

REVIEW OF LITERATURE AND RESEARCH ON THE POLICY IMPACT OF STANDARDISED PACKAGING FOR TOBACCO PRODUCTS

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INTRODUCTION

Singapore is considering instituting plain or standardised packaging for tobacco products. The Framework Convention on Tobacco Control (FCTC) defines “standardised packaging” as “measures to restrict or prohibit the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style”.¹

This review considers “standardised packaging” in the sense defined by FCTC; however, the Authors note that many countries implement enlarged graphic health warnings (GHWs) in conjunction with standardised packaging.

As part of this review process, the Authors conducted a review of selected international and local literature and research on standardised packaging. In particular, this Report considers:

- A. International reviews on standardised packaging, namely:
 - a. The “Stirling Review”;
 - b. The “Chantler Report”;
 - c. The “Hammond Report”;
 - d. The Australian Post-Implementation Review;
 - e. Cochrane Review Paper 2017;
 - f. An Assessment of the Likely Effect of Plain Packaging on Warnings Efficacy by Prof W. Kip Viscusi; and
 - g. Analysis of CITTS data and NTPPTS data by Prof W. Kip Viscusi.

¹ World Health Organization. World No Tobacco Day. Frequently asked questions: Plain packaging of tobacco products. 31 May 2016. <http://www.who.int/campaigns/no-tobacco-day/2016/faq-plain-packaging/en/>. Accessed 23 January 2018.

B. Local studies:

- a. Local studies by Health Promotion Board, Singapore; and
- b. Singapore Public Opinion Survey.

The aim of this Report is to provide guidance on whether, based on existing international and local evidence, there is a reasonable basis to conclude that standardised packaging:

- a. reduces the appeal of tobacco products;
- b. increases the noticeability of health warnings;
- c. reduces the ability of the packaging of tobacco products to mislead about the harmful effects of smoking; and
- d. eliminates the effects of tobacco packaging as a form of advertising and promotion,

and ultimately contributes to reducing smoking prevalence over the long term.

THE “STIRLING REVIEW”

1. A UK-based panel acting under the auspices of the Public Health Research Consortium reviewed the evidence on standardised packaging for tobacco products, and published their findings in a report entitled, “Plain Tobacco Packaging: A Systematic Review”². This report is commonly referred to as the “Stirling Review”, referring to the University of Stirling, where the lead author is based.
2. The Stirling Review was published in 2012. It applied systematic review methodology and reviewed the literature from 1980 until August 2011. The resultant review included 37 papers, with an update in September 2013³ to include papers that were subsequently published (17 papers). The review overviewed 54 papers in total.
3. The Stirling Review reviewed the evidence on the effects of standardised packaging in relation to the benefits proposed by the FCTC. It sought to assess the impact of standardised tobacco packaging on the:
 - a. appeal of packaging or product;
 - b. effectiveness of health warnings; and
 - c. perceptions of product strength or harm⁴.In addition, it also presented a synthesis of evidence with respect to:
 - d. smoking-related attitudes, beliefs, intentions and behaviour; and
 - e. facilitators or barriers to the introduction of standardised packaging.

² Moodie C, Stead M, Bauld, et al. Plain tobacco packaging: a systematic review. 2012. Stirling, Scotland: Centre for Tobacco Control Research, Institute for Social Marketing, University of Stirling. http://phrc.lshtm.ac.uk/papers/PHRC_006_Final_Report.pdf. Accessed 5 June 2017.

³ Moodie C, Angus K, Stead M and Bauld L. Plain tobacco packaging research: an update. 2013. Stirling, Scotland: Centre for Tobacco Control Research, Institute for Social Marketing, University of Stirling. Accessed 5 June 2017.

⁴ The Stirling Review only reviewed the evidence on the effects of standardised packaging in relation to three out of the four objectives identified in the Introduction above. It derived these three objectives from a reading of the “Guidelines for Implementation of Article 11 of the WHO Framework Convention on Tobacco Control (Packaging and labelling of tobacco products)” and “Guidelines for implementation of Article 13 of the WHO Framework Convention on Tobacco Control (Tobacco advertising, promotion and sponsorship)”. While the elimination of the advertising and promotion effect of tobacco packaging is mentioned in the “Guidelines for Implementation of Article 13”, this does not appear to have been regarded by the Stirling Review’s authors as a separate objective/effect of standardised packaging.

4. The Stirling Review included primary research. It also did not impose any restrictions on the selection of the studies it would review in regard to the type of study methodology. Studies were found using systematic review methodology⁵ and were presented in a narrative synthesis organised around five main headings: appeal of cigarettes, packs and brands; salience of health warnings; perceptions of harm; smoking-related attitudes and behaviour; and barriers and facilitators to the introduction of standardised packaging.

Findings of the Stirling Review

5. The Stirling Review found that there was strong evidence to support the proposed benefits identified by the FCTC in relation to the role of standardised packaging in helping to reduce smoking rates; that is, that standardised packaging would:
 - a. reduce the attractiveness and appeal of tobacco products;
 - b. increase the noticeability and effectiveness of health warnings and messages; and
 - c. reduce the use of design techniques that may mislead consumers about the harmfulness of tobacco products.

In addition, the Stirling Review concluded that studies showed that standardised packaging:

- d. was perceived by both smokers and non-smokers to reduce initiation among non-smokers, and increased cessation-related behaviours among smokers; and
 - e. had some evidence of public support, although the majority of the public opinion studies were conducted in Australia.
6. The Stirling Review noted its own strengths and limitations. Noted strengths included the diversity of research methods used in the studies that it reviewed, the

⁵ A systematic review is a critical assessment and evaluation of all research studies that address a particular clinical issue. The researchers use an organized method of locating, assembling, and evaluating a body of literature on a particular topic using a set of specific criteria. A systematic review typically includes a description of the findings of the collection of research studies.

diversity of samples and study sites, the different types of standardised packaging assessed and the consistency of the findings across studies.

7. A further strength noted in the Stirling Review was that the studies included in its review scope were all peer-reviewed and published in peer-reviewed literature.
8. The main limitation noted was that because at the time of writing of the Stirling Review, standardised packaging had yet to be introduced in any country, it was not possible to evaluate the impact of the policy in practice. (Authors' Note: The update to the Stirling Review occurred in September 2013, 9 months after implementation in Australia, but that was before Australia published its post-implementation review. However, it is notable that the conclusions from the Stirling Review update were consistent with the original conclusions described in paragraph 5 above.)
9. Individual studies that were reviewed were also limited by elements of study design. For example, many of the surveys included convenience sampling⁶ and reporting was of variable quality in some of the articles and reports examined. In addition, a number of types of literature were not covered by the review, including internal tobacco industry documents and literature on marketing practices.
10. Despite these limitations, it was found that there was consistency of findings across all the studies regarding the potential impacts of standardised packaging. This consistency of evidence provided the Stirling Review authors with confidence about their observed potential effects of standardised packaging.
11. The Stirling Review authors concluded that if and when introduced in the UK, the existing evidence suggested that standardised packaging represented an additional tobacco control measure with the potential to contribute to reductions in the harm caused by tobacco smoking, now and in the future.

⁶ Convenience sampling is a sampling technique where the subjects chosen are the ones who are most accessible.

Industry criticisms of the Stirling Review

12. One criticism of the Stirling Review by the tobacco industry was based on the methodological limitations of the papers reviewed, notably that none of the papers reviewed employed a randomised controlled trial⁷ (RCT) methodology or longitudinal study⁸ design.
13. Another industry criticism was that the studies had little predictive value for actual behaviour because the studies only considered attitudes and intentions in hypothetical situations.

Authors' Discussion of the Stirling Review

14. The Stirling Review and its 2013 update referred to in paragraphs 2 and 8 above are academic reviews of the international peer-reviewed literature. The findings of the Stirling Review can be considered reliable because the methodology was sound and the studies it reviewed were peer-reviewed. That the Stirling Review itself was subsequently published in peer-reviewed literature further legitimises its process and conclusions.
15. The Stirling Review looked at international literature pertaining to standardised packaging. There was nothing in the literature review which precluded it from being applicable to Singapore (see paragraphs 82-87 below for why the findings of the Stirling Review are applicable to Singapore).

⁷ An RCT is "A study in which a number of similar people are randomly assigned to 2 (or more) groups to test a specific drug, treatment or other intervention. One group (the experimental group) has the intervention being tested, the other (the comparison or control group) has an alternative intervention, a dummy intervention (placebo) or no intervention at all. The groups are followed up to see how effective the experimental intervention was. Outcomes are measured at specific times and any difference in response between the groups is assessed statistically. This method is also used to reduce bias."- National Institute for Health and Care Excellence. Glossary. Available at: <https://www.nice.org.uk/glossary?letter=r>. Last accessed 24 August 2017.

⁸ A longitudinal study is a study where groups of people without the outcome of interest are assigned either to the intervention or as control group. They are then followed up and tracked for the development of the outcome. This contrasts with a cross-sectional study, which observes groups of people at a point in time.

16. All studies and reviews have limitations. The Stirling Review noted its own limitations, namely, that the evidence included in the original review was collected prior to standardised packaging being introduced in any country. By definition, this means that none of the evidence published could be evaluative of any actual implementation. This is not a flaw of the Stirling Review, merely an artefact of timing. Notwithstanding the critique in paragraph 9 above, its conclusion that there was strong evidence in favour of standardised packaging achieving the objectives of the FCTC remains reliable.

17. The industry criticisms relating to methodology (see paragraphs 12-13 above) are not reasonable bases to dismiss the more than fifty peer-reviewed published studies which were assessed in the Stirling Review. In general, RCT is not a feasible methodology to assess real world policy interventions. Moreover, RCTs with smoking prevalence as outcomes were not possible due to real-world limitations on isolating in real life, an entire country or sub-population of that country from confounding factors that would influence smoking prevalence.⁹ In particular, it would also be unethical to expose randomised groups of children to tobacco and potential nicotine addiction. Longitudinal study design was not available because of the timing of the review, which captured studies before the results of any actual implementation could be available.

