

# STANDARDIZED PACKAGING OF TOBACCO PRODUCTS

## EVIDENCE REVIEW

PREPARED ON BEHALF OF THE IRISH DEPARTMENT OF HEALTH

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# EXECUTIVE SUMMARY

*There is sufficient evidence to conclude beyond a reasonable doubt that plain packaging would help Ireland to achieve its public health policy objectives in relation to tobacco control.<sup>1</sup>*

The current report reviews the scientific evidence on standardized or “plain” packaging, and the extent to which plain packaging regulations would help Ireland to achieve its tobacco control objectives.

Plain packaging is a form of marketing restriction that prohibits the use of logos, colours, brand images and promotional information on tobacco packaging. Under plain packaging regulations, the colour of the pack is uniform across different brands and varieties. Regulations may also standardize the size and shape of packages.

In December 2013, Australia became the first jurisdiction in the world to require plain packaging of tobacco products. Plain packaging regulations are recommended under the World Health Organization’s Framework Convention on Tobacco Control (FCTC) elaborated guidelines. In the European Union, the revised Tobacco Product Directive does not require plain packaging, but allows Member States to introduce these measures.

The evidence base on plain packaging has rapidly evolved. A total of 75 original empirical articles were reviewed as part of this report, in addition to evidence contained in corporate documents from the tobacco industry and the broader literature on tobacco advertising and marketing. The evidence on plain packaging is notable for its breadth and diversity: research has 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 plain packaging in Australia.

The evidence indicates that tobacco packaging is a critically important form of tobacco promotion, particularly in jurisdictions with comprehensive advertising and marketing restrictions, such as Ireland. The evidence indicates that plain packaging reduces false beliefs about the risks of smoking, increases the efficacy of health warnings, reduces consumer appeal among youth and young adults, and may promote smoking cessation among established smokers.

Overall, there is very strong evidence that plain packaging would be effective in regards to four of Ireland’s specific policy objectives:

*Prevent non-smokers including children and young people from starting to smoke*

*Encourage, motivate and support current smokers to quit*

*Reduce recidivism rates among those who have quit*

*Limit the societal impacts of smoking and protect society, especially those under 18 years, from the marketing practices of the tobacco industry.*

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# STANDARDIZED PACKAGING: BACKGROUND

## Description

Standardized packaging refers to the removal of logos, colours, brand images and promotional information from tobacco packaging. Under standardized or “plain” packaging regulations, the colour of the pack is uniform across different brands and varieties. The physical dimensions of packaging and products may also be standardized, along with restrictions on packaging “extensions”. Government-mandated information, such as health warnings, tax stamps, and constituent information remains.

## Policy recommendations

### WHO Framework Convention on Tobacco Control

Standardized packaging is recommended by the World Health Organization’s Framework Convention on Tobacco Control (FCTC). FCTC Article 11 states that:

*...tobacco product packaging and labelling [shall] not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression including any term, descriptor, trademark, figurative or any other sign that directly or indirectly creates the false impression that a particular tobacco product is less harmful than other tobacco products.* (p.9)<sup>1</sup>

Elaborated guidelines for implementing Article 11 explicitly address plain packaging:

*Parties should consider adopting 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 (plain packaging.)* (para.46)<sup>2</sup>

The elaborated guidelines for restrictions on tobacco advertising, promotion and sponsorship, included in FCTC Article 13, also recommend that, “Parties should consider adopting plain packaging requirements to eliminate the effects of advertising or promotion on packaging.” (para.17)<sup>3</sup>

### European Union Tobacco Product Directive

In 2014, the European Union revised its Tobacco Product Directive. The new Directive specifically allows Member States to introduce additional measures relating to standardized or plain packaging where they are

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<sup>1</sup>WHO: World Health Organization Framework Convention on Tobacco Control. Geneva: World Health Organization. <http://whqlibdoc.who.int/publications/2003/9241591013.pdf>

<sup>2</sup>World Health Organization. Guidelines for implementation of Article 11 of the WHO Framework Convention on Tobacco Control (Packaging and labelling of tobacco products). November, 2008.: [http://www.who.int/fctc/guidelines/article\\_11.pdf](http://www.who.int/fctc/guidelines/article_11.pdf).

<sup>3</sup>World Health Organization. Guidelines for implementation of Article 13 of the WHO Framework Convention on Tobacco Control (Tobacco advertising, promotion and sponsorship). [http://www.who.int/fctc/guidelines/article\\_13.pdf](http://www.who.int/fctc/guidelines/article_13.pdf).

justified on grounds of public health, are proportionate and do not lead to hidden barriers to trade between Member States.<sup>4</sup>

## Existing regulations

In December 2012, Australia became the first jurisdiction in the world to implement “plain packaging” regulations.<sup>5</sup> The *Tobacco Plain Packaging Act* was introduced to meet three objectives: 1) to increase the noticeability, recall and impact of health warning messages; 2) to reduce the ability of packaging to mislead consumers to believe that some products may be less harmful than others; and 3) to reduce the attractiveness of the tobacco product, for both adults and children.

The Australian regulations prohibit all trademarks and logos, and standardize the colour and finish of retail packaging. Brand names and varieties must be printed in a standard font size, type, and colour. The regulations also restrict the physical dimensions of tobacco packaging, including minimum pack size, which effectively prohibit “superslim” packages. The appearance of cigarette sticks is also restricted, along with packaging “extensions”, such as “inserts” and “onserts”. Plain packaging was implemented at the same time as new health warning regulations, which increased the size of pictorial health warnings on Australian cigarette packages (75% and 90% of the principal display areas), and introduced new health warning messages and images.



## Legal challenges

Three separate legal challenges were initiated in response to Australia’s *Tobacco Plain Packaging Act*.<sup>6,7</sup> In the first case, the High Court of Australia heard challenges from British American Tobacco Australasia Limited and Japan Tobacco International. The companies argued that the Act represented an unconstitutional acquisition of

<sup>4</sup>European Commission. Tobacco. [http://ec.europa.eu/health/tobacco/introduction/index\\_en.htm](http://ec.europa.eu/health/tobacco/introduction/index_en.htm)

<sup>5</sup>Department of Health, Australian Government. Plain packaging of tobacco products. <https://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-plain>

<sup>6</sup>Mitchell AD1, Studdert DM. Plain packaging of tobacco products in Australia: a novel regulation faces legal challenge. *JAMA* 2012;307(3):261-2.

<sup>7</sup>Attorney-General’s Department. Australian Government. Investor-state arbitration - tobacco plain packaging. <http://www.ag.gov.au/internationalrelations/internationallaw/pages/tobaccoplainpackaging.aspx>

their intellectual property rights. In August 2012, the Australian High Court ruled against the companies and upheld the plain packaging law, primarily on the basis that the government was only restricting and not acquiring property<sup>8</sup>:

*A majority of the Court held that...an acquisition must involve the accrual to some person of a proprietary benefit or interest. Although the Act regulated the plaintiffs' intellectual property rights and imposed controls on the packaging and presentation of tobacco products, it did not confer a proprietary benefit or interest on the Commonwealth or any other person. As a result, neither the Commonwealth nor any other person acquired any property....*<sup>9</sup>

In the second legal challenge, Philip Morris Asia challenged the plain packaging legislation under the 1993 Agreement between the Government of Australia and the Government of Hong Kong for the Promotion and Protection of Investments. The plain packaging law has also been subject to a World Trade Organization (WTO) challenge related to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).<sup>10</sup> As of March 2014, the PM Asia and WTO challenges were ongoing. Several overviews of these legal challenges from a public health perspective have been published to date.<sup>11</sup>

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<sup>8</sup> High Court of Australia. British American Tobacco Australasia Limited and Ors v. The Commonwealth of Australia. Case No. S389/2011. <http://www.hcourt.gov.au/cases/case-s389/2011>

<sup>9</sup> High Court of Australia. JT INTERNATIONAL SA v COMMONWEALTH OF AUSTRALIA; BRITISH AMERICAN TOBACCO AUSTRALASIA LIMITED & ORS v COMMONWEALTH. [2012] HCA 43. 5 October 2012. <http://www.hcourt.gov.au/assets/publications/judgment-summaries/2012/hca43-2012-10-05.pdf>

<sup>10</sup> Attorney-General's Department. Australian Government. Investor-state arbitration - tobacco plain packaging. <http://www.ag.gov.au/internationalrelations/internationallaw/pages/tobaccoplainpackaging.aspx>

<sup>11</sup> (1) Chapman S. Legal action by Big Tobacco against the Australian government's plain packaging law. Tob Control. 2012 Mar;21(2):80-1. (2) Mitchell AD, Studdert DM. Plain packaging of tobacco products in Australia: a novel regulation faces legal challenge. JAMA. 2012 Jan 18;307(3):261-2. (3) Lo CF. Plain packaging and indirect expropriation of trademark rights under BITs: does FCTC help to establish a right to regulate tobacco products? Med Law. 2012 Dec;31(4):521-51. (4) Jarman H. Attack on Australia: tobacco industry challenges to plain packaging. Journal of Public Health Policy 2013; 34(3):375-87. (5) Fooks G, Gilmore AB. International trade law, plain packaging and tobacco industry political activity: the Trans-Pacific Partnership. Tobacco Control 2014; 23:e1.



