

Institution: University of Bristol		
Unit of Assessment: 4) Psychology, Psychiatry and Neuroscience		
Title of case study: Implementation of standardised tobacco packaging has reduced smoking prevalence and smoking uptake worldwide		
Period when the underpinning research was undertaken: 2011 - 2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Olivia Maynard	Lecturer in Experimental Psychology	2011 – present
Marcus Munafò	Professor of Biological Psychology	2005 – present
Ute Leonards	Professor of Neuropsychology	2003 – present
Period when the claimed impact occurred: 2014 - 2019		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact

Novel research showing how, and for whom, standardised tobacco packaging is effective, has been key evidence in countering the legal challenges against standardised packaging worldwide and has informed policy development in the 15 countries that have introduced it. Our previous REF2014 case study reported our assistance to the Australian and UK Governments. Since then, the international reach of our impact has increased dramatically through direct assistance to numerous governments including those of Ireland, France, Norway and Colombia. Furthermore, our work has extended to other domains including tobacco health warning policies in Colombia. Standardised packaging is now recommended as a key policy under the World Health Organisation (WHO) Framework Convention on Tobacco Control (FCTC). Evidence suggests that standardised packaging is contributing to an increase in smoking cessation and reduction in smoking uptake in the countries where it has been introduced. In Australia, 130,000 people have stopped smoking due to standardised packaging and independent modelling shows that in the UK and Latin America millions of healthy years of life could be saved.

2. Underpinning research

Tobacco industry documents indicate awareness of the importance of the cigarette pack in attracting young smokers, particularly in countries where tobacco marketing has been restricted, such as the UK. Standardised packaging requires all cigarettes to be sold in packs with a standardised pack shape, colour and method of opening, removing all branding, leaving only the brand name in a standard font and location. Standardised packaging was first introduced in 2012 in Australia.

University of Bristol (UoB) research into likely impacts of standardised packaging began in 2011. Other research at the time had relied on measuring subjective attitudes to packaging, and as a result had been criticised by the tobacco industry for lacking in credibility. UoB research was the first to employ objective bio-behavioural, neuroscientific and naturalistic methodologies to directly assess the likely impact of standardised tobacco packaging on behaviour. The research [1] and [2] was submitted to REF 2014 with impacts in the Australian courts and on policy consultation in the European Union and UK. Since then papers [3-6] have provided new insights on smoking behaviour and the salience of health warnings and led to more countries adopting standardized packaging.

Impact case study (REF3)

Our studies among adults [1, 4], and adolescents [2], used eye-tracking technology to directly measure eye movements towards health warnings and branding on branded and standardised cigarette packs. Our results indicated that for adult and adolescent non-established smokers and non-smokers, standardised packaging increases visual attention towards health warnings and away from branding. In contrast, daily smokers actively avoid attending health warnings on cigarette packs. This has relevance for disease prevention, as increased attention towards health warnings will increase the likelihood of health warnings being read and understood, and affect subsequent smoking uptake.

In 2014, we published findings from the first randomised controlled trial (RCT) [3, 5], examining the impact of using standardised packaging on actual smoking behaviour. This RCT was the first study to objectively measure smoking behaviour when smokers used standardised packs. Despite seeing no meaningful difference in smoking behaviour, we found that standardised packaging increased the perceived impact of the health warning and reduced pack appeal, supporting our eye-tracking work. We also found that standardised packs reduced tobacco seeking as compared with branded packs [3].

To further build the evidence that health warnings are more salient on standardised packs, in 2015 we conducted the only fMRI study combined with eye-tracking to examine the impact of standardised packaging on neural responses [6]. This study found that when taking visual attention to health warnings into account, there were higher levels of activation in the visual cortex in responses to standardised as compared with branded packaging.

In 2019, after discussion of research priorities with the Colombian Ministry of Health, we expanded our research to low and middle income settings and conducted the first eye-tracking study examining the impact of standardised packaging and larger health warnings on visual attention to warnings and attitudes towards smoking among smokers in Colombia. The results corroborate those from our previous eye-tracking studies among adults [1] and adolescents [2] in the UK.

