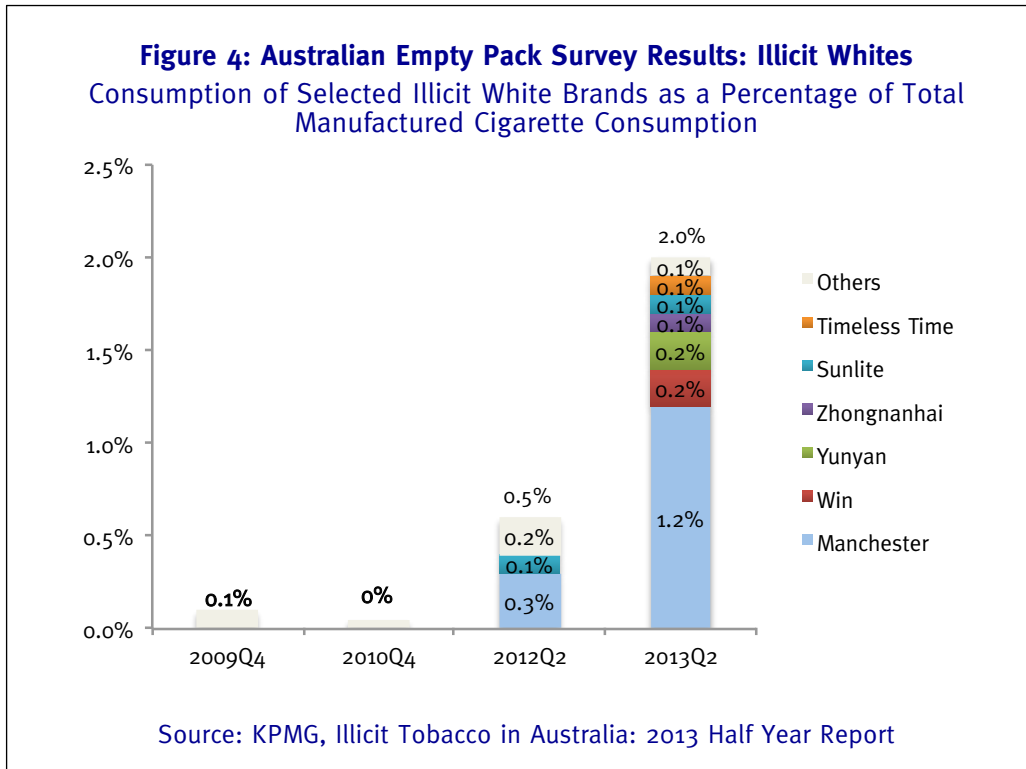
Table 1 Customs Tobacco Seizures 2006–07 to 2012–13

Year	Number of detections	Loose tobacco (tonnes)	Illicit cigarettes (millions)
2006–07	19	67	42
2007–08	58	287	107
2008–09	33	180	50
2009–10	42	311	68
2010–11	55	258	82
2011–12	45	177	141
2012–13	76	183	200

Source: Australian Government: Australian Customs and Border Protection Service, Annual Report 2012–2013, p. 91 <http://www.customs.gov.au/webdata/resources/files/ACBPSAnnualReport2012-13.pdf>, accessed 3/6/2014, and Australian Government, *Annual Report 2010–11*, Australian Customs and Border Protection Service, Canberra, 2011, p. 55, Available at: <http://www.customs.gov.au/webdata/resources/files/879316AUSCUSwebpdf.pdf>, accessed 3/6/2014.

In part, the rise of the illicit white reflects a shift in consumption habits away from high-priced brands to low-priced brands, which began as a response tax increases. In 2010, Australia’s government introduced a 25% increase in tax on tobacco products. As a result, low-priced branded cigarettes rose from 24% of sales in 2007 to 36% in the first half of 2013 (a 50% increase). In the first half of 2013, demand for low-priced brands rose from 33% to 36% of the legal cigarette market. Since there has been no change in tax levels over the past year, the most likely explanation for this recent shift is the introduction of plain packaging. This is consistent with the expectations noted above: as consumers’ associations with brands are diminished by plain packaging, their choices will increasingly be driven by other considerations, especially price.