# POLICY CONTEXT: TOBACCO USE IN IRELAND

## Prevalence and patterns of use

Tobacco use remains a significant public health challenge in Ireland. Each year, approximately 5,200 people die from diseases caused by tobacco use in Ireland. Tobacco use is the leading cause of preventable death, and mortality attributable to tobacco use is estimated to represent approximately 19% of all deaths.<sup>12</sup>

Patterns of tobacco use in Ireland have followed a similar trajectory to most other Western countries. The prevalence of cigarette smoking increased dramatically in the first half of the 20<sup>th</sup> century, and was followed by declines in the second half of the 20<sup>th</sup> century. The prevalence of weekly cigarette smoking in Ireland was estimated at 22% in June 2012 with the vast majority of smokers reporting daily consumption.<sup>13</sup> Smoking rates remain higher among men than women (approximately 24% vs. 21%, respectively).<sup>14</sup> Approximately 60% of current smokers intend to quit smoking and half of Irish smokers report trying to quit each year.<sup>15</sup>

Tobacco use in Ireland is characterized by socioeconomic disparities. The prevalence of smoking is markedly higher among disadvantaged groups and social classes 3 to 6, with slower declines in smoking prevalence among disadvantaged groups over time.<sup>16</sup> Disparities are greatest among women in the lower social classes, particularly those in the 18–29 year age groups. Individuals in lower social classes are also less likely to report trying to quit.

Approximately 12% of children and 20% of youth smoke in Ireland, with a higher prevalence of smoking among girls (23%) than boys (19%).<sup>17</sup> Similar to other Western markets, young adults aged 18-29 years old have the highest rates of smoking (35%).

## The tobacco market in Ireland

The Irish market is dominated by three main tobacco companies: JTI Ireland, John Player & Co (Imperial Group) and PJ Carrolls & Co (BAT Group). The JTI Ireland group has the largest market share with over 50% of sales, as of June 2012. The JTI Ireland Group distributes three of the top five most popular brands in Ireland: Benson and Hedges, Silk Cut Purple and Silk Cut Blue. As of 2012, Benson & Hedges was the most popular brand, reportedly smoked by 14% of smokers. The top five brands account for more than one half of Irish smokers. There are two small manufacturers of tobacco products in Ireland.

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<sup>12</sup> Howell F R Shelley E (2011). Mortality attributable to tobacco use in Ireland. The Faculty of Public Health Medicine RCPI Winter meeting; Dublin.

<sup>13</sup> Irish Department of Health. Tobacco Free Ireland: Report of the Tobacco Policy Review Group. October 2013. Available at: <http://www.dohc.ie/publications/TobaccoFreeIreland.html>

<sup>14</sup> Irish Department of Health. Tobacco Free Ireland: Report of the Tobacco Policy Review Group. October 2013. Available at: <http://www.dohc.ie/publications/TobaccoFreeIreland.html>

<sup>15</sup> Irish Department of Health. Slán 2007: Survey of Lifestyle, Attitudes and Nutrition in Ireland. 2008. Available at: [http://www.dohc.ie/publications/slan07\\_report.html](http://www.dohc.ie/publications/slan07_report.html)

<sup>16</sup> Irish Department of Health. Tobacco Free Ireland: Report of the Tobacco Policy Review Group. October 2013. Available at: <http://www.dohc.ie/publications/TobaccoFreeIreland.html>

<sup>17</sup> Hibell B, Guttormsson U, Ahlstrom S, et al. The 2011 ESPAD Report: Substance use among students in 36 European Countries. The Swedish Council for Information on Alcohol and other Drugs (CAN), The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Council of Europe, Co-operation Group to Combat Drug Abuse and Illicit Trafficking in Drugs (Pompidou Group); May 2012. Available at: [http://www.espad.org/Uploads/ESPAD\\_reports/2011/The\\_2011\\_ESPAD\\_Report\\_FULL\\_2012\\_10\\_29.pdf](http://www.espad.org/Uploads/ESPAD_reports/2011/The_2011_ESPAD_Report_FULL_2012_10_29.pdf)

Tobacco companies have previously launched legal proceedings in Ireland to challenge tobacco control measures. In 2009, the industry initiated proceedings in Ireland’s High Court challenging point of sale advertising restrictions and display bans, which were subsequently implemented later that year.

The illicit tobacco trade and tax evasion represent a challenge to tobacco control policy in Ireland, as in most countries. The proportion of illicit packs was recently estimated at 4.6%, below the average for European countries.<sup>18,19</sup>

## Policy environment

Ireland ratified the WHO FCTC in 2005 and has since implemented a range of tobacco control measures. As a member of the European Union, Ireland’s regulations on tobacco advertising and marketing comply with the European Tobacco Product Directive<sup>20</sup>, including bans on tobacco advertising in newspapers and magazines, and sponsorships. Ireland was among the first countries to implement a comprehensive ban on in-store advertising and display of tobacco products. Labelling regulations include pictorial health warnings on packages, and a ban on misleading descriptors, such as “light” and “mild”. Other regulatory measures include comprehensive smoke-free workplace legislation, reduced ignition propensity standards for cigarettes, restrictions on self-serving vending machines and minimum pack sizes of 20 cigarettes. Smoking cessation services include a telephone “quitline”, subsidized nicotine replacement therapy, and mass media campaigns to promote quitting.

Survey research indicates a high level of support for tobacco control policies among Irish citizens, well above levels of support in other European countries. For example, in 2012, 90% supported the introduction of pictorial health warnings on all tobacco products, and 81% were in favour of banning colours, logos and promotional elements from tobacco products.<sup>21</sup>

## Summary

Ireland has very similar levels of smoking prevalence, cigarette consumption, and quitting activity as many other Western countries.<sup>22,23</sup> Ireland also has a very similar tobacco market with respect to the mix of international and domestic cigarette brands. Ireland has also implemented a comprehensive set of tobacco control policies, particularly with respect to restrictions on advertising and promotion of tobacco products.

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<sup>18</sup> Joossens L1, Lugo A, La Vecchia C, Gilmore AB, Clancy L, Gallus S. Illicit cigarettes and hand-rolled tobacco in 18 European countries: a cross-sectional survey. *Tob Control* 2012;0:1–7.

<sup>19</sup> Nagelhout GE, van den Putte B, Allwright S, Mons U. Socioeconomic and country variations in cross-border cigarette purchasing as tobacco tax avoidance strategy. Findings from the ITC Europe Surveys. *Tob Control* 2014; 23 Suppl 1:i30-i38.

<sup>20</sup> Directive 2001/37/EC of the European Parliament and of the Council of 5 June 2001 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco products - Commission statement. *Official Journal L 194, 18/07/2001 P. 0026 - 0035* <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0037:EN:HTML>

<sup>21</sup> European Commission. Eurobarometer: Attitudes of Europeans towards tobacco. May 2012. [http://ec.europa.eu/health/tobacco/docs/eurobaro\\_attitudes\\_towards\\_tobacco\\_2012\\_en.pdf](http://ec.europa.eu/health/tobacco/docs/eurobaro_attitudes_towards_tobacco_2012_en.pdf)

<sup>22</sup> Borland R, Li L, Driezen P, Wilson N, Hammond D, et al. Cessation assistance reported by smokers in 15 countries participating in the International Tobacco Control (ITC) policy evaluation surveys. *Addiction* 2012;107(1):197-205.

<sup>23</sup> Fong GT, Hyland A, Borland R, Hammond D, et al. Reductions in tobacco smoke pollution and increases in support for smoke-free public places following the implementation of comprehensive smoke-free workplace legislation in the Republic of Ireland: findings from the ITC Ireland/UK Survey. *Tob Control* 2006; 15 Suppl 3:iii51-8.