3. References to the research

1. **Munafò MR, Roberts N, Bauld L, Leonards U.** (2011). Plain packaging increases visual attention to health warnings on cigarette packs in non-smokers and weekly smokers but not daily smokers. *Addiction*, 106(8):1505-10. DOI:[10.1111/j.1360-0443.2011.03430.x](https://doi.org/10.1111/j.1360-0443.2011.03430.x)
2. **Maynard OM, Munafò MR, Leonards U.** (2013). Visual attention to health warnings on plain tobacco packaging in adolescent smokers and non-smokers. *Addiction*, 108(2):413-419. DOI:[10.1111/j.1360-0443.2012.04028.x](https://doi.org/10.1111/j.1360-0443.2012.04028.x)
3. **Maynard OM, Leonards U, Attwood AS, Bauld L, Hogarth L, Munafò MR.** (2014). Plain packaging of cigarettes and smoking behavior: study protocol for a randomized controlled study. *Trials*, 15(1):252. DOI:[10.1186/1745-6215-15-252](https://doi.org/10.1186/1745-6215-15-252)
4. **Maynard OM, Attwood AS, O'Brien L, Brooks S, Hedge C, Leonards U, Munafò MR.** (2014). Avoidance of cigarette pack health warnings among regular cigarette smokers. *Drug and Alcohol Dependence*, 136:170-174. DOI:[10.1016/j.drugalcdep.2014.01.001](https://doi.org/10.1016/j.drugalcdep.2014.01.001)
5. **Maynard OM, Leonards U, Attwood AS, Bauld L, Hogarth L, Munafò MR.** (2015). Effects of first exposure to plain cigarette packaging on smoking behaviour and attitudes: a randomised controlled study. *BMC Public Health*, 15(1):240. DOI:[10.1186/s12889-015-1586-8](https://doi.org/10.1186/s12889-015-1586-8)
6. **Maynard OM, Brooks JC, Munafò MR, Leonards U.** (2017). Neural mechanisms underlying visual attention to health warnings on branded and plain cigarette packs. *Addiction*, 122(4):662-672. DOI:[10.1111/add.13699](https://doi.org/10.1111/add.13699)

4. Details of the impact

Countering tobacco industry challenges to standardised packaging legislation

By the end of 2020, 15 countries worldwide will have implemented standardised tobacco packaging. In all these countries, this followed years of public consultation and debate, along with significant and sustained opposition from the tobacco industry and their allies. A key tobacco industry strategy has been to argue that there is no credible evidence on the effects of standardised packaging on behaviour. University of Bristol research using laboratory-based methodologies [1, 2], and physiological measures [6], have been used to counter this claim effectively, and to inform and reinforce global governmental decision making on standardised packaging.

Australia, which introduced standardised tobacco packaging in 2012, was the first government to face tobacco industry legal action. University of Bristol research [1, 2] guided expert opinion to counter legal challenges as outlined in a REF2014 case study.

The expert advisor on standardised packaging for Australia and six further countries (Ireland, UK, Singapore, USA, New Zealand and Canada) as well as the EU and the WHO, and said that UoB research *“transformed the scientific evidence base available on the behavioural impacts of standardised packaging”* [i]. Moreover, since 2014, he has used our *“data more than any other research to support these legal cases and to justify the introduction of standardised packaging legislations”* [i].

Worldwide, key legislative documents and evidence reviews on standardised packaging cite our work.

- Ireland became the first country in the EU to legislate for standardised packaging in 2015, following an evidence review (2014), on behalf of the Irish Department of Health [ii]. The review cited our eye-tracking studies [1, 2, 4], to support the impact of standardised packaging on attention to health warnings. It cited our randomised controlled trial [3, 5], to demonstrate that there is research that is *“generally consistent with self-reported measures from [other] research conducted”* showing that *“plain packages would motivate smokers to quit or reduce smoking”* [ii p.24]. Our fMRI study [6] was cited to further *“lend support to the efficacy of plain packaging”*. Together this served to discredit tobacco industry legal action arguing that there was insufficient behavioural evidence to support standardised packaging.
- In the UK, an influential evidence review conducted on behalf of the Secretary of State for Health [iii], cited our work [1,2], to support conclusions that standardised packaging would be an effective tobacco control strategy. This supported implementation of standardised packaging in the UK in 2016.
- In France, an expert witness for the French Government, cited our *“innovative and objective methods”* as key to help *“convince French decision makers to adopt plain packaging and graphic warnings that were implemented in [France] in January 2017”* [iv].
- An evidence review conducted for the Norwegian Ministry of Health and Care Services used our research to support conclusions that *“the scope of experimental and exploratory studies...has increased significantly”* and that standardised packaging will *“change perceptions and attitudes that in turn will contribute to the decline in smoking”* [v]. Norway subsequently introduced standardised packaging in 2018.

Impact case study (REF3)

- In 2020, our impact extended to informing tobacco health warning policies in addition to standardised packaging policies. The Colombian Ministry of Health used our in-country research on standardised packaging and larger graphic health warnings to support ongoing discussions about the implementation of these measures. The Ministry of Health stated that our *“findings were included in the institutional advice issued by this Ministry regarding the Bill that seeks to modify the characteristics of the health warnings presented to the public on tobacco packages to maximize their impact on the population”* [vi].