Figure 4 shows that most of the increase in consumption of illicit whites has occurred since the introduction of plain packaging. For a person who no longer cares much about which brand of cigarette he is smoking, illicit whites make a good deal of sense. They sell for about half the amount of legal cigarettes and actually have the appearance of being branded: the top selling illicit white is called Manchester, which has approximately 1.2 percent of the total tobacco market.⁷⁵ (Of course the producers of illicit whites are unable to enforce their “brands” through the use of trademark protection—though they may enforce it through the use of force—so have less incentive to invest in maintaining quality.)



One particularly worrying facet of this problem is the impact on youth smoking. The group most impacted by high prices is the young, who tend to have lower incomes. In principle, high cigarette prices discourage members of this group from taking up smoking, but the availability of much cheaper illicit whites means that price effect is less of an issue.

Worse, under-age smokers are even more vulnerable to illicit whites. Since it is illegal in Australia to sell tobacco products to anyone under 18, people under that age wishing to smoke will seek out alternatives. Previously, that would have meant finding a corrupt retailer or an adult who would buy on the under-age smoker's behalf. But now that criminal gangs are manifestly selling illegal whites in large quantities, presumably through networks of street dealers, those under-age smokers have a more reliable source available to them.

Meanwhile, illicit whites tend to display few if any health warnings (since they are illegal anyway, the manufacturers have little incentive to include such warnings), so smokers are less likely to be exposed to the graphic warning labels. If these illicit cigarettes are predominantly being smoked by young people (including those under age), then the very people who are most likely to be dissuaded by graphic warnings are less likely to be exposed to those graphic warnings. It is even possible that young people experimenting with smoking are less exposed to health warnings than they would have been had the plain packaging laws not been introduced. That would be a truly perverse outcome.

Conclusions

In sum, the introduction of “plain packaging”—i.e., the mandatory removal of brand identifiers—appears to have done little to reduce demand for tobacco products in Australia. Indeed, it seems to have coincided with a halt in the previous decades-long decline in such demand. It has also coincided with an increase in consumption of “illicit whites.” There is no evidence that it has reduced rates of smoking, relapses, or smoking initiation (its three main purposes). To the extent that young people were previously being discouraged from smoking by warning labels on cigarette packs but are now purchasing illicit whites, the law may have resulted in an increase in young people transitioning from occasional to regular smokers.

While the introduction of “plain packaging” may have shown some promise in principle, it seems, on the basis of the evidence available, that its unintended effects have far outweighed any benefits. Other countries considering the introduction of plain packaging would be well advised to delay any such decision until its impacts in Australia are better understood.

About the Author

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Reason Foundation advances a free society by developing, applying and promoting libertarian principles, including individual liberty, free markets and the rule of law. It uses journalism and public policy research to influence the frameworks and actions of policymakers, journalists and opinion leaders.

Endnotes

- ¹ King James, *A Counterblaste to Tobacco*, 1604, available at: http://www.ash.org.uk/files/documents/ASH_741.pdf, accessed 2/26/2014.
- ² See, for example: <https://www.britannica.com/nobelprize/article-224787>, accessed 2/26/2014
- ³ Available at: <https://play.google.com/books/reader?id=3npVAAAACAAJ&printsec=frontcover&output=reader&authuser=0&hl=en&pg=GBS.PP6>, accessed 2/26/2014
- ⁴ Samuel Green, *Smoking*, New England Almanack and Farmers' Friend, 1836, New London, CT, pp. 25–2. Cited in by James S. Powers and Martha Wetteman, “On the Hazards of Smoking: Statement from 1836,” *American Journal of Public Health*, April 1979, Vol 69(4), at p. 389, available at: <http://ajph.aphapublications.org/doi/pdfplus/10.2105/AJPH.69.4.389>. Accessed 2/26/2014.
- ⁵ I. Adler, *Primary Malignant Growths of the Lungs And Bronchi: A Pathological and Clinical Study*, (New York: Longmans, Green, & Co., 1912), available at: <https://ia600402.us.archive.org/5/items/primarymalignant00adle/primarymalignant00adle.pdf> Accessed 2/26/2014
- ⁶ Richard Doll and A. Bradford Hill, “Smoking and Carcinoma of the Lung: Preliminary Report,” *British Medical Journal*, September 30, 1950, pp. 739–748,