18. Studies conducted in the field of marketing have drawn links between product appeal, attitude towards products and consumer behaviour.¹⁰ We expect there to be similar links in the case of standardised packaging since tobacco products are also consumer goods. Moreover, some of the experimental studies examined by the Stirling Review measured behavioural outcomes that approximate real life

⁹ In RCTs, subjects should be isolated from all other factors that may have the same effects as the intervention being studied. This way, the effects that are observed can be attributed to the intervention rather than any other causes. RCTs for individual tobacco control measures are not possible because we cannot isolate entire populations from all the factors that could influence smoking prevalence except the one being studied.

¹⁰ For example, Raz C, Piper D, Haller R, Nicod H, Dusart N and Giboreau A. From sensory marketing to sensory design: how to drive formulation using consumers' input? *Food Quality and Preference*. 2008;19:719-726. Doi: 10.1016/j.foodqual.2008.04.003. Also, Krishna A. An integrative review of sensory marketing: engaging the senses to affect perception, judgment and behaviour. *Journal of Consumer Psychology*. 2012;22:332-351. Doi: 0.1016/j.foodqual.2008.04.003.

behaviour (e.g. experimental auctions¹¹, eye tracking¹², naturalistic study¹³ designs). Therefore, it was reasonable to conclude that reduced appeal would likely contribute to decreased tobacco consumption as it offered the best fit with the wider evidence on the effects of marketing, including development and use of brand imagery. A notable strength of the Stirling Review is that it gave direct evidence (not reliant on stated intentions) that standardised packaging is consistently less appealing than branded packaging.

19. As emphasised by the Stirling Review authors, it is noteworthy that despite the limitations of the individual studies it covered, there was remarkable consistency in the findings in a single direction. This contributed to the confidence about the studies' observed impact of standardised packaging.

20. The conclusions in the Stirling Review on the effectiveness of standardised packaging as a measure that will contribute to reductions in smoking harm are reliable. None of the limitations and tobacco industry criticisms materially undermine the body of evidence and the Stirling Review authors' conclusions.

21. In summary, in our opinion, neither the specific criticisms of the Stirling Review made by industry, nor any matter that we have identified, diminishes the credibility or reliability of the Stirling Review or of its findings.

¹¹ An experimental auction is a research method designed to determine the value the participant places on a product by measuring his willingness-to-pay (or exchange a resource for that product). Participants are placed in an active market scenario in which there are real economic consequences to their choices. This simulation of real-life condition is an advantage of experimental auctions over studies that rely on participants stating their preferences in hypothetical scenarios. See: Lusk JL, Shogren JF. Introduction. In: *Experimental Auctions: Methods and Applications in Economic and Marketing Research*. Quantitative Methods for Applied Economics and Business Research. Cambridge: Cambridge University Press; 2007:1-18. doi:10.1017/CBO9780511611261.001.

¹² Eye tracking experiments track participants' subconscious eye movements in response to visual stimuli and measure the duration that the eyes gaze at each visual stimulus. Such experiments are based on theories on how eye movement predicts the individual's preference of one stimulus over another. See: Clement J. Visual influence on in-store buying decisions: an eye-track experiment on the visual influence of packaging design. *Journal of Marketing Management*. 2007;23:917-928. Pg920-922.

¹³ These are studies in which the researchers observe participants in their natural environment with minimal interference.

THE “CHANTLER REPORT”

22. The “Chantler Report”¹⁴ was prepared for the UK’s Department of Health in March 2014, by Sir Cyril Chantler, a UK paediatrician.

23. The Chantler Report assessed the likelihood and nature of the impact that standardised packaging might have on public health, particularly the health of children and young adults.

24. The Chantler Report also addressed the following issues:

- a. Does branded packaging promote tobacco consumption, especially by encouraging children to take up smoking?
- b. Is standardised packaging likely to lead to a reduction in the consumption of tobacco?

25. The method by which the review was conducted consisted of:

- a. Consideration of existing evidence including the responses to a prior Department of Health consultation, and the Stirling Report and its subsequent update;
- b. Collection and consideration of additional evidence from proponents and opponents of standardised packaging. This included:
 - i) new research-based evidence that was not already provided to the consultation; and
 - ii) discussions from the main meetings with proponents and opponents, as well as side meetings with key experts and representatives of the tobacco industry;
- c. Commission of independent analyses of the qualitative and quantitative studies in the Stirling Review [Authors’ note: Both analyses employed a different review method from that used in the Stirling Review and arrived at findings that were similar to that of the Stirling Review.]; and

¹⁴ Chantler C. Standardised packaging of tobacco: report of the independent review undertaken by Sir Cyril Chantler. 2014. United Kingdom: Department of Health. <http://www.kcl.ac.uk/health/10035-TSO-2901853-Chantler-Review-ACCESSIBLE.PDF>. Accessed 5 June 2017.

- d. Consideration of the emerging evidence from Australia's implementation of standardised packaging.

Findings of the Chantler Report

26. Chantler reported that it was highly likely that standardised packaging would serve to reduce the rate of children taking up smoking, and it was implausible that standardised packaging would increase the consumption of tobacco. He also reported being persuaded that branded packaging plays an important role in encouraging young people to smoke and in consolidating the habit, irrespective of the intentions of the industry.
27. Chantler reported that he had not, at the time of writing, seen evidence that allowed him to quantify the size of the likely impact of standardised packaging, but was satisfied that the body of evidence showed that standardised packaging, in conjunction with the current tobacco control regime, was very likely to lead to a modest but important reduction over time on the uptake and prevalence of smoking, and thus have a positive impact on public health.
28. Chantler found that the overall evidence showed that branded packaging would act as one of the factors that encouraged children and young adults to experiment with tobacco and establish a habit of smoking:
 - a. Considerable evidence existed on tobacco companies' research on the use of packaging to appeal to young adults, and it was very plausible that the effects of such targeted marketing would have "spillover" influence on younger persons;
 - b. Advertising and promotion had been shown to increase the likelihood of smoking, even in adolescents and young adults;
 - c. Tobacco packaging was an important marketing tool, especially in markets that already had high restrictions on tobacco promotion;
 - d. Evidence showed that brand association with positive smoker attributes contributes to the initiation and experimentation among the young, along with other known factors such as peer pressure and socialisation. The tendency of youths to focus on the "here and now" (i.e., peer approval,

looking cool, etc.) increased their susceptibility to experiment when offered a cigarette. Standardised packaging would distance brand imagery and its positive associations from youths who would potentially experiment with smoking¹⁵;

- e. The susceptibility of the young to branding had been demonstrated for other consumer products. There was no reason to believe otherwise for tobacco products;
- f. There was very strong evidence that exposure to tobacco advertising and promotion increased the likelihood of children taking up smoking. Tobacco packages appeared to be especially important as a means of communicating brand imagery in countries which have comprehensive bans on advertising and promotion. The balance of evidence suggested that the appeal of branded packaging acts as one of the factors encouraging children and young adults to experiment with tobacco and to establish and continue a habit of smoking;
- g. Opponents of standardised packaging made the point that there has been no RCT carried out to test the impact of standardised packaging on the take up of smoking amongst children. But it was neither possible nor ethical to undertake such a trial; and
- h. A large number of experimental studies had tested the effects of standardised packaging. The Stirling Review had systematically assessed these studies and found that:
 - i) Standardised packaging was less appealing than branded packaging;
 - ii) Graphic and text health warnings were more credible and memorable on standardised packaging than when juxtaposed with attractive branding;
 - iii) Whereas colours and descriptors on branded packaging confused smokers into falsely perceiving some products as lighter and therefore “healthier”, products in standardised packages were more likely to be perceived as harmful; and

¹⁵ See paragraphs 3.7, 3.14-3.17, 6.5 of the Chantler Report.

- iv) There was some evidence that standardised packaging changes smoking behaviour and intentions. However, these should be interpreted with some caution as expressed intentions were not always predictive of actual future behaviour.

29. While there were methodological limitations (i.e., no RCTs or longitudinal studies) on the evidence available at the time of the Stirling Review, Chantler was of the view that there was sufficient evidence that the introduction of standardised packaging as part of a comprehensive policy of tobacco control measures would be very likely over time to contribute to a modest but important reduction in smoking prevalence, especially in children and young adults.

30. According to Chantler, the most important contribution made by the Stirling Review was the consistency of its results on appeal, salience and perceptions of harm, most notably, that standardised packaging is less appealing than branded packaging. This evidence was direct and not reliant on stated intentions. Evidence from other spheres showed a strong non-conscious link between appeal and subsequent behaviour regardless of stated intentions.¹⁶ It was therefore concluded that, by reducing its appeal, standardised packaging would affect smoking behaviour.

31. Chantler concluded, therefore, that it was likely that standardised packaging would lead to:

- a. increased negative feelings in smokers and potential smokers toward smoking;
- b. less misperception that some brands were less harmful than others;
- c. increased credibility of health warnings once conflicting brand messaging was removed; and

¹⁶ See paragraph 14 of Chantler's "Letter to the Secretary of State for health, the Rt. Hon. Jeremy Hunt MP"; also, Webb TL, and Sheeran P, (2006). Does Changing Behavioral Intentions Engender Behavior Change? A Meta-Analysis of the Experimental Evidence. *Psychological Bulletin*. Vol. 132, No. 2, pp, 249–268.

- d. weakened association of brands with positive traits and smoker identity (children and youths would also be less likely to associate brands with the people they want to emulate).

These would result in behavioural change in smokers and diminish their role in creating an exaggerated view of smoking prevalence and as a social norm. That would in turn contribute toward 'de-normalising' smoking and make it less desirable for children to take up smoking to "fit in" with their peers.

- 32. There was little risk of standardised packaging having a price effect (i.e., drive prices down) that would increase tobacco consumption. If a price effect were to occur, the impact could be mitigated through taxation. There was no convincing evidence to suggest that standardised packaging would lead to a growth in the illicit market, and any such growth could be addressed with an effective enforcement regime.
- 33. There was strong emphasis among the evidence in the literature and from experts that tobacco control measures (of which standardised packaging is one) were meant to work complementarily together to achieve the intended outcomes.
- 34. The Chantler Report emphasized the strong evidence of the effect of tobacco appeal on youth smoking initiation. There was strong evidence that standardised packaging would reduce the appeal of tobacco products. It was reasonable to conclude that standardised packaging would help to reduce appeal and youth smoking.
- 35. Brand imagery (that can be represented in branded packaging) encouraged a distorted view of the social desirability of smoking. 'De-glamourising' packaging and smoking would reduce appeal with flow on effects contributing to subsequent smoking behaviour. Chantler put forth arguments that standardised packaging would lead to more negative feelings toward smoking and contribute to making smoking less of a social norm.