Guiding international and supranational policy

Since 2015, the annual WHO Report on the Global Tobacco Epidemic [vii], has included our research every year. These reports cite our randomised controlled trial [5] to support the claims that *“plain (standardised) packaging enhances the impact of health warnings and other packaging and labelling measures and reduces the marketing impact of package design”*. Standardised packaging is now recommended as a key policy under the World Health Organisation (WHO) Framework Convention on Tobacco Control (FCTC).

Impact on smoking behaviour and health

Tobacco use is the leading cause of preventable death, causing 100,000 premature deaths in the UK every year, 700,000 in the EU, and five million worldwide.

It is difficult to accurately estimate the impact of a population-level tobacco control policy such as standardised packaging, particularly because the effects on smoking cessation and uptake are likely to take years to have an effect. However, there is mounting evidence that the legislation has achieved its goals. The expert advisor to Australia and the UK confirmed *“as a result of being able to cite Dr Maynard’s work, [he has] been able to successfully counter legal challenges against standardised packaging in the United Kingdom and in subsequent legal challenges in other jurisdictions. These regulations have played an important role in ensuring that tobacco prevalence continues to decline, particularly among youth and young adults.”* [i].

The UK Government have estimated that standardised packaging would result in GBP24.7 billion in health benefits and productivity savings over 10 years [viii]. As predicted from our research, longitudinal evidence from the UK between 2016 and 2018 [ix], found that standardised packaging increased the noticeability of health warnings. In Australia, the first country to introduce standardised packaging, there is now considerable research demonstrating positive changes in attitudes, knowledge and behaviour as a result [x].

These changes in attitudes have resulted in changes in smoking behaviour. An Australian Government Department of Health report published in 2016 [x], concluded that standardised packaging was accountable for at least 25% of the 2.2% reduction in smoking prevalence observed in the 34 months after the introduction of standardised packaging. This represents 130,000 people quitting smoking.

A recent simulation model estimated the likely impact of implementing standardised packaging across seven Latin American countries (covering 80% of the Latin American population) based on evidence from countries where standardised packaging has been introduced [xi]. The authors estimate that standardised packaging will save over 155,000 premature deaths, add 4.1 million additional healthy years of life and save USD13.6 billion in direct health care expenses.

5. Sources to corroborate the impact

- i) School of Public Health & Health Systems, University of Waterloo (2020). Supporting Letter - Expert Advisor to Governments of Australia, UK, Ireland, Singapore, USA, New Zealand, Canada, EU and WHO
- ii) Irish Department of Health (2014). Standardised Packaging of Tobacco Products – Evidence Review. *Cites underpinning research 1, 2, 3, 4, 5 and 6.*
- iii) Chantler C. (2014). Standardised Packaging of Tobacco - Report of the independent review undertaken by Sir Cyril Chantler. *Cites underpinning research 1 and 2.*
- iv) Professor in Social Marketing, EHESP School of Public Health (2020). Supporting Letter - Expert Advisor to French Government
- v) State Institute for Substance Research (SIRUS), Norway (2015). Update of the knowledge base on standardised tobacco packaging (translated version). *Cites underpinning research 2 and 3.*
- vi) Columbian Ministry of Health (2020). Supporting Letter - Deputy Director of Non-Communicable Diseases
- vii) a) WHO Report on the Global Tobacco Epidemic, 2019 – Offer help to quit tobacco use
b) WHO Report on the Global Tobacco Epidemic, 2017 – Monitoring tobacco use and prevention policies
c) WHO Report on the Global Tobacco Epidemic, 2015 – Raising taxes on tobacco
Cites underpinning research 5.
- viii) UK Department of Health (2014). Standardised Packaging of Tobacco Products.
- ix) Aleyan *et al.* (2020). Evaluating the impact of introducing standardized packaging with larger health-warning labels in England: findings from adult smokers within the EUREST-PLUS ITC Europe Surveys. *European Journal of Public Health*, 30 (Supplement_3), iii91-iii97.
- x) Australian Government, Department of Health (2016). Post-Implementation Review Tobacco Plain Packaging
- xi) Alcaraz *et al.* (2020). Health and Economic Impact of Health Warnings and Plain Tobacco Packaging in Seven Latin-American Countries: Results of a Simulation Model. *Nicotine & Tobacco Research*. DOI:[10.1093/ntr/ntaa104](https://doi.org/10.1093/ntr/ntaa104)