available at:

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2038856/pdf/brmedj03566-0003.pdf>, accessed 2/26/2014

- ⁷ Ernst L. Wynder and Evarts A. Graham, “Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma: A Study of Six Hundred and Eighty Four Proved Cases,” *Journal of the American Medical Association*, May 27, 1950, pp. 329–336, Available at: <http://www.epidemiology.ch/history/PDF%20bg/Wynder%20and%20Graham%201950%20tobacco%20smoking%20as%20a%20possible%20etiologic.pdf> Accessed 2/26/2014.
- ⁸ Richard Doll and A. Bradford Hill, “The Mortality of Doctors in Relation to their Smoking Habits: A Preliminary Report,” *British Medical Journal*, June 26, 1954, pp. 1451–1455. Available at: http://www.bmj.com/highwire/filestream/370125/field_highwire_article_pdf/0/1529 Accessed 2/26/2014
- ⁹ See also Richard Doll and A. Bradford Hill, “A Study of the Aetiology of Carcinoma of the Lung,” *British Medical Journal*, December 13, 1952, pp. 1271–1280. (Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2022425/?page=1> Accessed 2/26/2014).
- ¹⁰ *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service*, (Washington, D.C.: U.S. Department of Health, Education and Welfare – Public Health Service Publication No. 1103, 1964). Available at: <http://profiles.nlm.nih.gov/ps/access/NNBBMQ.pdf>, accessed 2/26/2014.
- ¹¹ Action on Smoking and Health, *Key Dates in the History of Anti-Tobacco Campaigning*; available at: http://www.ash.org.uk/files/documents/ASH_741.pdf, accessed 2/26/2014.
- ¹² King James, *A Law of James about Tobacco*, 1604 available at: <http://www.laits.utexas.edu/poltheory/james/blaste/blaste.app.html>, accessed 2/26/2014
- ¹³ Caleb Johnson, Crime and Punishment in Plymouth Colony, available at <http://mayflowerhistory.com/crime/>, accessed 2/26/2014.
- ¹⁴ Action on Smoking and Health, *Key Dates in the History of Anti-Tobacco Campaigning*, p.4.
- ¹⁵ National Archives of Australia, *Tobacco Advertising Ban in Australia – Fact Sheet 252*, available at: <http://www.naa.gov.au/collection/fact-sheets/fs252.aspx>, accessed 2/26/2014.
- ¹⁶ For example, see Jon P. Nelson, “Cigarette Demand, Structural Change, and Advertising Bans: International Evidence, 1970-1995,” *B. E. Journal of Economic Analysis and Policy*, Vol. 2(1), 2003, pp. 1–29.