Authors' Discussion of the Chantler Report

36. Chantler's review is a review undertaken by an expert, with assistance from academic advisors. Chantler's review was thorough. The summary of findings in the Chantler Report support the conclusion that standardised packaging will reduce the appeal of tobacco products, reduce misperceptions of the harmfulness of smoking and reduce the effects of tobacco packaging as a form of advertising and promotion. The findings were drawn from the international literature, from an international visit (to Australia) and from interviews with representatives from the tobacco industry which operates globally.
37. The scope of the review is global and of relevance to Singapore, and the conclusions of the report are also relevant to Singapore. There is no reason to believe that the findings are not generalisable to the Singapore context (see paragraphs 82-87 below).
38. The Chantler Report's conclusion on standardised packaging's likely impact on tobacco price, consumption and the illicit market is borne out by Australia's post-implementation data¹⁷:
- a. Tobacco companies had claimed that the removal of design features from tobacco packaging would force brands to compete only on the basis of cost and that this "commoditization" of tobacco products would lead to dramatic drops in prices, resulting in an increase in consumption. However, post-standardised packaging in Australia, the retail prices in all categories of cigarettes increased beyond inflation rates.¹⁸ Also seen was an initial increased shift to value brands among smokers, likely due to increase in numbers available and smaller price increase relative to premium brands. Reported consumption among daily smokers and regular smokers also

¹⁷ In view of her close professional relationship with many of the authors of studies that form the basis of the Australian Post-Implementation Review, Caroline Miller recuses herself from discussing the conclusion of the Chantler Report insofar as it relates to the Australian Post-Implementation data.

¹⁸ Scollo M, Bayly M, Wakefield M. The advertised price of cigarette packs in retail outlets across Australia before and after the implementation of plain packaging: a repeated measures observational study. *Tob Control*. 2015;24:ii82–ii89. doi:10.1136/tobaccocontrol-2014-051950.

dropped after a subsequent tax increase.¹⁹ Australian Bureau of Statistics data from excise and customs receipts suggested a continuing decline in tobacco consumption²⁰, a fact that is corroborated by population surveys that found no significant increase in consumption²¹; and

- b. Government surveys found no evidence of increased use of illicit unbranded tobacco or contraband cigarettes. Industry reports also showed low prevalence of counterfeit cigarettes. Figures from the tobacco industry likely overestimated the extent of the illicit market, mainly due to limitations of sampling; users of unbranded illicit tobacco were over represented and occasional smokers were omitted from sample populations. Industry figures were widely criticised, including in expert testimonies in the UK High Court case on standardised packaging legislation. KPMG, the company commissioned by the industry to conduct the surveys on which the tobacco industry's figures were based, stated that their work had been misrepresented by the industry in claims that standardised packaging could of itself lead to increase in the illicit tobacco trade in Australia.²²

¹⁹ Scollo M, Zacher M, Coomber K, et al. Changes in use of types of tobacco products by pack sizes and price segments, prices paid and consumption following the introduction of plain packaging in Australia. *Tob Control*. 2015;24:ii66–ii75. doi:10.1136/tobaccocontrol-2014-052071.

²⁰ Post-implementation review: tobacco plain packaging, 206. Australian Government Department of Health. <http://ris.pmc.gov.au/2016/02/26/tobacco-plain-packaging>. Accessed 6 June 2017. P43-45.

²¹ Post-implementation review, 2016. P38-43.

²² British American Tobacco v. UK Department of Health; judgment approved by the court for handing down. 19 May 2016. <https://www.judiciary.gov.uk/wp-content/uploads/2016/05/bat-v-doh-judgment.pdf>. P54. Accessed 6 June 2017.

THE “HAMMOND REPORT”

39. The report ‘Standardized packaging of tobacco products: evidence review’²³ was prepared for the Irish Department of Health in March 2014. It was prepared by David Hammond PhD based at the University of Waterloo, Ontario, Canada.
40. The report reviewed the scientific evidence on standardised packaging, to assess the extent to which standardised packaging regulations would help Ireland to achieve its tobacco control objectives.
41. The report sought to address each of the following issues:
- a. Tobacco marketing and advertising;
 - b. Review of independence evidence;
 - c. Review of evidence from the tobacco industry;
 - d. Methodological quality of the evidence; and
 - e. Industry arguments.
42. The review examined 75 original empirical articles, across both youth and adults, and from 10 countries, and including 19 quantitative studies, 10 qualitative studies and 5 mixed studies. The broader tobacco control and marketing literature and available tobacco company corporate documents also provided a foundation for the Hammond Report.

Findings of the Hammond Report

43. Hammond’s overall conclusion was that there is sufficient evidence to conclude beyond a reasonable doubt that plain (or standardised) packaging would help Ireland to achieve its public health policy objectives in relation to tobacco control.

²³ Hammond D. Standardized packaging of tobacco products: evidence review. Prepared on behalf of the Irish Department of Health. March 2014. <http://health.gov.ie/wp-content/uploads/2014/06/2014-Ireland-Plain-Pack-Main-Report-Final-Report-July-26.pdf>. Accessed 9 June 2017.

44. The Hammond Report concluded that there was **very strong evidence** that standardised packaging would be effective, specifically with regard to Ireland's policy objectives, which were:

- a. Preventing non-smokers including children and young people from starting to smoke;
- b. Encouraging, motivating and supporting current smokers to quit;
- c. Reducing recidivism [relapse] rates among those who have quit; and
- d. Limiting the societal impacts of smoking and protecting society, especially those under 18, from the marketing practices of the tobacco industry.

45. The Hammond Report noted that the evidence base on standardised packaging had rapidly evolved. The number of original articles was then 75, in addition to the broader previous tobacco control and marketing literature, and evidence from corporate tobacco company documents.

46. It was also noted that the evidence on standardised packaging was notable for its breadth and diversity: research had been conducted in 10 different countries using a range of methodologies, including consumer perceptions, eye-tracking technology, neuroimaging, measures of consumer demand, and behavioural tasks, as well as evidence on the impact of standardised packaging in Australia.

47. The Hammond Report also concluded that the literature provided the following insights:

- a. Health warnings on standardised packs were more noticeable, more easily recalled, and might lead to greater cognitive processing, particularly among youth non-smokers. The impact of branding persisted even when there were large pictorial warnings alongside. Standardised packaging and health warnings had complementary but independent effects on consumer perceptions;
- b. Perceptions of risk between different brands could be biased by pack design and colour, supporting the false beliefs held by many consumers that some cigarette brands were less harmful than others, despite

scientific evidence to the contrary. Findings indicated that standardised packaging was associated with fewer false beliefs;

- c. Consumer appeal was unequivocally reduced by standardised packaging, particularly among youth and young adults, including smokers and non-smokers. Standardised packaging was also associated with less positive brand imagery and limited the ability of packaging to target sub-groups of youth and young adults;
- d. Measures of consumer demand and smoking behaviour indicated that standardised packaging might promote smoking cessation among established smokers, while branded tobacco packaging was a reliable cue for smokers;
- e. Post-implementation, the impact of standardised packaging regulations in Australia suggest in preliminary evidence (at the time of writing in 2014) that standardised packaging has had a positive public health impact in Australia; and
- f. Plain pack colour which were darker and non-white were perceived as significantly less appealing and more effective, while white and lighter colour products were perceived as “healthier” and cleaner. Standardising colour for uniformity would also minimise the belief that some products are less harmful than others.

48. On the methodological quality of the evidence, the Hammond Report noted that:

- a. The research focused on the key role of packaging and on how packaging is used by the tobacco industry to influence consumers’ beliefs about the risks of smoking, and of risks of different brands; and
- b. While most of the research on standardised packaging at the time was experimental in nature and had been conducted in jurisdictions without standardised packaging, the evidentiary base was highly consistent across more than 70 original empirical articles with different research domains and study designs, including the post-implementation studies in Australia.

49. The importance of tobacco packaging as a marketing tool to industry was noted, including recruiting new smokers and “starters”. The importance of packaging as a

communication vehicle for industry in countries where advertising and marketing is constrained was also noted.

50. Corporate documents released by tobacco companies provided consistent, unambiguous evidence that packaging was an effective promotional tool for influencing consumer perceptions of risk, establishing brand imagery of specific brands, as well as promoting positive social norms and attitudes towards smoking more generally.
51. The Hammond Report concluded that the evidence indicated that packaging was a critical form of tobacco promotion, particularly in jurisdictions with comprehensive advertising and marketing restrictions. Standardised packaging reduced false beliefs about the risks of smoking, increased efficacy of health warnings, reduced consumer appeal among youth and young adults, and might promote smoking cessation among established smokers.

Authors' Discussion of the Hammond Report

52. The Hammond Report was an academic review that was well conducted.
53. The Report's scope was the international literature on standardised packaging, which by then had grown to 75 peer-reviewed, published articles that spanned 10 countries and multiple methodologies. It was also undertaken within the broader context of the published tobacco control literature and marketing literature, and publicly available tobacco company corporate documents. The expanding volume and context was a strength of the Hammond Report.
54. The Hammond Report is international, spanning the standardised packaging literature from 10 countries and the global tobacco control literature. Its findings support that standardised packaging would reduce the appeal of tobacco products, increase the noticeability of GHWs, reduce the ability of tobacco packaging to mislead consumers about tobacco's harmful effects and decrease the effects of tobacco packaging as a form of advertising and promotion. The Report's international context and literature review is generalisable to Singapore (see

paragraphs 82-87 below). Its conclusions with regard to standardised packaging's contribution to tobacco control, which were written for the Irish Government, are generalisable to Singapore, which also has a similarly mature tobacco control policy context.