# TOBACCO MARKETING & ADVERTISING

Packaging is an important component of the overall marketing strategy for consumer goods.<sup>24</sup> Packaging is particularly important for consumer products with a high degree of social visibility, such as cigarettes. Unlike many other consumer products, cigarettes are contained in packages that are displayed each time the product is used and are often left in public view between uses.<sup>25</sup>

Plain packaging regulations represent a form of marketing restriction. The following section reviews evidence on the impact of tobacco marketing on smoking behaviour, with an emphasis on youth and young adults, as a critically important demographic for tobacco control.

## Marketing and advertising targeting youth

Tobacco marketing and advertising have played a fundamental role in promoting smoking among young people. Cigarette smoking virtually always begins in adolescence, with virtually all initiation occurring by the mid-twenties in most markets. The implications of this phenomenon were summarized in a 1984 Strategic Research Document from RJ Reynolds:

*Younger adult smokers have been the critical factor in the growth and decline of every major brand and company over the last 50 years. They will continue to be just as important to brands/companies in the future for two simple reasons: The renewal of the market stems almost entirely from 18-year-old smokers. No more than 5% of smokers start after age 24. The brand loyalty of 18-year-old smokers far outweighs any tendency to switch with age. (p.399067078)<sup>26</sup>*

A wide range of industry documents highlight the importance of tobacco marketing targeted at youth.<sup>27</sup> A published review of tobacco company documents concluded:

*Industry documents show that the cigarette manufacturers carefully monitored the smoking habits of teenagers over the past several decades. Candid quotes from industry executives refer to youth as a*

<sup>24</sup> (1) Slade J. The pack as advertisement. *Tob Control* 1997;6:169-170. (2) Underwood RL, Ozanne J. Is your package an effective communicator? A normative framework for increasing the communicative competence of packaging. *J Marketing Communication* 1998;207-20. (3) Shapiro SJ, Perreault WD, McCarthy EJ. *Basic Marketing: A global managerial approach*. Toronto: McGraw-Hill, 1999. (4) Palmer A. *The Product. Principles of Marketing*. Oxford: Oxford University Press/Books; 2000:215-38. (5) Pollay RW. The role of packaging seen through industry documents. Mar 2001. Expert Report prepared for: JTI-Macdonald., Imperial Tobacco Canada Ltd and Rothmans, Benson & Hedges Inc. v. Attorney General of Canada and Canadian Cancer Society (intervenor). Supreme Court, Province of Quebec, District of Montreal. Defense Exhibit D-116. (6) Wakefield M, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. *Tob Control* 2002; 11(Suppl 1):i73-i80. (7) Dewhirst T. POP goes the power wall? Taking aim at tobacco promotional strategies utilised at retail. *Tob Control* 2004;13:209-210. (8) Federal Trade Commission Cigarette Report for 2004 and 2005. 2007. Available from: <http://www.ftc.gov/reports/tobacco/2007cigarette2004-2005.pdf>.

<sup>25</sup> (1) Pollay RW. The role of packaging seen through industry documents. Mar 2001. Expert Report prepared for: JTI-Macdonald., Imperial Tobacco Canada Ltd and Rothmans, Benson & Hedges Inc. v. Attorney General of Canada and Canadian Cancer Society (intervenor). Supreme Court, Province of Quebec, District of Montreal. Defense Exhibit D-116. (2) Wakefield M, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. *Tob Control* 2002; 11(Suppl 1):i73-i80.

<sup>26</sup> RJR. Young adult smokers: Strategies and opportunities. February 1984. Available at: <http://legacy.library.ucsf.edu/tid/rko20j00/pdf?search=%22peer%20brand%20strategy%22>

<sup>27</sup> (1) Pollay RW. Targeting youth and concerned smokers: evidence from Canadian tobacco industry documents. *Tob Control*. 2000 Jun;9. (2):136-47. (2) Perry CL. The tobacco industry and underage youth smoking: tobacco industry documents from the Minnesota litigation. *Arch Pediatr Adolesc Med* 1999 Sep;153(9):935-41. (3) BAT. A structured Creativity Group. June 26 1984 [http://tobaccodocuments.org/health\\_canada/10050158.pdf](http://tobaccodocuments.org/health_canada/10050158.pdf) (2) BAT. June 26 1984 <http://legacy.library.ucsf.edu/tid/qys76b00/pdf?search=%22starter%20packaging%22>; <http://legacy.library.ucsf.edu/tid/hyg60f00>; <http://legacy.library.ucsf.edu/tid/trf90f00>; <http://legacy.library.ucsf.edu/tid/jme83f00>; <http://legacy.library.ucsf.edu/tid/dpu96e00>; <http://legacy.library.ucsf.edu/tid/sgd32f00>; <http://legacy.library.ucsf.edu/tid/omq76b00/pdf?search=%22packaging%20starter%22>; <http://legacy.library.ucsf.edu/tid/jme83f00/pdf?search=%22starter%20packaging%22>

source of sales and as fundamental to the survival of the tobacco industry. The documents reveal that the features of cigarette brands (that is, use of filters, low tar, bland taste, etc), packaging (that is, size, colour and design), and advertising (that is, media placements and themes and imagery) were developed specifically to appeal to new smokers (that is, teenagers). Evidence also indicates that relevant youth oriented marketing documents may have been destroyed and that the language used in some of the more recent documents may have been sanitised to cover up efforts to market to youth.” .(p.i5)<sup>28</sup>

## Causal associations with smoking behaviour

There is a large and diverse evidence base demonstrating that tobacco marketing and advertising are causally associated with youth smoking.<sup>29</sup> This evidence is applicable to understanding the role of packaging in that it collectively demonstrates that exposure to tobacco promotions are causally related to smoking behaviour.<sup>30</sup>

<sup>28</sup> Cummings KM, Morley CP, Horan JK, Steger C, Leavell NR. Marketing to America's youth: evidence from corporate documents. *Tob Control* 2002;11 Suppl 1:15-17.

<sup>29</sup> (1) DiFranza JR, Wellman RJ, Sargent JD, et al. Tobacco promotion and the initiation of tobacco use: assessing the evidence for causality. *Pediatrics* 2006;117:e1237-48.(2) Donovan RJ, Jancey J & Jones S. Tobacco point of sale advertising increases positive brand user imagery. *Tob Control* 2002;11:191-4. (3) Freeman D, Brucks M, Wallendorf M, Borland W. Youths' understandings of cigarette advertisements. *Addict Behav* 2009;34:36-42. (4) Grant IC, Hassan L, Hastings G, MacKintosh AM and Eadie D. The influence of branding on adolescent smoking behaviour: exploring the mediating role of image and attitudes. *International Journal of Nonprofit and Voluntary Sector Marketing* 2008;13:275-85. (5) Hanewinkel R, Isensee B, Sargent J, Morgenstern M. Cigarette advertising and adolescent smoking. *Amer J Prev Med* 2010;38:359-66. (6) Klitzner M, Gruenewald PJ, Bamberger E. Cigarette advertising and adolescent experimentation with smoking. *Br J Addict* 1991;86:287-98. (7) Lovato C, Hsu HCH, Sabiston CM, Hadd V, Nykiforuk CIJ. Tobacco point-of-purchase marketing in school neighbourhoods and school smoking prevalence: A descriptive study. *Can J Public Health* 2007;98:265-70. (8) Lovato C, Linn G, Stead LF, Best A. Cochrane review: Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *The Cochrane Database of Systematic Reviews* 2003, Issue 3. Art. No.: CD003439. DOI: 10.1002/14651858.CD003439: page 1-2. (9) MacKintosh AM, Harris F, Hastings G. 5.4 Measures to assess the effectiveness of restrictions on tobacco marketing communications In: *Methods for Evaluating Tobacco Control Policies*. IARC IARC handbooks of cancer prevention (Volume 12). International Agency for Research on Cancer, World Health Organization 2008. (10) MacFadyen L, Hastings G and MacKintosh AM. Cross sectional study of young people's awareness of and involvement with tobacco marketing. *BMJ* 2001; 322(7285): 513-7. (11) Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Berry CC. Tobacco industry promotion of cigarettes and adolescent smoking. *JAMA* 1998;279:511-5. (12) Pierce J, Distefan J, Jackson C, White MM, Gilpin EA. Does tobacco marketing undermine the influence of recommended parenting in discouraging adolescents from smoking? *J Prev Med* 2002;23:73-81. (13) Pierce J, Gilpin E, Burns DM, Whalen E, Rosbrook B, Shopland D, Johnson M. Does tobacco advertising target young people to start smoking? Evidence from California. *JAMA* 1991;266:3154-8. (14) Sargent J, Gibson J, Heatherton T. Comparing the effects of entertainment media and tobacco marketing on youth smoking. *Tob Control* 2008;18:47-53. (15) Schooler C, Feighery E & Flora J. Seventh graders' self-reported exposure to cigarette marketing and its relationship to their smoking behaviour. *Amer J Public Health* 1996;86:1216-21. (16) Slater S, Chaloupka F, Wakefield M, Johnston L & O'Malley P. The impact of retail cigarette marketing practices on youth smoking uptake. *Arch Pediatr Adolesc Med* 2007;161:440-5. (17) Weiss JW, Cen S, Schuster V, Unger JB, Anderson Johnson C, Mouttapa M. Longitudinal effects of pro-tobacco and anti-tobacco messages on adolescent smoking susceptibility. *Nicotine Tob Res* 2006;8:455-65. (18) White D, Kelly S, Wenyong H, Charlton A. Cigarette advertising and onset of smoking in children. *BMJ Journals* 1996;313:398-39. (19) Morgenstern M, Sargent JD, Isensee B, Hanewinkel R. From never to daily smoking in 30 months: the predictive value of tobacco and non-tobacco advertising exposure. *BMJ Open*. 2013; 3(6). (20) U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012.