- ¹⁷ Directive 2003/33/EC. Available at http://eur-lex.europa.eu/LexUriServ/site/en/oj/2003/l_152/l_15220030620en00160019.pdf, accessed 3/1/2014.
- ¹⁸ Cancer Council, *Tobacco in Australia: Facts and Issues – A comprehensive online resource, Chapter 1*; available at: http://www.tobaccoinaustralia.org.au/downloads/chapters/Ch1_Prevalence.pdf, accessed 2/26/2014.
- ¹⁹ Ibid.
- ²⁰ OECD, *OECD Factbook 2013: Economic, Environmental and Social Statistics; Health; Risk Factors; Smoking; Change in Smoking Rates*, (Paris: Organization for Economic Cooperation and Development, 2013). Available at: <http://dx.doi.org/10.1787/888932710745>, accessed 2/26/2014.
- ²¹ http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT (Note that these data include smokeless tobacco and are based on official statistics, so do not include any tobacco sold illegally).
- ²² Gary Giovino et al. (The GATS Collaborative Group), “Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys,” *The Lancet*, Vol. 380, Issue 9842, pp. 668–679. Available at: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)61085-X/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)61085-X/abstract), accessed 2/27/2014.
- ²³ WHO, *WHO Global Report: Mortality Attributable to Tobacco*, (Geneva: World Health Organization, 2004). Available at: http://whqlibdoc.who.int/publications/2012/9789241564434_eng.pdf, accessed 2/27/2014.
- ²⁴ *WHO Framework Convention on Tobacco Control*, (Geneva: World Health Organization, 2003). Available at: <http://whqlibdoc.who.int/publications/2003/9241591013.pdf>, accessed 2/27/2014.
- ²⁵ Ibid, p. 5.
- ²⁶ Article 11 of the FCTC spells out the following requirements concerning the packaging and labelling of tobacco products:
1. Each Party shall, within a period of three years after entry into force of this Convention for that Party, adopt and implement, in accordance with its national law, effective measures to ensure that:
 - (a) tobacco product packaging and labelling do not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression about its characteristics, health effects, hazards or emissions, including any term, descriptor, trademark, figurative or any other sign that directly or indirectly creates the false impression that a particular tobacco product is less harmful than other tobacco products. These may include terms such as “low tar”, “light”, “ultra-light”, or “mild”; and
 - (b) each unit packet and package of tobacco products and any outside packaging and labeling of such products also carry health warnings describing the

harmful effects of tobacco use, and may include other appropriate messages. These warnings and messages:

shall be approved by the competent national authority,

shall be rotating,

shall be large, clear, visible and legible,

should be 50% or more of the principal display areas but shall be no less than 30% of the principal display areas,

may be in the form of or include pictures or pictograms.

2. Each unit packet and package of tobacco products and any outside packaging and labeling of such products shall, in addition to the warnings specified in paragraph 1(b) of this Article, contain information on relevant constituents and emissions of tobacco products as defined by national authorities.
3. Each Party shall require that the warnings and other textual information specified in paragraphs 1(b) and paragraph 2 of this Article will appear on each unit packet and package of tobacco products and any outside packaging and labelling of such products in its principal language or languages.
4. For the purposes of this Article, the term “outside packaging and labelling” in relation to tobacco products applies to any packaging and labelling used in the retail sale of the product.

²⁷ Australia, Tobacco Plain Packaging Act 2011, No. 148, 2011. Available at: <http://www.comlaw.gov.au/Details/C2011A00148>, accessed 3/1/2014.

²⁸ Cancer Council of Victoria, The Benefits of Plain Packaging, available at: <http://www.cancervic.org.au/plainfacts/browse.asp?ContainerID=benefits-plain-packaging>, accessed 2/27/2014.

²⁹ Ibid.

³⁰ Ibid.

³¹ See, for example, Anthony Grimes and Isobel Doole, “Exploring the Relationship Between Colour and International Branding: A Cross Cultural Comparison of the UK and Taiwan,” *Journal of Marketing Management*, Vol. 14(9), pp. 799–817, 1998.

³² See, for example, Jenni Romaniuk, “Brand Attributes – ‘distribution outlets’ in the mind.” *Journal of Marketing Communications*, Vol. 9(2), 2003, pp. 73–92.