AUSTRALIAN POST-IMPLEMENTATION REVIEW (PIR)²⁴

55. The “**Australian PIR**” was prepared by Australia’s Department of Health in 2016, in line with the requirements of the Australian government’s Office of Best Practice Regulation. The PIR was undertaken to examine the post-implementation evidence, data and analysis of the broader costs and benefits to industry, government and the wider community, to evaluate the efficiency and effectiveness of the tobacco standardised packaging measure as implemented through the *Tobacco Plain Packaging Act 2011*.
56. The Australian PIR reviewed the larger context of the Act, described its definition and policy development, and then assessed the evidence of its impact against its stated objectives, within a wider public health context. The stated objectives were to reduce the appeal of tobacco products, to increase the effectiveness of health warnings, and to reduce the ability of packaging to mislead consumers regarding the harmful effects of tobacco use. The measure also gave effect to certain obligations of Australia under the FCTC. The standardised packaging measures were part of the Australian government’s comprehensive tobacco control strategy.
57. The Australian PIR included multiple federal and local surveys on smoking prevalence and behaviours before and after implementation.
58. The Australian PIR reviewed the various post-implementation studies:
- a. Three studies based on the data produced in the **National Tobacco Plain Packs Tracking Survey (NTPPTS)** (April 2012-May 2014) concluded that standardised packaging reduced the appeal of tobacco products, made graphic health warnings more noticeable and increased the number of smokers who correctly believed all cigarettes were equally harmful;
 - b. Studies based on the data produced in the **New South Wales Cancer Institute Tobacco Tracking Survey (CITTS)** (2006-2013) concluded that

²⁴ Caroline Miller recuses herself from an assessment of the Australian Post-Implementation Review. A/Prof Miller was not involved in the Australian PIR. However, A/Prof Miller is a member of the Australian Government Expert Advisory Committee on Tobacco Plain Packaging and is an author of some studies evaluating the Australian laws.

with standardised packaging, more smokers had strong responses to pack health warnings, worried about smoking, were encouraged to stop, and felt like they should hide their pack, and that the early effects amongst adult smokers indicated reduced promotional appeal of the packaging and increased effectiveness of health warnings;

- c. Studies based on the data produced in the **International Tobacco Control Policy Evaluation Project Data** pre- and post-implementation (2011-2012, Feb-May 2013), concluded that “overall the net effect of (standardised packaging) and larger graphic health warnings appears to be positive, although there are some indications that the effects might be smaller than anticipated”²⁵;
- d. Studies based on the data produced in the **Australian Secondary Students Alcohol Smoking and Drugs (ASSAD) Survey Extension** (2013) concluded that there was evidence of reduction in positive perceptions regarding brand characteristics and increase in negative pack image ratings, although adolescent mental processing of warning information did not increase following health warning enlargement (unlike in adults, as showed by other studies);
- e. A study on **cigar and cigarillo smokers** concluded that standardised packaging with enlarged graphic health warnings reduced the appeal of tobacco packaging, increased the noticeability of graphic health warnings, reduced misperceptions about the harm of certain products (including the view that cigars were less harmful), and might have increased the frequency of self-reported quitting thoughts and behaviours;
- f. A study on **calls to Quitline** before and after the implementation showed a sustained increase in calls not attributable to other anti-tobacco activities;
- g. A **Cancer Council Victoria observational survey** of the prevalence of cigarette pack display and smoking in outdoor venues observed a decline in personal pack display (e.g., packs being placed faced up, as opposed to being concealed by phones/wallets/other items), and a reduction in active smoking in outdoor restaurants, bars and cafes, sustained over one year;

²⁵ Australian Government Department of Health. Post-Implementation Review. Tobacco Plain Packaging 2016. 24 January 2016. Paragraph 82.

- h. The Australian PIR noted there were industry-commissioned reports that contradicted the findings listed above, including those prepared by **SLG Economics**. However, these reports were unclear as to their methodology and were not peer-reviewed, unlike the academic studies cited before; and
- i. Taken as a whole, the Australian PIR concluded that there was substantial early diverse and reliable evidence that the tobacco standardised packaging measure was having a positive impact on the three specific mechanisms of reducing the appeal of tobacco products, reducing the potential for tobacco packaging to mislead consumers, enhancing the effectiveness of graphic health warnings, and that the measure was resulting in positive changes to smoking behaviours.

59. The Australian PIR also reviewed the prevalence of tobacco use based on several surveys:

- a. An analysis of the **Roy Morgan Single Source Survey Data** concluded that a statistically significant decline in smoking prevalence of 0.55 percent (of a larger 2.2% decline in smoking prevalence observed overall) could be attributed to 2012 packaging changes. Because the changes were designed to deter smoking initiation, promote cessation and to deter relapse (which affect only a subset of current and future smokers), the benefits would be slow to appear in the population but were likely to grow over time. In a supplement to the main report, the author estimated that the packaging changes resulted in an average of some 108,228 fewer smokers over the post-implementation period from Dec 2012 to Sep 2015, in a base population of approximately 3.3 million smokers, or about 18% of the total population;
- b. Another industry-commissioned analysis by academics **Kaul and Wolf** used a smaller and shorter subset of the Roy Morgan data and concluded that there had been no impact on 14-17 year olds and no lasting impact on those 14 years and above. However, the Australian PIR pointed out the significant flaws and criticisms by other academic experts, and that there was a recent peer-reviewed article that re-analysed the same dataset with a more appropriate statistical method and found that there was a “clear and

statistically significant reduction in smoking prevalence” and that the impact of the measure “appears to have been even greater than expected”;

- c. The **National Drug Strategy Household Survey** (of licit and illicit drug use) in 2013 showed a decline in the number of people smoking daily, an increase in the proportion of people reporting never smoking and a decline in the average number of cigarettes smoked per week, a delay in age at which young people take up smoking, and a decline in the proportion of households with dependent children where someone smoked inside the home, and a significant fall in prevalence; and
- d. **Other surveys** (including of proxies like tobacco import and household expenditure) showed the ongoing general decline in prevalence after the implementation of the packaging changes.

Conclusion of the Australian PIR

60. The Australian PIR concluded that, based on the early evidence, “the [standardised packaging] measure has begun to achieve its public health objectives of reducing smoking and exposure to tobacco smoke in Australia and it is expected to continue to do so into the future.”

Authors’ Discussion of the Australian PIR

61. The Australian PIR presented a substantial body of studies which evaluated the early impact of Australian standardised packaging measures. The Australian PIR concluded that Australia’s standardised packaging policy had begun to show its intended impact on appeal, GHWs and beliefs about harmfulness of smoking. From the Australian PIR’s conclusions, we can say that there is real-world evidence for standardised packaging reducing the appeal of tobacco products, increasing the noticeability of GHWs and reducing the ability of tobacco product packaging to mislead about its harmful effects.

62. The Australian PIR reported a decline in smoking rates, and attributed a portion of this decline to standardised packaging specifically. While it was not possible to predict if other countries, including Singapore, would observe the same magnitude

of decline in smoking prevalence (2.2% over 3 years, with 0.55% attributable to standardised packaging), the conclusion that standardised packaging would achieve its public health objectives is generalisable to other countries - including Singapore.

63. The body of literature on standardised packaging continues to grow, and the Authors acknowledge that this Report has not exhaustively covered the literature on the Australian PIR. However, the Authors are of the view that the present Report covers the major points made in the published literature, as well as the major issues that have been raised by industry-sponsored studies.

TOBACCO PACKAGING DESIGN FOR REDUCING TOBACCO USE (A COCHRANE REVIEW PAPER) 2017

64. Cochrane Reviews are systematic reviews of research in healthcare and health policy. Cochrane Reviews base their findings on the results of studies that meet certain quality criteria. Cochrane Reviews apply methods which reduce the impact of bias across different parts of the review process.

65. A team of Cochrane researchers from the UK and Canada summarised results from studies that examined the impact of standardised packaging on tobacco attitudes and behaviour, and published their results in the Cochrane Library. The review paper is titled 'Tobacco packaging design for reducing tobacco use (Review)'²⁶ (henceforth referred to in this Report as "Cochrane Review").

66. Cochrane methods were used to search and screen publications in nine databases from 1980 to January 2016, with additional unpublished materials, totalling 9105 records. Fifty-one studies met the Cochrane Review criteria and were included.

67. The objectives of the Cochrane Review were to:

- a. assess the effect of standardised packaging on tobacco use uptake, cessation and reduction; and
- b. assess the effect of standardised packaging on the potential intermediate outcomes that could be measured and were relevant to tobacco use uptake, cessation or reduction.

68. Five studies assessed primary outcomes for the Cochrane Review (*tobacco use prevalence incorporating uptake, cessation, reduction in consumption and relapse prevention*):

²⁶ McNeill A, Gravelly S, Hitchman SC, Bauld L, Hammond D and Hartmann-Boyce J. Tobacco packaging design for reducing tobacco use (Review). *Cochrane Database of Systematic Reviews*. 2017;4. Article no. CD011244. Doi: 10.1002/14651858.CD011244.pub2.

- a. One study²⁷ assessed smoking prevalence in Australia for the period January 2001 to December 2013 (one year after standardised packaging was fully implemented in Australia). A statistically significant reduction was found post-standardised packaging – with a 0.5% drop in smoking prevalence, after adjusting for other effects;²⁸
- b. Four studies tracked if current smokers reduced the number of cigarettes they smoked and found mixed results. Two studies (one observational in Australia and one experimental in UK) found no statistically significant reductions. The other two relatively small studies (again, one cross-sectional survey in Australia and one experimental study in UK) found some statistically significant reductions; and
- c. No studies directly assessed cessation (i.e., smokers at baseline quit at follow-up), relapse prevention, and uptake in children and young adults.

69. The other studies assessed the effects of standardised packaging on secondary outcomes for the review; both behavioural (e.g., quit attempts, forgoing cigarettes, covering the pack) and non-behavioural (e.g., motivation and plans to quit, packaging appeal, salience and believability of health warnings, perceptions of harm).

Behavioural secondary outcomes

- a. Studies²⁹ found statistically significant changes in quit attempts, from 20.2% before implementation to 26.6% one-year post-implementation. Calls to Quitline, which is an indirect measure of quit attempts, increased by 78%. Call

²⁷ P. Diethelm and T. Farley, 'Refuting Tobacco-industry Funded Research: Empirical Data Shows a Decline in Smoking Prevalence Following the Introduction of Plain Packaging in Australia' (2015) 6 *Tobacco Prevention & Cessation*. This paper was not part of the Australian PIR, though it was referred to in the PIR's footnotes 127-129.

²⁸ The Cochrane Review uses the figure 0.5% in its analysis. We note that the original analysis of the Roy Morgan Single Source Survey Data in fact concluded that the statistically significant decline in smoking prevalence was 0.55% instead.