<sup>30</sup> (1) DiFranza JR, Wellman RJ, Sargent JD, et al. Tobacco promotion and the initiation of tobacco use: assessing the evidence for causality. *Pediatrics* 2006;117:e1237-48.(2) Donovan RJ, Jancey J & Jones S. Tobacco point of sale advertising increases positive brand user imagery. *Tob Control* 2002;11:191-4. (3) Freeman D, Brucks M, Wallendorf M, Borland W. Youths' understandings of cigarette advertisements. *Addict Behav* 2009;34:36-42. (4) Grant IC, Hassan L, Hastings G, MacKintosh AM and Eadie D. The influence of branding on adolescent smoking behaviour: exploring the mediating role of image and attitudes. *International Journal of Nonprofit and Voluntary Sector Marketing* 2008;13:275-85. (5) Hanewinkel R, Isensee B, Sargent J, Morgenstern M. Cigarette advertising and adolescent smoking. *Amer J Prev Med* 2010;38:359-66. (6) Klitzner M, Gruenewald PJ, Bamberger E. Cigarette advertising and adolescent experimentation with smoking. *Br J Addict* 1991;86:287-98. (7) Lovato C, Hsu HCH, Sabiston CM, Hadd V, Nykiforuk CIJ. Tobacco point-of-purchase marketing in school neighbourhoods and school smoking prevalence: A descriptive study. *Can J Public Health* 2007;98:265-270. (8) Lovato C, Linn G, Stead LF, Best A. Cochrane review: Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *The Cochrane Database of Systematic Reviews* 2003, Issue 3. Art. No.: CD003439. DOI: 10.1002/14651858.CD003439: page 1-2. (9) MacKintosh AM, Harris F, Hastings G. 5.4 Measures to assess the effectiveness of restrictions on tobacco marketing communications In: *Methods for Evaluating Tobacco Control Policies*. IARC IARC handbooks of cancer prevention (Volume 12). International Agency for Research on Cancer, World Health Organization 2008. (10) MacFadyen L, Hastings G and MacKintosh AM. Cross sectional study of young people's awareness of and involvement with tobacco marketing. *BMJ* 2001; 322(7285): 513-517. (11) Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Berry CC. Tobacco industry promotion of cigarettes and adolescent smoking. *JAMA* 1998;279:511-5. (12) Pierce J, Distefan J, Jackson C, White MM, Gilpin EA. Does tobacco marketing undermine the influence of recommended parenting in discouraging adolescents from smoking? *J Prev Med* 2002;23:73-81. (13) Pierce J, Gilpin E, Burns DM, Whalen E, Rosbrook B, Shopland D, Johnson M. Does tobacco advertising target young people to start smoking? Evidence from California. *JAMA* 1991;266:3154-8. (14) Sargent J, Gibson J, Heatherton T. Comparing the effects of entertainment media and tobacco marketing on youth smoking. *Tob Control* 2008;18:47-53. (15) Schooler C, Feighery E & Flora J. Seventh graders' self-reported exposure to cigarette marketing and its relationship to their smoking behaviour. *Amer J Public Health* 1996;86:1216-21. (16) Slater S, Chaloupka F, Wakefield M, Johnston L & O'Malley P. The impact of retail cigarette marketing practices on youth

Whereas tobacco companies have argued that tobacco marketing and promotional activities only target established smokers, the body of literature on the impact of tobacco marketing includes longitudinal studies that establish that tobacco marketing leads to smoking susceptibility and not simply the reverse, as the industry has argued. The impact of tobacco marketing has been highlighted in a number of comprehensive reviews. For example, one of the major conclusions in the 2012 US Surgeon General's Report on *Preventing Tobacco Use Among Youth and Young Adults* states that: "Advertising and promotional activities by tobacco companies have been shown to cause the onset and continuation of smoking among adolescents and young adults."(p.8)<sup>31</sup> The report goes on to conclude:

*There is strong, consistent evidence that advertising and promotion influence the factors that lead directly to tobacco use by adolescents, including the initiation of cigarette smoking as well as its continuation... promotion and advertising by the tobacco industry causes tobacco use, including its initiation among youth. This conclusion has been buttressed by a multitude of scientific and governmental reports, and the strength of the evidence for causality continues to grow. (p.528)<sup>32</sup>*

This conclusion was reiterated in the 2014 US Surgeon General's Report on *The Health Consequences of Smoking*, which reviewed evidence over the past 50 years since the first US Surgeon General's Report was released in 1964: "The evidence is sufficient to conclude that advertising and promotional activities by the tobacco companies cause the onset and continuation of smoking among adolescents and young adults."(p.12)<sup>33</sup>

*There is strong empirical evidence that tobacco companies' advertising and promotions affect awareness of smoking and of particular brands, the recognition and recall of cigarette advertising, attitudes about smoking, intentions to smoke, and actual smoking behavior. In fact, children appear to be even more responsive to advertising appeals than are adults (Pollay et al. 1996)... Both the industry's own internal documents and its testimony in court proceedings, as well as widely accepted principles of advertising and marketing, also support the conclusion that tobacco advertising recruits new users during their youth.(p.508)<sup>34</sup>*

The 2006 landmark ruling of US District Court Judge Gladys Kessler stands as one of the most comprehensive reviews of tobacco industry advertising and marketing.<sup>35</sup> The ruling, at more than 1,700 pages long, documents the marketing practices of the tobacco industry and concluded that cigarette marketing recruits youth to smoke:

*Cigarette marketing, which includes both advertising and promotion, is designed to play a key role in the process of recruiting young, new smokers by exposing young people to massive amounts of imagery associating positive qualities with cigarette smoking.(p.548)<sup>36</sup>*

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smoking uptake. Arch Pediatr Adolesc Med 2007;161:440-5. (17) Weiss JW, Cen S, Schuster V, Unger JB, Anderson Johnson C, Mouttapa M. Longitudinal effects of pro-tobacco and anti-tobacco messages on adolescent smoking susceptibility. Nicotine Tob Res 2006;8:455-65. (18) White D, Kelly S, Wenyong H, Charlton A. Cigarette advertising and onset of smoking in children. BMJ Journals 1996;313:398-9.

<sup>31</sup> U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012.

<sup>32</sup> U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012.

<sup>33</sup> U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. January 2014.

<sup>34</sup> Ibid

<sup>35</sup> United States v. Philip Morris USA, 449 F. Supp. 2d 1,(D.D.C., 2006) 980.

[http://www.tobaccocontrol.org/files/live/litigation/596/US\\_United%20States%20v.%20Philip%20Morris.pdf](http://www.tobaccocontrol.org/files/live/litigation/596/US_United%20States%20v.%20Philip%20Morris.pdf)

It is highly plausible that the causal mechanisms demonstrated in this broader set of literature—that exposure to promotional materials and increases in brand awareness promote smoking initiation—are relevant to the impact of promotion information on tobacco packaging.