³³ M. A. Wakefield, D. Germain, and S. J. Durkin, “How does increasingly plainer cigarette packaging influence adult smokers’ perceptions about brand image? An experimental study,” *Tobacco Control*, Vol. 17, 2008, pp. 416–421. Available at: <http://tobaccocontrol.bmj.com/content/17/6/416>; Crawford Moodie, Anne Marie Mackintosh, Gerard Hastings and Allison Ford, “Young adult smokers’ perceptions of plain packaging: a pilot naturalistic study,” *Tobacco Control*, Vol. 20, 2011, pp.

367–373, available at: <http://tobaccocontrol.bmj.com/content/20/5/367.abstract>, accessed 3/1/2014. Janne Scheffels and Ingeborg Lund, “The impact of cigarette branding and plain packaging on perceptions of product appeal and risk among young adults in Norway: a between subjects experimental survey,” *BMJ Open*, Vol. 3(12), available at: <http://bmjopen.bmj.com/content/3/12/e003732.abstract>, accessed 2/28/2014.; David Hammond, Samantha Daniel and Christine M. White, “The effect of cigarette branding and plain packaging on Female Youth in the United Kingdom,” *Journal of Adolescent Health* Vol. 52(2) pp. 151–157.

- ³⁴ The study by Crawford Moodie et al. cited in the previous endnote reports that eight study participants indicated that they had “either increased avoidant behavior or reduced consumption” after smoking cigarettes in “plain” packs for two weeks. But this tells us little about their actual behavior (self reports in an interview setting are notoriously unreliable, especially in relation to activities on which the interviewers hold strong views: See e.g. Nancy Brener, John Billy, and William Grady, “Assessment of Factors Affecting the Validity of Self-Reported Health-Risk Behavior Among Adolescents: Evidence From the Scientific Literature,” *Journal of Adolescent Health*, 2003, pp. 436–457), nothing at all about the longer term effects of plain packaging, and, hence, next to nothing about what might happen if plain packs became the norm.
- ³⁵ <http://brandtruth.com.au/2012/11/30/why-brand-authenticity-is-critical-for-customer-satisfaction/>, accessed 2/27/2014. But compare to Jenni Romanuik, Byron Sharp, and Andrew Ehrenberg, “Evidence concerning the importance of perceived brand differentiation,” *Australasian Marketing Journal*, Vol.15 (2), 2007, pp. 42–54
- ³⁶ See, for example, Reanto Gomes and Joao De Mello, “Non-Price Advertising and Price Competition: a Theory, and Evidence from the Brazilian Beer Market,” Rio, Brazil: PUC Department of Economics Discussion Paper, 2005, available at: <http://www.econ.puc-rio.br/pdf/td525.pdf>
- ³⁷ John A. Bishop and Jang H. Yoo, “Health Scare,” Excise Taxes and Advertising Ban in the Cigarette Demand and Supply,” *Southern Economic Journal*, Vol. 52(2), 1985, pp. 402–411.
- ³⁸ Khosrow Doroodian and Barry Seldon, “Advertising and Cigarette Consumption,” *Eastern Economic Journal*, Vol. 17(3), 1991, pp. 359–366.
- ³⁹ Crag Gallett and Rajshree Agarwal, “The Gradual Response of Cigarette Demand to Health Information,” *Bulletin of Economic Research* Vol. 51(3), 1999, pp. 259–265.
- ⁴⁰ See: <http://profiles.nlm.nih.gov/ps/access/NNBBMQ.pdf>, accessed 2/28/2014.
- ⁴¹ Jon P. Nelson, “Cigarette Advertising Regulation: A Meta-Analysis,” *International Review of Law and Economics*, Vol. 26(2), 2006, pp. 195–226.
- ⁴² Beter Bardsley and Nilss Olekalns, “Cigarette and Tobacco Consumption: Have Anti-Smoking Policies Made a Difference?” *The Economic Record*, Vol. 75, issue 230, 1999, pp. 225–240.
- ⁴³ Lois Biener and Michael Siegel (“The Role of Tobacco Advertising and Promotion in Smoking Initiation, Smoking and Control Monograph No. 14, available at:

http://cancercontrol.cancer.gov/brp/tcrb/monographs/14/m14_13.pdf, accessed 3/1/2014) point out that smoking initiation is correlated with advertising and other product promotions. However, the causal link imputed from advertising to smoking, even in the few longitudinal studies cited, is weak at best and plausibly might imply the opposite, namely: youths who are interested in smoking, some of whom subsequently become smokers, show an interest in tobacco advertisements and product promotions because of that interest—which would have resulted in smoking initiation regardless of the advertisements. Nonetheless, it seems plausible that advertisements and product promotions have a reinforcing effect on the potential smokers' interest.

- 44 David Hammond et al., “Cigarette pack design and perceptions of risk among UK adults and youth,” *European Journal of Public Health*, Vol. 19(6), pp. 631–637, 2009. Available at: <http://eurpub.oxfordjournals.org/content/19/6/631.full>, accessed 3/1/2014.
- 45 Ibid.
- 46 Marcus Munafò, N. Roberts, L. Bauld and U. Leonards, “Plain packaging increases visual attention to health warnings on cigarette packs in non-smokers and weekly smokers but not daily smokers,” *Addiction*, Vol. 106(8), 2011, pp. 1505–1510.
- 47 Olivia Maynard, Marcus Munafò, and Ute Leonards, “Visual attention to health warnings on plain tobacco packaging in adolescent smokers and non-smokers,” *Addiction*, Vol. 108(2), 2013, pp. 413–419. Available at: [http://davidhammond.ca/downloads/Backup/AUS/2012%20Plain%20Pack%20-%20Maynard%20Munafa%20Leonards%20\(Addiction\).pdf](http://davidhammond.ca/downloads/Backup/AUS/2012%20Plain%20Pack%20-%20Maynard%20Munafa%20Leonards%20(Addiction).pdf), accessed 3/1/2014.
- 48 Suzi Gage, “Will plain packaging of cigarettes work? A look at the current evidence,” *The Guardian* blog, 7 March 2013, at: <http://www.theguardian.com/science/sifting-the-evidence/2013/mar/07/plain-packaging-cigarettes-current-evidence>, accessed 3/1/2014.
- 49 Marcus Munafò is an expert in the “genetic and cognitive influences on addictive behavior”; Olivia Maynard has a degree in experimental psychology and has undertaken work on perceptions of hunger, while her PhD “aims to explore how packaging of harmful products such as tobacco can be modified in order to promote increased understanding of the risks of these products for consumers.”
- 50 <http://www.acuity-intelligence.com/blog/smoke-gets-in-your-eyes>, accessed 3/1/2014.
- 51 Ibid.
- 52 Ibid.
- 53 Robert Ruiter and Gerjo Kok, “Saying is not (always) doing: cigarette warning labels are useless,” *European Journal of Public Health*, Vol. 15(3), p. 229 (Letter to the editor.)
- 54 Ibid.