²⁹ Durkin S, Brennan E, Coomber K, Zacher M, Scollo M, Wakefield M. Short-term changes in quitting-related cognitions and behaviours after the implementation of plain packaging with larger health warnings: findings from a national cohort study with Australian adult smokers. *Tobacco Control* 2015;24:II26–32. Young JM, Stacey I, Dobbins TA, Dunlop S, Dessaix AL, Currow DC. Association between tobacco plain packaging and Quitline calls: a population-based, interrupted timeseries analysis. *Medical Journal of Australia* 2014;200(1):29–32.

volume peaked at four weeks post-implementation and the peak was sustained up till 43 weeks post-implementation;

- b. Six studies (observational and experimental) found some behavioural changes. Smokers were more likely to stub out their cigarettes early and forgo at least one cigarette when a craving arose and decreased active smoking in outdoor cafes was observed, with the most decline in venues where children were present. In an experimental study, young female daily smokers stubbed out earlier, forgoed cigarettes and smoked less around others when they used standardised packs compared to regular packs. Three studies found no difference; and
- c. Seven studies (both observational and experimental) found increased avoidance behaviour regarding warning labels, such as concealment of tobacco packs by external cases, packs facing down, keeping the pack out of sight etc. especially among young female smokers.

Non-behavioural secondary outcomes

- d. There were mixed results among studies that assessed non-behavioural secondary outcomes. Some studies saw moderate effects from standardised packaging while other studies found no significant effect on non-behavioural secondary outcomes. However, there was strong consistency in findings that standardised packaging reduced appeal (of packaging, and perceived quality and taste of product) compared to branded packs, for both adults and adolescents; and
- e. Standardised packaging appeared to reduce the misperception that some cigarettes were less harmful than others, but only for dark-coloured packs.

Findings of the Cochrane Review

70. The Cochrane Review listed the evidence as low or very low “grade” (a term used by Cochrane) for studies that assessed the primary outcome of tobacco use prevalence, because of the nature of the studies.

71. The Cochrane Review authors concluded that the evidence suggested that standardised packaging might reduce smoking prevalence. They noted that only

one country had implemented standardised packaging at the time of the review, such that the evidence for the effect came from one large observational study that provided evidence for the effect. A reduction in smoking behaviour was supported by routinely collected data by the Australian government. Data on the effects of standardised packaging on non-behavioural outcomes (e.g., appeal) were clearer and provided plausible mechanisms of effect consistent with the observed decline in prevalence.³⁰

72. The Cochrane Review recommended that as standardised packaging is implemented in different countries, research programmes should be initiated to capture long term effects on tobacco use prevalence, behaviour and uptake.

73. The Cochrane Review authors did not find any evidence suggesting that standardised packaging might increase tobacco use.

74. Standardised packaging was likely to affect knowledge, beliefs and attitudes about tobacco use, which had some influence on smoking behaviour and prevalence. Hence, studies on these secondary outcomes were seen to be valuable. Even though the studies on secondary outcomes varied widely in design and type, most of the studies suggested that standardised packaging would impact secondary outcomes that could impact smoking prevalence.

Authors' Discussion of the Cochrane Review

75. Cochrane Reviews are a well-accepted academic methodology for assessing evidence. The Cochrane review grading system is more frequently used for clinical trials. In such context, observational studies are 'graded' as 'low', as the effect of the intervention is not isolated from the effect of other factors that would affect the outcomes.

³⁰ The findings on non-behavioural outcomes showed some plausible ways/mechanisms through which standardised packaging reduced smoking prevalence. That is, it gave plausible explanation for how standardised packaging reduces prevalence.

76. There are inherent challenges in evaluating the impact of population-level interventions; mainly the impossibility of isolating the effect of the intervention from that of other factors. National policies such as standardised packaging cannot be studied using RCTs, generally considered the most robust study design, since countries cannot be randomly assigned to interventions.³¹ Even where longitudinal design, also considered to be a robust design, was used, it would still be difficult to isolate the effects of standardised packaging. The Cochrane grades that were given reflect these inevitable limitations of the studies on standardised packaging.

77. In line with these constraints, the Cochrane Review authors concluded that available evidence suggested that standardised packaging might³² reduce smoking prevalence.

78. One strength of the Cochrane Review was the diversity of the studies that it assessed: design, type, assessment of primary and secondary outcomes. The search was comprehensive and studies that were reviewed were published peer-reviewed research.

79. One limitation of the review was that only one country had implemented standardised packaging at the time of data collection and the data sources available to assess impact on smoking behaviour are limited to the data routinely collected by the Australian government. However, the evidence from these data supported a reduction in smoking behaviour.

80. The Cochrane Review was conducted in a manner consistent with academic standards. The conclusions of the Cochrane Review are well founded based on the review methodology and results.³³

³¹ Please see paragraph 17; it is not feasible to isolate entire nations from all factors, save the one being studied, that influence smoking prevalence and the most obvious ethical issue is in relation to children.

³² The Cochrane Review complements and adds to the conclusions of the other reviews. The other reviews looked at standardised packaging's effect on appeal, GHW efficacy and false beliefs about harm and assumed that these would impact smoking prevalence. Cochrane Review's conclusion that standardised packaging may reduce smoking prevalence is consistent with the other reviews.

³³ Please see paragraphs 76-77 and paragraph 17: Cochrane Reviews are more frequently used for clinical trials, with a grading system appropriate for clinical trials (for example, RCT design is graded high and observational study design is graded low). Study designs suited for clinical trials may not be

81. The Cochrane Review covered the international literature which is relevant and generalisable to Singapore. The emergent evidence is from Australia, an environment with a mature tobacco control policy environment similar to that of Singapore. The evidence from tobacco control in Australia is broadly generalisable to other nations, including Singapore (see paragraphs 82-87 below).

feasible for studies on population-level interventions such as standardised packaging because of some inevitable limitations (e.g. cannot isolate entire population from confounding factors). Therefore, it is not surprising that using the Cochrane Review method (more commonly used for clinical trials), the evidence from studies on standardised packaging are graded low.

APPLICABILITY OF THE INTERNATIONAL EVIDENCE TO SINGAPORE

82. The evidence base for the tobacco control intervention of standardised packaging is applicable to Singapore. The applicability of tobacco control policy and campaign interventions across different international jurisdictions has been demonstrated many times. The International Tobacco Control (ITC) Policy Evaluation Project (www.itcproject.org), for example is a major international cohort study across more than 25 countries³⁴, which measures the psychosocial and behavioural impact of key national level policies of the FCTC. It has assessed the impact of: health warning labels and package descriptors; smoke-free legislation; pricing and taxation of tobacco products; communication and education; cessation; and tobacco advertising and promotion. The results from these studies demonstrated the comparable impact of tobacco control interventions across different countries in different regions.

83. The international evidence demonstrates the existence of a relationship – that standardised cigarette packaging reduces the appeal of cigarettes, misperceptions about the harmfulness of smoking, and ascription of positive smoker attributes. It also increases the noticeability of GHWs.

84. In public health, the important factors that are generally considered in assessing the efficacy of tobacco control interventions include socio-economic status, general and health literacy, experience in tobacco control measures, as well as known factors of smoking initiation and patterns of prevalence.³⁵ The majority of the international evidence consist of studies conducted in Australia, US, UK, Canada and several European countries which are similar to Singapore with respect to these factors. This would suggest that the evidence is applicable to Singapore.

³⁴ For list of countries, visit <http://www.itcproject.org/countries>.

³⁵ For example, the importance of smoking media literacy, see: Primack BA, Gold MA, Land SR and Fine M. Association of cigarette smoking and media literacy about smoking among adolescents. *Journal of Adolescent Health*. 2006;39(4):465-472. Doi: 10.1016/j.jadohealth.2006.05.011; and for importance of socio-economic status, see: Gilman S, Abrams D and Buka A. Socioeconomic status over the life course and stages of cigarette use: initiation, regular use, and cessation. *Journal of Epidemiology and Community Health*. 2003 57(10):802-808.

85. In particular, Singapore and Australia are comparable in economic status; gross national income per capita in 2016 (Atlas method) was USD54,420 for Australia and USD51,880 for Singapore.^{36 37} The two countries are also similar in levels of literacy and numeracy. OECD's Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), was designed to measure adults' proficiency in several key information-processing skills. It covered 24 countries and economies. Australia's mean scores for literacy and numeracy were 280 and 268 respectively. Singapore's mean scores were 258 and 257 for literacy and numeracy respectively. Singapore's lower scores were explained by the higher prevalence of adults whose native language were different from that of the assessment (English).^{38 39} Another key similarity between Singapore and Australia is that both countries have a comprehensive suite of tobacco control measures (e.g., taxes, advertising ban, minimum legal age, smoke-free zones) and a mature tobacco control policy environment. This had led to declines in smoking prevalence in both countries (Singapore: over 30% among males in the 1990s to 24.7% in 2010; Australia: over 40% of male smokers in the 1970s to 16% in 2016).^{40 41} This decline was driven primarily by decrease in smoking prevalence by younger adults in Singapore.⁴² Likewise, in Australia smoking has declined markedly among adolescents, young adults and middle-aged adults.⁴³ Furthermore, both countries share similar known factors of smoking

³⁶ World Bank. World development indicators database. Australia Country Profile. Available http://databank.worldbank.org/data/Views/Reports/ReportWidgetCustom.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=AUS. Accessed 17 January 2018.

³⁷ World Bank. World development indicators database. Singapore Country Profile. Available http://databank.worldbank.org/data/Views/Reports/ReportWidgetCustom.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=SGP. Accessed 17 January 2018.

³⁸ OECD. Skills matter: further results from the Survey of Adult Skills, OECD Skills Studies. 2016. OECD Publishing. Paris. Doi: <http://dx.doi.org/10.1787/9789264258051-en>. Figure 1.1, pg 22.

³⁹ The Authors were unable to compare health literacy rates as there appears to be little data on health literacy in Singapore.

⁴⁰ Ministry of Health, Singapore. National Health Survey 2010. Downloaded from: https://www.moh.gov.sg/content/moh_web/home/Publications/Reports/2011/national_health_survey2010.html. Accessed 16 January 2018. Table 5.4.

⁴¹ Greenhalgh, EM, Bayly, M, & Winstanley, MH. 1.3 Prevalence of smoking—adults. In Scollo, MM and Winstanley, MH [editors]. *Tobacco in Australia: Facts and issues*. Melbourne: Cancer Council Victoria; 2015. Tables 1.3.1 and 1.3.2. Available from <http://www.tobaccoinaustralia.org.au/chapter-1-prevalence/1-3-prevalence-of-smoking-adults>. Last updated: June 2017.