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<sup>36</sup> United States v. Philip Morris USA, 449 F. Supp. 2d 1, (D.D.C., 2006) 980. Available online: [http://www.tobaccocontrolaws.org/files/live/litigation/596/US\\_United%20States%20v.%20Philip%20Morris.pdf](http://www.tobaccocontrolaws.org/files/live/litigation/596/US_United%20States%20v.%20Philip%20Morris.pdf)

# REVIEW OF INDEPENDENT EVIDENCE

A total of 75 original empirical articles were identified and reviewed in this section.<sup>37</sup> A summary of each study is available in the Appendix. Research articles came from the following jurisdictions: Australia (n=19), Canada (n=15), UK (n=11), France (n=7), New Zealand (n=7), US (n=6), Scotland (n=5), Norway (n=3), Belgium (n=1) and Brazil (n=1). Studies used samples of youth (n=32) and adults (n=54). Articles in the review consisted of 59 quantitative studies, 10 qualitative studies and 5 studies with both quantitative and qualitative components. Public opinion articles, reviews, and commentaries were excluded from this review.

This section summarizes the literature with respect to six primary outcomes: health warnings, perceptions of risk, consumer appeal, measures of consumer demand and smoking behaviour, post-implementation research from Australia, and research on differences in plain packaging colours.

## Health warnings

Three qualitative studies have examined how consumer perceptions of health warnings change when displayed on plain packaging. Qualitative research with New Zealand youth found that pictorial warnings on plain cigarette packs increased the attention paid to graphic warning labels and the overall perceptions of harm caused by cigarette smoking, and reduced the social appeal of cigarette smoking.<sup>38</sup> A second qualitative study conducted with youth in Belgium found that health warnings “catch the eye” much more strongly when presented on plain, rather than branded packages.<sup>39</sup> Qualitative research conducted in Australia also found that consumers felt that plain packaging would strengthen the impact of health messages.<sup>40</sup> These findings are consistent with a quantitative study from 1995 conducted in Canada, which found that youth reported that health warnings were “easier to see” and “looked more serious” when presented on plain packaging.<sup>41</sup>

Five experimental studies have examined recall of health warnings as an outcome of plain versus branded packaging. A 1992 study conducted with New Zealand youth found that recall of health warnings was greater when presented on plain vs. branded packaging.<sup>42</sup> A 1995 study conducted with Canadian youth produced consistent findings: when health messages were presented on plain packages, unaided recall was greater for 1 of 3 messages and aided recall was greater for 2 of 3 messages presented during the study.<sup>43</sup> These results were partially replicated in a separate study involving Canadian and US youth. Canadian youth smokers were more

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<sup>37</sup> Articles were identified through searches of electronic databases, previous literature reviews, and searches of article reference lists. Studies were also identified through recent conference abstracts, along with email enquiries to leading scholars in the field. Unpublished materials were included if a description of the study methods and findings were provided. Surveys that consisted of “public opinion” data were excluded from this review. A list of excluded studies are provided in the Appendix.

<sup>38</sup> McCool J, Webb L, Cameron LD, Hoek J. Graphic warning labels on plain cigarette packs: will they make a difference to adolescents? *Social Science & Medicine*. 2012; 74(8):1269-73.

<sup>39</sup> Van Hal G, Van Roosbroeck S, Vriesacker B, Arts M, Hoek S, Fraeyman J. Flemish adolescents' perceptions of cigarette plain packaging: a qualitative study with focus group discussions. *BMJ Open* 2012; 2:e001424.

<sup>40</sup> Shanahan P, Elliot D. Evaluation of the effectiveness of the graphic health warnings on tobacco product packaging 2008. Australian Government Department of Health and Ageing, Canberra, 2009.

<sup>41</sup> Rootman I, Flay BR et al. A study on youth smoking: plain packaging, health warnings, event marketing and price reductions. Toronto: Centre for Health Promotion, University of Toronto, 1995.

<sup>42</sup> Beede P, Lawson R. The effect of plain packages on the perception of cigarette health warnings. *Public Health* 1992; 4:315-22.

<sup>43</sup> Expert Panel Report – prepared for Health Canada. When packages can't speak: possible impacts of plain and generic packaging of tobacco products – recall & recognition experiment. 1995.

likely to recall a health warning when presented on plain packaging, with no differences among the US sample.<sup>44</sup> A subsequent experiment conducted with Canadian youth in 1999 found that message recall increased when health messages were presented on plain white packs for two health messages, but decreased for a third message.<sup>45</sup> A more recent experiment from 2013 found that Canadian university students exhibited greater recall for health warnings on plain versus branded packaging.<sup>46</sup>

Three studies have also used objective physiological measures to assess the impact of plain packaging on visual attention to health warnings. An eye-tracking experiment was conducted in the UK with young adults, in which the number of saccades (eye movements) towards health warnings was assessed to directly index visual attention.<sup>47</sup> The study found greater visual attention towards health warnings when presented on plain versus branded packs. The effect was observed among non-smokers and weekly smokers, but not daily smokers. A second study of eye-tracking in the UK found similar results among youth: plain packaging produced more eye movements to health warnings compared to branded packs.<sup>48</sup> The effect was observed among experimenters and weekly smokers, but not among never-smokers or daily smokers. A third eye-tracking study was conducted with 30 adult smokers in the UK and found equal levels of visual attention between a branded pack and a plain pack, both of which had very similar colours, with the conclusion that smokers actively seek to avoid health warnings regardless of the amount of branding.<sup>49</sup>

The impact of plain packaging on health warnings has also been assessed in a “naturalistic” experiment, in which young Scottish female smokers used plain packs for a 2-week period.<sup>50</sup> The authors found no significant overall differences between the pack types in the salience, perceived seriousness or believability of health warnings; however, participants reported looking more closely at the warnings on plain packs and reported greater levels of cognitive processing of the message content.

Eight studies have examined the effect of branding under different types or sizes of health warnings. These studies seek to determine whether larger health warnings— which leave less space for branded information on packages— attenuate the effect of branding. Two large experimental studies conducted in 2008 among Canadian adult smokers<sup>51</sup> and youth<sup>52</sup> tested the effect of the size of pictorial health warnings on smoker image (e.g., “cool”) and product image associations (e.g., “high quality”, “dangerous”). The findings indicate that smoker and product image associations persisted; significant differences in most outcomes were not observed until the pictorial health warning size reached 90% of the principal display area of the pack. Research conducted

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<sup>44</sup> Rootman I, Flay BR et al. A study on youth smoking: plain packaging, health warnings, event marketing and price reductions. Toronto: Centre for Health Promotion, University of Toronto, 1995.

<sup>45</sup> Goldberg ME, Liefeld J, Madill J, Vredenburg H. The effect of plain packaging on response to health warnings. *Amer J Public Health* 1999; 89:9-10.

<sup>46</sup> Al-Hamdani M. The effect of cigarette plain packaging on individuals' health warning recall. *Healthcare Policy* 2013; 8(3):68-77.

<sup>47</sup> Munafò MR, Roberts N, Bauld L, Leonards U. Plain packaging increases visual attention to health warnings on cigarette packs in non-smokers and weekly smokers but not daily smokers. *Addiction* 2011; 106:1505-10.

<sup>48</sup> Maynard OM, Munafò MR, Leonards U. Visual attention to health warnings on plain tobacco packaging in adolescent smokers and non-smokers. *Addiction* 2013; 108(2):413-9.

<sup>49</sup> Maynard OM, Attwood A, O'Brien L, Brooks S, Hedge C, Leonards U, Munafò MR. Avoidance of cigarette pack health warnings among regular cigarette smokers. *Drug Alcohol Depend* 2014; 136:170-174.

<sup>50</sup> Moodie CS, Mackintosh AM. Young adult women smokers' response to using plain cigarette packaging: a naturalistic approach. *BMJ Open* 2013; 3(3):e002402.

<sup>51</sup> Environics Research Group – Prepared on behalf of Health Canada. Quantitative Study of Canadian Adult Smokers: effects of modified packaging through increasing the size of health warnings on cigarette packages. Environics Research Group, 2008.