- ⁵⁵ Sheldon Cohen and Edward Lichtenstein, “Perceived Stress, Quitting Smoking, and Smoking Relapse,” *Health Psychology* Vol. 9(4), 1990, pp. 466–478. Available at: <http://www.psy.cmu.edu/~scohen/relapse90.pdf>, accessed 3/1/2014.
- ⁵⁶ Mark Muraven and Roy F. Baumeister, “Self-Regulation and Depletion of Limited Resources: Does Self-Control Resemble a Muscle?” *Psychological Bulletin*, Vol. 126(2), 2000, pp. 247–259. Available at: <http://psyserv06.psy.sbg.ac.at:5916/fetch/PDF/10978569.pdf>, accessed 3.1.2014.
- ⁵⁷ Matthew Galliot and Roy F. Baumeister, “The Physiology of Willpower: Linking Blood Glucose to Self-Control,” *Personality and Social Psychology Review*, Vol. 11(4), 2007, pp. 303–327.
- ⁵⁸ Chao Y. Lam et al. “Individual and combined effects of multiple high-risk triggers on postcessation smoking urge and lapse,” *Nicotine and Tobacco Research*, 2013, published online. Abstract at: <http://ntr.oxfordjournals.org/content/early/2013/12/08/ntr.ntt190.abstract>, accessed 3/1/2014.
- ⁵⁹ Crawford Moodie, Kathryn Angus, Martine Stead and Linda Bauld, *Plain Tobacco Packaging Research: An Update*, (University of Stirling: UK Centre for Tobacco and Alcohol Studies, September 2012. Available at: <http://www.stir.ac.uk/media/schools/management/documents/Plain%20Packaging%20Studies%20Update.pdf>, accessed 3/6/2014.
- ⁶⁰ Melanie Wakefield, Linda Hayes, Sarah Durkin and Ron Burland, “Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study,” *BMJ Open* 2013. Available at: <http://bmjopen.bmj.com/content/3/7/e003175.abstract>
- ⁶¹ Jane Young et al. “Association between tobacco plain packaging and Quitline calls: a population-based, interrupted time-series analysis,” *Medical Journal of Australia*, Vol. 200(1), 2014, pp. 29-32. Available at: <https://www.mja.com.au/journal/2014/200/1/association-between-tobacco-plain-packaging-and-quitline-calls-population-based>
- ⁶² Meghan Zacher et al. “Personal tobacco pack display before and after the introduction of plain packaging with later pictorial health warnings in Australia: an observational study of outdoor café strips,” *Addiction* Vol 109(4), 2014, pp. 653-662, available at: <http://onlinelibrary.wiley.com/doi/10.1111/add.12466/abstract>, accessed 3/12/2014.
- ⁶³ London Economics, “An analysis of smoking prevalence in Australia,” November 2013, available at: <http://londoneconomics.co.uk/wp-content/uploads/2013/11/London-Economics-Report-Australian-Prevalence-Final-Report-25-11-2013.pdf>
- ⁶⁴ While a casual inspection of the numbers for the 2012 wave and the March 2013 wave give the appearance that there was a slight dip in smoking prevalence, this is not statistically significant. Moreover, it should be noted that most of the apparent difference came from an increase in number of people saying that they had never smoked—a number that cannot have changed appreciably across the population as a whole, indicating that it is an artifact of the sample.

⁶⁵ <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4125.0main+features3320Jan%202013>, accessed 3/1/2014.

⁶⁶ I used the Australian Bureau of Statistics data for males and females and created an average using an assumed population ratio of 51 females to 49 males, which is approximately correct.

⁶⁷ From Hagger's powerpoint presentation, available here:
<http://www.ehawa.org.au/documents/item/677>

⁶⁸ Ibid.

⁶⁹ KPMG, "Illicit tobacco in Australia: 2013 Half Year Report," London: KPMG, LLP, October 2013, at p. 10. Available at:
[http://www.bata.com.au/group/sites/bat_7wykg8.nsf/vwPagesWebLive/DO9879X3/\\$FILE/medMD9D4L6C.pdf](http://www.bata.com.au/group/sites/bat_7wykg8.nsf/vwPagesWebLive/DO9879X3/$FILE/medMD9D4L6C.pdf)

⁷⁰ Ibid.

⁷¹ Ibid., p. 28.

⁷² Ibid., p. 28.

⁷³ Australian Government: Australian Customs and Border Protection Service, Annual Report 2012–2013. Available at
<http://www.customs.gov.au/webdata/resources/files/ACBPSAnnualReport2012-13.pdf>, accessed 3/6/2014.

⁷⁴ Customs Amendment (Smuggled Tobacco) Act 2012, No. 146, 2012, available at:
<http://www.comlaw.gov.au/Details/C2012A00146>, accessed 3/6/2014.

⁷⁵ Ibid. p. 37.