⁴² Ministry of Health, Singapore. National Health Survey 2010. Downloaded from: https://www.moh.gov.sg/content/moh_web/home/Publications/Reports/2011/national_health_survey2010.html. Accessed 16 January 2018. Table 5.4.

⁴³ Greenhalgh, EM, Bayly, M, & Winstanley, MH. Chapter 1. Trends in the prevalence of smoking. In M.M. Scollo, & M.H. Winstanley [Editors]. *Tobacco in Australia: Facts and Issues*. Melbourne: Cancer

initiation. Three categories of factors were identified by researchers in Australia and in Singapore - “Intrinsic”/“intrapersonal” (e.g., demography, psychology, biology), “extrinsic”/“interpersonal” (e.g., family and peer influence, social networking) and environmental factors (e.g., social norms, cultural context, legislative context).⁴⁴ ⁴⁵ Studies in both Singapore and Australia show that the influences in uptake of smoking are multi-faceted, with social and peer influences being important factors, in addition to the promotion, availability and accessibility of tobacco.⁴⁶ ⁴⁷ The findings of these studies are consistent with those in other countries such as the UK which show that young people in particular are greatly influenced by their sense of what is normal and attractive, which is in turn influenced by the imagery and social meaning attached to different behaviours, including tobacco use.⁴⁸ Tobacco promotion, including the exaggerated ‘normalisation’ of smoking behavior depicted via popular media, and glamorisation of tobacco, are important influences on young people.⁴⁹

86. Additionally, given the similar restrictions on tobacco advertising, the marketing strategies used in both countries would also be similar. Thus, it is reasonable to conclude that Australia’s experience with standardised packaging as described in

Council Victoria; 2015. Chapter 1.3.2. “Historical trends in smoking prevalence”. Available from: <http://www.tobaccoaustralia.org.au/chapter-1-prevalence>.

⁴⁴ Winstanley M and Wood L. Updated by Letcher T and Wood L. With contributions by Purcell K and Scollo M. Chapter 5 Influences on the uptake and prevention of smoking in Scollo MM and Winstanley MH [eds]. Tobacco in Australia: Facts and Issues. 4th edn. Melbourne: Cancer Council Victoria; 2012. Last updated on 2011. Available from http://www.tobaccoaustralia.org.au/downloads/chapters/Facts_Issues--Fourth_edition/Ch5_Update.pdf.

⁴⁵ Subramaniam M, Shahwan S, Fauziana R and Chong SA. Perspectives on smoking initiation and maintenance: a qualitative exploration among Singapore youth. *International Journal of Environmental Research and Public Health*. 2015;12:8956-8970. Doi: 10.3390/ijerph120808956.

⁴⁶ Ibid.

⁴⁷ Winstanley M and Wood L. 2012.

⁴⁸ Hastings G and Angus K. Forever cool: the influence of smoking imagery on young people. London: British Medical Association, Board of Science, 2008. <https://www.stir.ac.uk/media/schools/management/documents/Angus%20-%20Forever%20Cool%20the%20influence%20of%20smoking%20imagery.pdf>.

⁴⁹ Greenhalgh, EM, Bayly, M, & Winstanley, MH. Section 5.15 Tobacco advertising and promotion targeted at young people. Chapter 5. Influences on the uptake and prevention of smoking. In M.M. Scollo, & M.H. Winstanley [Editors]. Tobacco in Australia: Facts and Issues. Melbourne: Cancer Council Victoria; 2015. Available from: <http://www.tobaccoaustralia.org.au/chapter-5-uptake>. Sections 5.15 and 5.16.

the studies conducted there and the conclusion of the Australian PIR, would be applicable to Singapore.

87. The findings of the local studies (discussed in paragraphs 112-137) were in line with the international evidence and so provide further indication of the applicability of international studies to Singapore.

AN ASSESSMENT OF THE LIKELY EFFECT OF PLAIN PACKAGING ON WARNINGS EFFICACY BY PROF W. KIP VISCUSI

88. In this and the following sections of this paper, the Authors chose to critique two papers by Prof W. Kip Viscusi as, in the Authors' views, these papers were recently produced industry-commissioned reviews that encapsulated the main criticisms made against standardised packaging literature.

89. Prof W. Kip Viscusi was commissioned by British American Tobacco Norway to review the literature on standardised packaging. The report, 'An Assessment of the Likely Effect of Plain Packaging on Warnings Efficacy' ("Viscusi Assessment"), was published on 5 June 2015.

90. The Viscusi Assessment reviewed the literature for:

- a. the likely effect of standardised packaging on the efficacy of health warnings;
- b. the impact of standardised packaging, particularly prominence of warnings and pack colours, on risk beliefs; and
- c. the likely effect of standardised packaging on smoking initiation.

91. The search criteria for the literature reviewed was not described.

92. The Viscusi Assessment was not peer-reviewed or published in peer-reviewed literature.

93. The Viscusi Assessment critiqued the published research on standardised packaging. We discuss the major criticisms below (paragraphs 95-104).

94. The Viscusi Assessment concluded that standardised packaging would not increase the efficacy of warnings, increase risk awareness, or reduce smoking initiation.

Authors' Discussion of the Viscusi Assessment

Criticism of standardised packaging made by Viscusi:

95. There is no beneficial role for general additional health warning efforts. Viscusi claimed that in an environment where the awareness of the health risks of smoking was already high, additional measures to enhance warnings would not increase risk awareness or influence smoking behavior. It was argued that if there is no information gap, enhancing warnings will not affect smoking choices and behavior.

Authors' Discussion:

96. High levels of self-reported awareness of the harms of smoking alone are not sufficient evidence that nothing more can be done to increase awareness and understanding of risk, or to influence behavior. Even when most of a population is generally cognizant that smoking carries health risks (e.g., risk of lung cancer, heart diseases), these are often at an abstract level and not internalised or personalised by the individual.

97. Evidence suggests that even in instances where people are generally aware of smoking harms, gaps in perceptions of risks exist, individuals tend to underestimate the risk of smoking compared to other causes of death, smokers tend not to apply their knowledge of health risks to themselves and young people tend to underestimate the addictiveness of tobacco.⁵⁰

98. Viscusi asserted that where the noticeability of warnings was already high, enhancing the salience of warnings would carry no additional benefits. This overlooks the fact that even if warnings are highly noticeable, their impact will be diminished by the existence of conflicting messages. Branding elements on packs distract from or dilute the message of health warnings. By removing these elements, standardised packaging increases the salience, seriousness and credibility of the warnings. The Viscusi Assessment's critique assumes that the

⁵⁰ Kenkel D and Chen L. Chapter 8: Consumer information and tobacco use. In *Tobacco Control in Developing Countries*. (eds) Jha P and Chaloupka. 2000; Oxford University Press for the World Bank and World Health Organization. <http://go.worldbank.org/3W5K819300>. Accessed 7 June 2017.

only aim of standardised packaging is to give more information or raise general knowledge of risks. However, standardised packaging is also aimed at preventing individuals from underestimating the harms of smoking.

Criticism of standardised packaging by Viscusi:

99. Research supporting standardised packaging are methodologically flawed and cannot be relied upon. Viscusi dismissed the body of research supporting standardised packaging by reviewing a selection of papers and highlighting the limitations of their study designs.

Authors' Discussion:

100. All studies and methodologies have limitations. Researchers highlight the limitations of their research as part of routine practice in the peer-reviewed publication process. The body of research supporting standardised packaging is substantial, spans decades, includes samples from a variety of demographic profiles, and contains a diversity of study designs and types; yet there is strong overall consistency in the findings. A substantial proportion of it has been published in peer-reviewed literature. Taken together, the evidence base for standardised packaging has been found to be strong. It is not reasonable to dismiss the credibility of the entire body of peer-reviewed published research based on individual design limitations.

101. Another criticism by Viscusi was that experimental studies do not directly study the impact of standardised packaging on smoking prevalence rate. It is not feasible to conduct experimental studies with smoking prevalence as the measured outcome. It would also be unethical to expose children to tobacco and risk nicotine dependence. With existing models that link intermediate outcomes to smoking behaviour⁵¹, it is reasonable to conclude that standardised packaging's impact on the intermediate outcomes will contribute to reducing smoking prevalence. At the

⁵¹ For example, IARC model adapted by the authors of the 2017 Cochrane Review on standardised packaging (McNeill A, Gravely S, Hitchman SC, Bauld L, Hammond D, Hartmann-Boyce J. *Tobacco packaging design for reducing tobacco use*. Cochrane Database of Systematic Reviews 2017, Issue 4. Art. No: CD011244. DOI:10.1002/14651858.CD011244.).

time of the publication of the Viscusi Assessment, Australia had already implemented standardised packaging for 3 years and studies from the nation indicated that standardised packaging was achieving its direct intended outcomes of reduced appeal and increased salience of health warnings, as well as having a broader impact on smoking prevalence. Yet these findings were absent from Viscusi's assessment.

Criticism of standardised packaging by Viscusi:

102. Studies on standardised packaging do not examine the impact of standardised packaging on other drivers of smoking initiation.

Authors' Discussion:

103. There are multiple influencers of smoking initiation, documented in the literature. Brand imagery in tobacco marketing, by associating smoking with attributes that are desirable for youths, is one of the contributing factors for youth smoking experimentation and initiation. Standardised packaging aims to contribute to de-glamorising tobacco and smoking for young people, and the published literature demonstrates that standardised packaging has been shown to be effective in reducing appeal.

Authors' Discussion of the Viscusi Assessment

104. The Viscusi Assessment is a critique of the large body of published literature on standardised packaging. The criticisms raised do not provide any convincing grounds for questioning the validity and reliability of the body of research on the effects of standardised packaging, or the systematic reviews and Cochrane Review of the evidence. Furthermore, the Viscusi Assessment has not been published in peer-reviewed literature.