<sup>52</sup> Environics Research Group – Prepared on behalf of Health Canada. Quantitative study of Canadian youth smokers and vulnerable non-smokers: effects of modified packaging through increasing the size of warnings on cigarette packages. Environics Research Group, 2008.



in Australia also found that the effect of branding was observable even in the context of large pictorial health warnings.<sup>53</sup>

Experimental studies also suggest that plain packaging and health warnings have independent effects on measures of consumer appeal. A New Zealand study with young adult smokers found that health warning size may have a positive, interactive effect with plain packaging: larger warnings and plain packaging result in lower levels of consumer appeal and demand, compared to smaller warnings and plain packaging.<sup>54</sup> Two between-subject experiments conducted in Australia also found that the largest reductions in consumer appeal are produced when plain packaging is combined with larger pictorial health warnings.<sup>55, 56</sup> Similar findings exist with respect to perceptions of risk. A within-subject experiment conducted with UK youth found an interaction between health warning type and plain packaging colour for measures of perceived health risk.<sup>57</sup> Finally, a between-subject experiment conducted among young adult smokers in the US found an interaction between the type of health warning and plain packaging on motivation to quit, suggesting that differences in health warnings may be more apparent when branding is removed.<sup>58</sup>

## Summary

Overall, the evidence suggests that health warnings are more noticeable on plain packs, associated with greater recall of health messages, and may lead to greater cognitive processing, particularly among youth non-smokers. The evidence also indicates that the effect of package branding persists even in the context of large pictorial warnings, and that plain packaging and health warnings have complimentary, but independent effects on consumer perceptions.

## Perceptions of risk

Tobacco packaging has played a central role in promoting the false belief that some cigarette brands are less harmful than others. In response to the growing evidence of the health risks of smoking in the second half of the 20<sup>th</sup> century, tobacco companies developed a “low tar” strategy to reassure consumers and public health authorities.<sup>59</sup> “Low tar” cigarettes were designed by introducing small holes in cigarette filters and marketed with “light” or “mild” packaging descriptors. Not only does filter ventilation dilute cigarette smoke to produce deceptively low tar and nicotine numbers under machine testing, but it also produces “lighter tasting” smoke, which reinforces the misleading descriptors on packages. As a result, considerable proportions of adult smokers believed that “light,” “mild,” and “low tar” cigarette brands lowered health risk and were less addictive than

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<sup>53</sup> (1) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 5: Online: Consumer appraisal of different graphic health warning sizes and layouts on pack. Australian Government Department of Health and Ageing, Canberra, 2011. (2) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 6: Online: Consumer appraisal of different graphic health warning sizes and layouts on pack – split 75% GWH testing. Australian Government Department of Health and Ageing, Canberra, 2011.

<sup>54</sup> Hoek J, Wong C, Gendall P, Louviere J, Cong K. Effects of dissuasive packaging on young adult smokers. *Tob Control* 2011; 20:183-8.

<sup>55</sup> Wakefield M, Germain D, Durkin S, Hammond D, Goldberg M, Borland R. Do larger pictorial health warnings diminish the need for plain packaging of cigarettes? *Addiction* 2012; 107(6):1159-67.

<sup>56</sup> Germain D, Wakefield MA, Durkin SJ. Adolescents’ perceptions of cigarette brand image: does plain packaging make a difference. *J Adolesc Health* 2010; 4: 385-92.

<sup>57</sup> Hammond D, White C, Anderson W, Arnott D, Dockrell M. The perceptions of UK youth of branded and standardized, 'plain' cigarette packaging. *Eur J Public Health* 2013; 1-7.

<sup>58</sup> Mays D, Niaura RS, Evans WD, Hammond D, Luta G, Tercyak KP. Cigarette packaging and health warnings: the impact of plain packaging and message framing on young smokers. *Tob Control* 2014; 0:1-6.

<sup>59</sup> National Cancer Institute. Risks Associated with Smoking Cigarettes with Low Machine-Measured Yields of Tar and Nicotine. *Smoking and Tobacco Control Monograph 13* Bethesda: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2001.

“regular” or “full flavor” brands.<sup>60</sup> Indeed, many health-concerned smokers reported switching to these brands as an alternative to quitting.<sup>61</sup> There is no evidence that “low tar” cigarettes are less harmful; to the contrary, the most recent US Surgeon General’s Report suggests that the relative risk of lung cancer has increased as a result of cigarette design changes during the shift to “lower tar” cigarettes.<sup>62</sup>

More than 50 countries, including Ireland, prohibit the descriptors “light,” “mild,” or “low” or similar descriptors on tobacco packages. However, research suggests that false beliefs persist after the removal of “light” and “mild” package descriptors, and many smokers continue to incorrectly believe that some cigarettes are less harmful than others.<sup>63</sup>

The evidence base on consumer perceptions and behaviour associated with “low tar” cigarettes and the role of packaging as part of this strategy is directly relevant to the impact of plain packaging; however, this literature has been the subject of various reviews and, therefore, is not reviewed in the current section.<sup>64</sup> The remainder of this section focuses on research specific to perceptions of risk associated with plain packaging and pack colour.

Several recent qualitative studies in New Zealand<sup>65</sup> and Scotland<sup>66</sup> have found that consumer perceptions of the relative harm and strength of cigarette brands are associated with pack colour similar to quantitative survey findings among UK youth.<sup>67</sup> These findings are consistent with a series of qualitative and quantitative studies commissioned by the Australian government prior to the implementation of plain packaging.<sup>68</sup> Collectively, these studies found consistent associations with colours: packs with darker colours were seen to contain cigarettes which were more ‘harmful to health’ and ‘harder to quit’. Conversely, packs with lighter colours were seen to be less ‘harmful to health’ and ‘easier to quit’.

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<sup>60</sup> National Cancer Institute. Risks Associated with Smoking Cigarettes with Low Machine-Measured Yields of Tar and Nicotine. Smoking and Tobacco Control Monograph 13 Bethesda: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2001.

<sup>61</sup> Gilpin EA, Emery S, White MM, Pierce JP. Does tobacco industry marketing of ‘light’ cigarettes give smokers a rationale for postponing quitting? *Nicotine Tob Res* 2002; 4 Suppl 2: S147-55.

<sup>62</sup> U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. January 2014.

<sup>63</sup> (1) Mutti S, Hammond D, Borland R, Cummings KM, O’Connor RJ, Fong GT. Beyond light and mild: cigarette brand descriptors and perceptions of risk in the International Tobacco Control (ITC) Four Country Survey. *Addiction* 2011; 106(6):1166-75. (2) Wilson N, Weeseekera D, Peace J, Edwards R, Thomson G, Devlin M. Misperceptions of “light” cigarettes abound: National survey data. *BMC Public Health* 2009; 9:126-37. (3) Borland R, Fong, GT, Yong HH, Cummings KM, Hammond D, et al. What Happened to Smokers’ Beliefs about Light Cigarettes When “Light/Mild” Brand Descriptors Were Banned in the UK? Findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2008; 17(4):256-62. (4) Brown A, McNeill A, Mons U, Guignard R. Do smokers in Europe think all cigarettes are equally harmful? *Eur J Public Health* 2012; 22(Suppl 1):35-40.

<sup>64</sup> (1) U.S. Department of Health and Human Services. Risks Associated with Smoking Cigarettes with Low Machine- Measured Yields of Tar and Nicotine. Bethesda, MD: U.S. Department of Health and Human Services, Public Health Services, National Institutes of Health; National Cancer Institute, 2001.(2)

U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012.

<sup>65</sup> Peace J, Wilson N, Thomson G, Edwards R. Colouring of cigarette packs in New Zealand, does it mislead customers? University of Otago: Health Promotion and Policy Research Unit, 2007.

<sup>66</sup> Moodie C, Ford A. Young adult smokers’ perceptions of cigarette pack innovation, pack colour and plain packaging. *Australasian Marketing Journal* 2011; 3:174-80.

<sup>67</sup> Moodie C, Ford A, Mackintosh AM, Hastings G. Young people’s perceptions of cigarette packaging and plain packaging: an online survey. *Nicotine Tob Res* 2012; 14(1):98-105.

<sup>68</sup> (1) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 2: Consumer perceptions of plain pack colour. Australian Government Department of Health and Ageing, Canberra, 2011. (2) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 4: Consumer perceptions of plain pack colour with brand elements. Australian Government Department of Health and Ageing, Canberra, 2011. (3) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 5: Face-to-face: consumer appraisal of plain packs with new health warnings using prototype packs. Australian Government Department of Health and Ageing, Canberra, 2011.

Eight experimental studies also demonstrate an association between packaging and perceptions of risk. Within-subject experiments with adult smokers and non-smokers in the US<sup>69</sup> and in France<sup>70</sup> found that pack colour was significantly associated with ratings of reduced risk and tar, and that plain packages were associated with fewer false beliefs about the relative risk of different brands.

A within-subject experiment conducted with adult smokers and youth smokers and non-smokers in the UK also found that false health beliefs were lower for plain versus fully branded packages.<sup>71</sup> Participants were less likely to report that some brands were less harmful or easier to quit than other cigarette brands when viewing plain packs. Experiments conducted with smokers and non-smokers in Canada<sup>72</sup> and the US<sup>73</sup> found that packs with lighter colours were perceived as less harmful than packs in darker colours.

Between-subject experiments conducted with young adult smokers and non-smokers in the US<sup>74</sup> and the UK<sup>75</sup> and Norway<sup>76</sup> also demonstrate that plain packaging reduces false health beliefs regarding reduced harm and tar delivery. Three experimental studies conducted among youth and young adults in Canada<sup>77</sup> and Brazil<sup>78</sup>, and the UK<sup>79</sup> produced null findings with respect to perceptions of risk associated with viewing plain versus branded packages.<sup>80</sup> A naturalistic study with roll-your-own smokers in France used plain packages for ten days, found no differences in perceptions of tar levels compared to when smokers used their regular packaging.<sup>81</sup>

Two studies have experimentally manipulated packaging to assess associations with weight-related health beliefs. A between-subjects experiment conducted with young adult females in Canada found that women who viewed fully branded female packs were more likely to believe that smoking helps people control their appetites compared to women who viewed non-female oriented packs or female oriented packs without descriptors or colours.<sup>82</sup> A second study conducted among US young adult females, found no association for a similar

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<sup>69</sup> Bansal-Travers M, Hammond D, Smith P, Cummings KM. The impact of cigarette pack design, descriptors, and warning labels on risk perception in the U.S. *Amer J Prev Med* 2011; 6:674-82.

<sup>70</sup> Gallopel-Morvan K, Béguinot E, Eker F, Martinet Y, Hammond D. Effectiveness perception of plain packaging of tobacco products: findings from France [Perception de l'efficacité des parquets de cigarettes standardisées. Une étude dans un contexte français]. *Bulletin Epidémiologique Hebdomadaire* 2011; 20-21:244-7.

<sup>71</sup> Hammond D, Dockrell M, Arnott D, Lee A, McNeil A. Cigarette pack design and perceptions of risk among UK adults and youth. *Eur J Public Health* 2009; 6:631-7.

<sup>72</sup> Hammond D, Parkinson C. The impact of cigarette package design on perceptions of risk. *J Public Health* 2009; 3:345-53.

<sup>73</sup> Bansal-Travers M, Hammond D, Smith P, Cummings KM. The impact of cigarette pack design, descriptors, and warning labels on risk perception in the U.S. *Amer J Prev Med* 2011; 6:674-82.

<sup>74</sup> Hammond D, Doxey J, Daniel S, Bansal-Travers M. Impact of female-oriented cigarette packaging in the United States. *Nicotine Tob Res* 2011; 7:579-88.

<sup>75</sup> Hammond D, Daniel S, White CM. The effect of cigarette branding and plain packaging on female youth in the United Kingdom. *J Adolesc Health* 2013; 52(2):151-7.

<sup>76</sup> Scheffels J, Lund I. The impact of cigarette branding and plain packaging on perceptions of product appeal and risk among young adults in Norway: A between-subjects experimental survey. *BMJ Open* 2013; 3:1-9.

<sup>77</sup> Doxey J, Hammond D. Deadly in Pink: the impact of female oriented packaging among young women. *Tob Control* 2011; 5:353-60.

<sup>78</sup> White CM, Hammond D, Thrasher JF, Fong GT. The potential impact of plain packaging of cigarette products among Brazilian young women: an experimental study. *BMC Public Health* 2012; 12:737.

<sup>79</sup> Brose LS, Chong CB, Aspinall E, Michie S, McEwen A. Effects of standardised cigarette packaging on craving, motivation to stop and perceptions of cigarettes and packs. *Psychol Health* 2014 Feb 24. [Epub ahead of print]

<sup>80</sup> Gallopel-Morvan K, Eker F, Béguinot E, Martinet Y. Perceptions of plain packaging among young adult roll-your-own smokers in France: A naturalistic approach. *Tob Control*. [Under Review].

<sup>81</sup> Gallopel-Morvan K, Eker F, Béguinot E, Martinet Y. Perceptions of plain packaging among young adult roll-your-own smokers in France: A naturalistic approach. *Tob Control*. [Under Review].

<sup>82</sup> Doxey J, Hammond D. Deadly in Pink: the impact of female oriented packaging among young women. *Tob Control* 2011; 5:353-60.

experimental manipulation; however, branded packs were significantly more likely to be associated with smoker-image traits of “slimness” than plain packs.<sup>83</sup>

The association between plain packaging and health warnings has also been examined using functional magnetic resonance imaging (fMRI) brain scans. UK smokers and non-smokers viewed images of plain and branded packages while undergoing a fMRI scan.<sup>84</sup> Viewing plain packages produced a different pattern of brain activity in areas related to threat (amygdale) and reward (nucleus accumbens), compared to viewing branded packages. The study concluded that the findings are consistent with eye-tracking studies and suggest daily cigarette smokers actively avoid cigarette package health warnings and lend support to the efficacy of plain packaging.

## Summary

Many consumers continue to hold false beliefs that some cigarette brands are less harmful than others, despite scientific evidence to the contrary. Pack design and colour promote false beliefs about the relative risks between brands. A variety of experimental studies indicate that plain packaging is associated with fewer false health beliefs.

## Consumer appeal

Qualitative research with youth and young adults in New Zealand<sup>85</sup>, Canada<sup>86</sup>, France, Scotland<sup>87,88</sup> and Belgium<sup>89</sup> suggests plain packaging reduces appeal, and attraction. Focus groups with US and Canadian youth also found that plain packaging was less appealing and “uglier”.<sup>90</sup> Approximately one third of youth in the same study believed plain packaging would make non-smokers “less likely to start” and approximately one quarter believed plain packaging would make young smokers “smoke less”. Another study conducted in Canada found that approximately half of youth surveyed believed that fewer youth would start smoking as a result of plain packaging.<sup>91</sup> Qualitative research in France with youth and young adults also found that plain and standardized packaging is associated with lower levels of attraction and appeal.<sup>92,93</sup>

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<sup>83</sup> Hammond D, Doxey J, Daniel S, Bansal-Travers M. Impact of female-oriented cigarette packaging in the United States. *Nicotine Tob Res* 2011; 7:579-88.

<sup>84</sup> Maynard OM, Munafò MR. Effects of cigarette packaging on neural responses to health warnings. Economic and Social Research Council, Medical Research Council, Action on Smoking and Health.

<sup>85</sup> Beede P, Lawson R, Shepherd M. The promotional impact of cigarette packaging: a study of adolescent responses to cigarette plain-packs. Dunedin: Department of Marketing, University of Otago, 1990.

<sup>86</sup> Centre for Health Promotion. Effects of plain packaging on the image of tobacco products among youth. Centre for Health Promotion, University of Toronto, 1993.

<sup>87</sup> Moodie C, Ford A. Young adult smokers’ perceptions of cigarette pack innovation, pack colour and plain packaging. *Australasian Marketing Journal* 2011; 3:174-80.

<sup>88</sup> Crawford M, Bauld L, Ford A, MacKintosh A. Young women smokers’ response to using plain cigarette packaging: Qualitative findings. *Nicotine Tob Res* [Under Review].

<sup>89</sup> Van Hal G, Van Roosbroeck S, Vriesacker B, Arts M, Hoeck S, Fraeyman J. Flemish adolescents’ perceptions of cigarette plain packaging: a qualitative study with focus group discussions. *BMJ Open* 2012; 2:e001424.

<sup>90</sup> Rootman I, Flay BR et al. A study on youth smoking: plain packaging, health warnings, event marketing and price reductions. Toronto: Centre for Health Promotion, University of Toronto, 1995.

<sup>91</sup> Expert Panel Report – prepared for Health Canada. When packages can’t speak: possible impacts of plain and generic packaging of tobacco products – national survey. 1995.

<sup>92</sup> Gallopel-Morvan K, Gabriel P, Le Gall-Ely M, Rieunier S, Urien B. Packaging to help public health. The case of tobacco control [Le packaging au service de la santé publique. Application à la lutte contre le tabac gisme.] Actes de la 1ère Journée Internationale du Marketing Santé, IAE (Institut d’Administration des Entreprises) Université de Lille 1, Lill, France, 2010.