ANALYSIS OF CITTS DATA AND NTPPTS DATA BY PROF W. KIP VISCUSI

105. The report “Analysis of CITTS Data and NTPPTS data: a report for the post-implementation review” (“Viscusi Review”) by Prof. W. Kip Viscusi was recently submitted to the Ministry of Health and the Authors were asked by the Ministry to review the report.
106. The Viscusi Review analysed data from CITTS and the NTPPTS, two of several data sources used in the Australian PIR on the impact of standardised packaging (see paragraph 58 above).
107. The Viscusi Review concluded that:
- a. standardised packaging did not lead to a decrease in smoking behaviour;
 - b. there was no consistent evidence that standardised packaging led to its intended effects on intermediary factors such as increasing the effectiveness of GHWs;
 - c. many of the studies in the peer-reviewed literature that relied on these two survey datasets had not assessed the data in a balanced or correct way; and
 - d. standardised packaging had been ineffective or had produced counterproductive results.

Authors’ Discussion of the Viscusi Review

108. The Viscusi Review was submitted on behalf of British American Tobacco UK Limited, British American Tobacco (Brands) Inc., and British American Tobacco (Investments) Limited in UK legal proceedings in which standardised packaging was challenged. The UK courts examined Viscusi’s analyses. It noted that the CITTS data was based on surveys of recent actual smokers, not a sample of the overall smoker population, and hence did not provide evidence on general smoking prevalence.⁵²

⁵² BAT v Department of Health. [2016] EWHC 1169 (Admin). Paragraph [604]. (Royal Courts of Justice, UK 2016).

109. Australia's PIR was based on information and data from multiple sources (listed in paragraphs 57-58), one of which was the NTPPTS data. The Australian PIR's overall review of the datasets showed that standardised packaging was achieving its intended effects, whereas Viscusi concluded the opposite after analysing only the NTPPTS data. The contradiction between Viscusi's findings and Australian PIR's findings could be due to differences in how the data was adjusted to control for confounding factors. Indeed, Prof Frank Chaloupka, an expert witness who gave evidence in the legal challenge brought by tobacco companies against the UK government when the latter introduced standardised packaging, highlighted that if Viscusi had "improved" controls for the characteristics of survey respondents, the analyses would show that standardised packaging reduced smoking behaviour.⁵³

110. Prof David Hammond, on behalf of UK Secretary of State, assessed that "Prof Viscusi's analyses of the CITTS and NTPPTS data violate the most basic standards of data analysis."⁵⁴

111. It is our opinion that in its consideration of standardised packaging, the Singapore government should not rely on the Viscusi Review as it was not peer-reviewed and has been found to be flawed in its methodology and analysis (see paragraphs 108-109).

⁵³ Ibid.

⁵⁴ BAT CA Judgment. [2016] EWCA Civ 1182. Paragraph [211]. (Royal Courts of Justice, UK 2016).

LOCAL STUDIES CONDUCTED BY HEALTH PROMOTION BOARD (HPB)

112. There were four studies conducted by HPB on standardised packaging:
- a. Phase 1 study⁵⁵: household survey of smokers and non-smokers on perceptions towards cigarette packs packaging and its possible impact; the noticeability of GHWs in current and standardised cigarette packs. Phase 1 was conducted in December 2014;
 - b. Phase 2 study⁵⁶: focus group discussions (FGD) to determine what defined unattractive cigarette packaging, and to optimise the elements of standardised packaging for the local context. Phase 2 was conducted in June-September 2015;
 - c. Phase 3 study⁵⁷: quantitative survey to identify optimal elements of standardised packaging of cigarette packs. Phase 3 was conducted in March-April 2016; and
 - d. Phase 4 study⁵⁸: FGD exploring the effectiveness of standardised packaging against current packaging for all other tobacco products.

Phase 1 study

113. The objectives of the Phase 1 study were to:
- a. examine the perceptions towards current tobacco packaging and the possible impact of current pack design on various variables; and
 - b. examine the noticeability of GHWs on current and mock-up standardised pack.

114. Smokers and non-smokers (Singaporeans and Permanent Residents aged 18 to 39) were recruited through an interviewer-administered questionnaire conducted in households across Singapore. A total of 160 smokers and 160 non-smokers were recruited. Participants were presented with brands of cigarettes currently sold

⁵⁵ Health Promotion Board Report titled "Perception on Cigarette Packs. Research Findings".

⁵⁶ Asia Insight reports titled "Findings for Tobacco Packaging Study (Theme 1)", "Findings for Tobacco Packaging Study (Theme 2)", and "Findings for Tobacco Packaging Study (Theme 3)".

⁵⁷ Asia Insight report titled "Findings for Tobacco Packaging Study (Quantitative)".

⁵⁸ Asia Insight report titled "Findings for Tobacco Packaging Study (Theme 4)".

(Malboro, Dunhill, Pall Mall and Gudang Garam) as well as a mock-up of standardised pack. Participants then rated on a 5-point Likert scale from “strongly agree” to “strongly disagree”, how much they agreed or disagreed with a series of statements, assessing their perceptions, possible impact and visibility of the graphic warning.

115. The Authors reviewed the Phase 1 study and found that the initial analysis took into account all the responses to the different packs as a whole. The Authors recommended re-analysis to examine each variable independently and present the results of these variables separately. The data was re-analysed in accordance with the Authors’ recommendation.

116. The main findings were:

- a. Except for Gudang Garam, smokers and non-smokers found current packaging of cigarettes attractive;
- b. Among smokers and non-smokers, smokers who found the packaging attractive held perceptions of high quality product and perceptions of likelihood of attracting the younger age group to smoke. This was within the context of the majority knowing that smoking was harmful to health (88% to 98% of those who found current packaging attractive);
- c. Both smokers and non-smokers found the standardised pack very much less attractive than the current packs (with the exception of Gudang Garam packaging being even less attractive for non-smokers); and
- d. The GHWs (covering 50% of front packs) in both current and standardised packs were equally noticeable, among both smokers and non-smokers.

117. The report concluded that the findings in Phase 1 study were consistent with those in the international and local literature on consumer-brand relationships, and that standardised packaging rendered the pack less attractive and mitigated the positive impact cigarette packs might have on consumers.

Authors' Discussion of Phase 1 study

118. The aim of the study was to assess the relationship between perceptions and possible impact. There was therefore no necessity to have a sample representative of the Singapore population (in terms of age, gender and ethnicity). What was more important was that the participants in the study were those targeted by the policy, i.e., young adults. The sample size was adequate. The observation of statistically significant difference reinforced the adequacy of the sample size.⁵⁹ The study was well-designed in general.
119. Limitations to the study:
- a. Gudang Garam brand is a very local form of tobacco (clove cigarettes) and is different from the more common international brands. With its small market share⁶⁰, analysing it would not have been useful and it might be less relevant to combine the results for this brand with the other, international tobacco brands;
 - b. Some of the specific questions in the survey were poorly phrased. For example, respondents were asked to rate if the packaging influenced their perception of whether the pack “contains cigarettes of a strong taste”. It was difficult to assess if strong taste was a positive or negative factor to the respondent. As such, the interpretation of the results from this question was difficult;
 - c. Another example of sub-optimal phrasing occurred on the noticeability of GHWs. Respondents were asked to rate the statement “the graphic health warning is noticeable/stands out visually on the pack”. Current phrasing was suboptimal because it did not make clear what “noticeable” meant. Noticeability is subjective. An optimal phrasing would describe what it meant to be “more noticeable”, for example “first feature seen”. At present, it cannot be known how, if at all, changing the questions to optimal phrasing would have affected the results;

⁵⁹ If the effect of an intervention is present and the sample size is inadequate, then the results will not be statistically significant. If the effect is present and the sample size is adequate, then a statistically significant result indicates that the finding is real and unlikely to be due to chance.

⁶⁰ We understand that the market share is less than 1%.

- d. Asking people whether a pack was likely to attract other people in a different age bracket (aged under 18) to try cigarettes is of questionable validity and reliability. The responses to these questions were unlikely to be of value; and
- e. Phase 1 study had not been published in peer-reviewed literature as it was a new study yet to be submitted for publication. However, it was critically reviewed by the Authors of the present Report.

120. Strengths:

- a. Notwithstanding the sub-optimal phrasing of some of the survey questions, the large majority of the questions were adequately phrased and therefore the Phase 1 study was still a sufficiently well-designed study to test the relationships it sought to assess. It had adequate sample size of the relevant group of people, it used a standard scale (Likert scale) for such surveys and minimised bias by presenting the options in random order;
- b. Phase 1 study used a local Singapore sample of young adults, which was of direct relevance; and
- c. The findings were consistent with other local and international literature on consumer-brand relationship. It clearly highlighted that attractive packaging gave the impression that the product was of higher quality and standardised packaging was less attractive than current packs.

Phase 2 study

121. Phase 2 study used the Focus Group approach to determine what constituted unattractive cigarette packaging, and to optimise the elements of standardised packaging for the local context, in terms of reducing appeal of tobacco products and increasing salience and effectiveness of GHWs. Phase 2 study recruited a total of 48 groups, each with 8-10 participants covering both gender, smokers and non-smokers. Such qualitative research aims to achieve saturation of themes around the topic, and as a general rule of thumb, 4-5 groups per demographic cell (16-20 groups in total) would be adequate to achieve saturation⁶¹.

⁶¹ This is standard practice in focus group studies.

122. The major findings were:
- a. Participants reported that colour of the pack and the brand were the most important factors influencing their current purchasing decisions;
 - b. Least appealing features were soft packaging, colours that were dull or disgusting (associated with diarrhoea), and bright colours that looked cheap;
 - c. Sentence case style of text warning on a yellow background could be read most easily; and
 - d. GHW decreased the pack appeal and of the 3 sizes (50%, 75% and 85%), the 85% graphics was least appealing although the 75% graphics was just as unappealing as the 85% graphics.

Authors' Discussion of Phase 2 study

123. This was a well-designed qualitative study with sufficient participants to achieve the aim of identifying what constituted unattractive cigarette packaging. The Focus Group approach is a well-established way to gather in-depth insights and identify themes. A third-party provider managing the groups created independence from the researchers and their potential biases.

124. The main findings were consistent with existing body of knowledge and reinforced the role of branding and colour in influencing consumer choices.

125. Phase 2 study was not published in peer-reviewed literature but was critically reviewed by the Authors of the present Report.

Phase 3 study

126. Based on the features found in Phase 2 study, a quantitative study was conducted using mock-ups of standardised packages with different colours (448C and 456C) and different sizes of GHWs (50% and 75%). A street intercept survey was conducted with 1076 respondents, 548 smokers and 528 non-smokers, aged 18-69.
127. The main finding was that packs with darker colour and 75% graphic warning were least attractive and perceived to be most harmful to health.

Authors' Discussion of Phase 3 study

128. a. Using both qualitative (Phase 2) and then quantitative (Phase 3) approaches to optimise the elements of standardised packaging was an appropriate approach. Phase 3 study was appropriately designed and its conclusion is generally sound;
- b. There was a minority of questions that were not well framed as they tested multiple concepts simultaneously. For example, "To what extent do you agree that this pack design is appealing to you, and (for non-smokers) encourages you to try smoking OR (for smokers) to buy the pack?" was used to try to test the appeal and how the appeal may lead to a particular behaviour. However, the inclusion of such questions did not materially influence the main finding of this study overall, which were based on the more appropriately phrased questions⁶²; and
- c. Both the qualitative and quantitative studies suggested that dark colour packaging with larger graphic warning would be least attractive. This was consistent with the published Australian standardised packaging experience.

⁶² For example, "Overall, to what extent do you agree that you would like to try smoking the cigarettes contained in this pack?"; "Overall, to what extent do you agree that smoking the cigarettes contained in this pack is harmful to your health?"; "Which cigarette pack do you perceive as most harmful to your health?"; "Why do you perceive it as most harmful?"; and "Overall, to what extent do you agree that it is easy to quit smoking the cigarettes contained in this pack?"

Phase 4 Study

129. This study was aimed at exploring the effectiveness of standardised packaging against current packaging (incorporating an increased GWH to 75%) when applied to other tobacco products (cigar, cigarillo, pipe tobacco, ang hoon and beedies). There were 9 FGDs, each with 8 to 10 participants exploring themes associated with standardised packaging and various non-cigarette tobacco products.
130. Phase 4 study recorded some insights into reflections against the mocked-up pack designs.
131. Phase 4 study included ranking of different mocked up branded packs and mocked up standardised packs. Generally, these findings were inconclusive.

Authors' Discussion on Phase 4 study

132. Phase 4 study used combined focus group methodology and included some quantitative elements. The quantitative elements within Phase 4 study were methodologically problematic and the results were of questionable value. Quantitative methodologies require adequate sample size and statistical power in order to measure differences between variables. In line with this, the quantitative results (rank counts) collected from focus group samples as was the case in Phase 4 study were difficult to interpret, and arguably of little value. The sample size was very low making the percentages reported of little value.⁶³ Furthermore, it was unclear from the reporting of Phase 4 study whether the quantitative rankings were collected openly in the focus group discussions or individually. It was also unclear whether all groups were asked to rank all types of tobacco (including those that they don't use). Although the qualitative approach taken was a legitimate design for qualitative insights design, the participants should have consisted of regular users of these non-cigarette tobacco products. In particular, cigars are considered a niche product, and exclusive or regular cigar smokers might have given a

⁶³ The general rule of thumb to achieve adequate sample size is 4-5 groups per demographic cell. In this case, there should have been 20-25 groups (at 8-10 persons per group, it would be a total of 160-250 persons).

different response from the participants of the current study. It is likely, based on Australian standardised packaging research,⁶⁴ that cigar smokers would have seen themselves as quite different to other tobacco users, and might have offered different responses from other groups of participants. An important finding in this study was that these products have specific groups of users, for example, Ang Hoon was associated with poorer Chinese smokers.

133. Standard focus group methodology would have been a preferable design methodology for Phase 4 study, and is recommended if Phase 4 study is to be repeated. Focus group methodology is designed to access the breadth of themes relating to attitudes, beliefs, behaviours and/or experiences, and to explore these themes in more depth, (rather than the prevalence of e.g. attitudes and behaviours, which is more appropriately assessed through quantitative methodologies). Focus group methodology can also capture subtleties and complexities in e.g. attitudes and experiences that can be missed in quantitative methodologies. Any future focus groups will likely offer most benefit if they are conducted with regular users of the relevant tobacco products (rather than non-users). This will allow for a more nuanced exploration of the attitudes towards these products and their packaging with regular users.

Authors' Discussion of the collection of local studies conducted

134. Phase 1, 2 and 3 studies were well-conducted with adequate sample sizes in a local context. They were consistent with the broader body of peer-reviewed published research on consumer-brand relationship. They clearly highlighted that attractive packaging gave the impression that the product is of higher quality, branding and colour had influence over appeal and purchasing decisions, and induced smokers to continue and non-smokers to start smoking.

⁶⁴ Miller C, Ettridge K, Wakefield M. "You're made to feel like a dirty filthy smoker when you're not, cigar smoking is another thing all together." Responses of Australian cigar and cigarillo smokers to plain packaging. *Tobacco Control* supplement. March 2015. 24:58-65. http://tobaccocontrol.bmj.com/content/24/Suppl_2/ii58

135. Based on the local studies, standardised packaging with larger GHW promoted a more accurate perception of the harms of smoking and reduced the likelihood of people trying to smoke, although we were unable to conclude if this was due to the enhanced noticeability of the GHW as a result of applying standardised packaging. However, based on the local qualitative survey (Phase 2) and experience from other jurisdictions, increasing the size of the GHW to as large as possible, for example from the current 50% to 75% or 85%, on standardised packaging would promote the more accurate perception of harm and reduce the likelihood to try smoking.
136. Phase 4 study had methodological limitations and the quantitative data should not be considered reliable. The qualitative data collected from different tobacco product users, about the products they use, can offer insights. Focus group methodology would be recommended to gain these insights.
137. The broader published literature on standardised packaging can offer insights into the effect of branded packaging for tobacco products other than cigarettes. The impact of standardised packaging on appeal, efficacy of GHWs, and smokers' beliefs about harmfulness of other tobacco products is likely to be similar to that of cigarettes.⁶⁵ It is also important to note that if standardised packaging is applied only to cigarettes, the other tobacco products would retain appeal and potentially gain relative appeal compared to cigarettes in standardised packaging.

⁶⁵ Refer to Footnote 64.

SINGAPORE PUBLIC OPINION SURVEY

138. The survey was commissioned by Philip Morris and forwarded to MOH by counsel for Philip Morris International on 28 March 2016. It was conducted by Ipsos Singapore, a market research agency.
139. The sample size was reported as 1,002 citizens of Singapore aged 18+, nationwide; face-to-face interviews, margin of error +/- 3.1% and data weighting on smoking status. The data were collected June-July 2015.
140. The results presented were that Singaporeans had a number of negative responses about standardised packaging and believed that the Government should focus on education instead.

Authors' Discussion of the Singapore Public Opinion Survey

141. The study was not peer-reviewed.
142. The sample size was good. The description of the other details of the methodology was very limited, hence it was difficult to assess the validity and generalisability of the results. For example, there was no information on sampling frame, collection method or demographics of respondents.
143. It was possible to evaluate the individual questions and the extent to which the conclusions were reasonable based on these results.
144. Overwhelmingly, the questions were general, often methodologically flawed (e.g., more than one concept was conflated into one question; some questions were leading with a long preamble; some questions had a double negative which was potentially confusing). Questions often asked about large outcomes (e.g., stopping experimentation in youth; greatest influence on smoking uptake), rather than the specific objectives of standardised packaging (e.g., reduce appeal).

145. The findings reported were an overstatement from the results that were presented.

CONCLUSION

146. Overall, the international, peer-reviewed, published evidence base for standardised packaging is substantial and growing. This is complemented by a much larger body of tobacco control and marketing literature which are also of relevance. This evidence has been the subject of systematic reviews and a Cochrane review in other jurisdictions considering and implementing standardised packaging. This broader literature and these reviews provide a substantial basis to conclude that standardised packaging is likely to reduce the appeal of tobacco packaging and products, increase prominence of GHWs, reduce misperceptions on the harms of smoking, and decrease the ability for packs to be used as vehicles for tobacco promotion. Results from evaluating standardised packaging's effects and impact on smoking prevalence in Australia, independent of the other control measures, have been promising. The evidence also suggests that standardised packaging will likely contribute to reducing smoking prevalence in the longer term. As discussed in paragraphs 82-87, the international evidence is applicable to Singapore.

147. Singapore has complemented the international peer-reviewed literature with local studies. These studies have been predominantly well conducted and reasonable conclusions have been drawn from the findings. Their findings are predominantly consistent with the international peer-reviewed literature and add further confirmation of the applicability of the international standardised packaging literature to the Singapore context.

148. Based on the review of the international and local evidence, the Authors of the present Report are of the opinion that there is a reasonable basis to conclude that standardised packaging in Singapore will:

- a. reduce the appeal of tobacco products;
- b. increase the noticeability of health warnings;
- c. reduce the ability of the packaging of tobacco products to mislead about the harmful effects of smoking; and
- d. eliminate the effects of tobacco packaging as a form of advertising and promotion,

and ultimately contribute to reducing smoking prevalence over the long term.

Appendix A

Professor Kee Seng CHIA MBBS, MSc(OM), MD

Prof Chia Kee Seng is the Founding Dean of the NUS Saw Swee Hock School of Public Health, Professor Chia started his professional career as an occupational health physician and subsequently as a molecular epidemiologist. His current research focuses on how genetic and lifestyle factors interact to cause chronic diseases (cancer, cardiovascular diseases, and diabetes mellitus) and the translation of these findings to preventive measures at the population level. He also serves as a Council Member of the Workplace Safety and Health Council and a member on the Board of Directors of the Health Promotion Board.

Associate Professor Caroline MILLER BA(Hons Psych) BEc MPH PhD

A/Prof Caroline Miller has worked in tobacco control and cancer prevention for over 20 years. She is Director, Population Health Research Group at the South Australian Health and Medical Research Institute (SAHMRI), and Associate Professor, School of Public Health University of Adelaide, Australia. She is a National Health and Medical Research Council Career Development Fellow, and a Heart Foundation Future Leader Fellow. She is a Research Associate at Cancer Council Victoria.

A/Prof Miller's research group includes the Tobacco Control Research and Evaluation Program. She is an expert member of the Australian government's Intergovernmental Committee on Drugs – Tobacco Committee. She is also a member of the Australian government's Expert Advisory Committee on Tobacco Plain Packaging. She is past Chair of the Tobacco Issues Committee of Cancer Council Australia and the Heart Foundation Australia and General Manager, Cancer Control at Cancer Council SA.