<sup>93</sup> Gallopel-Morvan K, Gabriel P, Le Gall-Ely M, Rieunier S, Urien B. Plain packaging to help public health. The case of tobacco control. *Journal of Business Research* 2011; 66:133-6.

A number of surveys<sup>94,95</sup> and within-subject experiments<sup>96</sup> conducted with UK youth found that plain packs were perceived more negatively and as less attractive. Studies of young adults in Canada<sup>97</sup>, the US<sup>98</sup> and France<sup>99,100</sup> indicate that plain packages are less attractive and would be less likely to be selected as the brand they would purchase.

Five between-subject experiments also indicate that plain packages are substantially less attractive and appealing, primarily among youth and young adults, including studies in the UK<sup>101</sup>, Canada<sup>102,103</sup>, the US<sup>104</sup>, and Australia<sup>105</sup>. For example, the Australian experiment reported a dose-response association between the amount of branded elements on packaging and measures of appeal. A between-subject experiment study with Canadian university students found lower levels of appeal and positive associations plain packages.

Two naturalistic studies have been conducted on brand appeal, in which participants actually use plain packs. First, a study conducted with young women in Scotland, in which smokers used dark brown plain packs for a one-week period, and found very negative emotional responses to using the plain packs.<sup>106</sup> Second, a study was conducted in France with young adult smokers of roll-your-own (RYO) tobacco, in which participants used plain RYO packaging for 10 days.<sup>107</sup> The results indicate that plain packs were associated with more negative pack and product perceptions, lower brand attachment, and more negative feelings about smoking in general.

## Brand imagery, smoker image and product associations

Fifteen studies have examined the impact of plain packaging on smoker image or product image. Qualitative and survey research in New Zealand<sup>108,109</sup>, Norway<sup>110</sup>, Australia<sup>111</sup>, and Canada<sup>112,113</sup> indicate that removing brand

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<sup>94</sup> Ford A, Mackintosh AM, Moodie C, Richardson S, Hastings G. Cigarette pack design and adolescent smoking susceptibility: a cross-sectional survey. *BMJ Open* 2013; 3(9):e003282.

<sup>95</sup> Moodie C, Ford A, Mackintosh AM, Hastings G. Young people's perceptions of cigarette packaging and plain packaging: an online survey. *Nicotine Tob Res* 2012; 14(1):98-105.

<sup>96</sup> Hammond D, Dockrell M, Arnott D, Lee A, McNeil A. Cigarette pack design and perceptions of risk among UK adults and youth. *Eur J Public Health* 2009; 6:631-7.

<sup>97</sup> Hammond D, Parkinson C. The impact of cigarette package design on perceptions of risk. *J Public Health* 2009; 3:345-53.

<sup>98</sup> Bansal-Travers M, Hammond D, Smith P, Cummings KM. The impact of cigarette pack design, descriptors, and warning labels on risk perception in the U.S. *Amer J Prev Med* 2011; 6:674-82.

<sup>99</sup> Gallopel-Morvan K, Moodie C, Hammond D, Eker F, et al. Consumer perceptions of cigarette pack design in France: a comparison of regular, limited edition and plain packaging. *Tob Control* 2012; 21(5):502-6.

<sup>100</sup> Gallopel-Morvan K, Béguinot E, Eker F, Martinet Y, Hammond D. Effectiveness perception of plain packaging of tobacco products: findings from France [Perception de l'efficacité des parquets de cigarettes standardisées. Une étude dans un contexte français]. *Bulletin Épidémiologique Hebdomadaire* 2011; 20-21:244-7.

<sup>101</sup> (1) Hammond D, Daniel S, White CM. The effect of cigarette branding and plain packaging on female youth in the United Kingdom. *J Adolesc Health* 2013; 52(2):151-7. (2) Brose LS, Chong CB, Aspinall E, Michie S, McEwen A. Effects of standardised cigarette packaging on craving, motivation to stop and perceptions of cigarettes and packs. *Psychol Health* 2014 Feb 24. [Epub ahead of print].

<sup>102</sup> Doxey J, Hammond D. Deadly in Pink: the impact of female oriented packaging among young women. *Tob Control* 2011; 5:353-60.

<sup>103</sup> Al-Hamdani M. The effect of cigarette plain packaging on individuals' health warning recall. *Healthcare Policy* 2013; 8(3):68-77.

<sup>104</sup> Hammond D, Doxey J, Daniel S, Bansal-Travers M. Impact of female-oriented cigarette packaging in the United States. *Nicotine Tob Res* 2011; 7:579-88.

<sup>105</sup> Germain D, Wakefield MA, Durkin SJ. Adolescents' perceptions of cigarette brand image: does plain packaging make a difference. *J Adolesc Health* 2010; 4: 385-92.

<sup>106</sup> Moodie CS, Mackintosh AM. Young adult women smokers' response to using plain cigarette packaging: a naturalistic approach. *BMJ Open* 2013; 3(3):e002402.

<sup>107</sup> Gallopel-Morvan K, Eker F, Béguinot E, Martinet Y. Perceptions of plain packaging among young adult roll-your-own smokers in France: A naturalistic approach. *Tobacco control*. [Under Review].

<sup>108</sup> Gendall P, Hoek J, Edwards R, McCool J. A cross-sectional analysis of how young adults perceive tobacco brands: implications for FCTC signatories. *BMC Public Health* 2012; 12:796.

<sup>109</sup> Hoek J, Gendall P, Gifford H, Pirikahu G, McCool J, Pene G, Edwards R, Thomson G. Tobacco branding, plain packaging, pictorial warnings, and symbolic consumption. *Qualitative Health Research* 2012; 22(5):630-9.

<sup>110</sup> Scheffels J, Sæbø G. Perceptions of plain and branded cigarette packaging among Norwegian youth and adults: a focus group study. *Nicotine Tob Res* 2013; 15(2):450-6.

imagery reduces positive associations with product characteristics and smokers of plain packaged products are rated less favourably than smokers of branded products.

A number of between-subject experiments have been conducted with youth and young adults in Australia<sup>114,115</sup>, the UK<sup>116</sup>, Norway<sup>117</sup>, the US<sup>118</sup>, and Brazil<sup>119</sup>. For example, an experimental study of young adult females in Canada found that fully branded packs were significantly more likely to be associated with positive attributes such as glamour, being slim, and sophistication.<sup>120</sup> An experimental study of adult smokers in Australia also found that removal of branding was associated with unfavourable appraisals of packs, the smokers who might smoke such packs, and the inferred experience of smoking a cigarette from these packs.<sup>121</sup> Smokers of plain packs were rated as less trendy/stylish, less sociable/outgoing, and less mature than smokers of the branded packs. This pattern of findings has been replicated in experimental studies with socio-economically disadvantaged smokers in Australia.<sup>122</sup>

## Summary

The evidence unequivocally demonstrates that plain packaging is perceived as less attractive and less appealing, particularly among youth and young adults, including smokers and non-smokers. Plain packaging is also associated with less positive brand imagery, including smoker traits, such as cool, stylish, thin. The findings suggest that plain packaging is less socially desirable and limits the ability of packaging to target sub-groups of youth and young adults.

## Measures of consumer demand and smoking behaviour

A growing number of studies have examined the association between plain packaging and measures of consumer demand, including smoking behaviour. Conjoint and discrete choice experiments are established methodologies for assessing consumer demand in the field of marketing. A conjoint experiment was conducted

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<sup>111</sup> Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 1: Consumer perceptions of branding appeal, attractiveness and smoking harm. Australian Government Department of Health and Ageing, Canberra, 2011.

<sup>112</sup> Expert Panel Report – prepared for Health Canada. When packages can't speak: possible impacts of plain and generic packaging of tobacco products – visual image experiment. 1995.

<sup>113</sup> Expert Panel Report – prepared for Health Canada. When packages can't speak: possible impacts of plain and generic packaging of tobacco products – word image survey. 1995.

<sup>114</sup> Germain D, Wakefield MA, Durkin SJ. Adolescents' perceptions of cigarette brand image: does plain packaging make a difference? Centre for Behavioural Research in Cancer, The Cancer Council Victoria. *J Adolesc Health* 2010; 4: 385-392.

<sup>115</sup> Wakefield M, Germain D, Durkin S, Hammond D, Goldberg M, Borland R. Do larger pictorial health warnings diminish the need for plain packaging of cigarettes? *Addiction* 2012; 107(6):1159-67.

<sup>116</sup> Hammond D, Daniel S, White CM. The effect of cigarette branding and plain packaging on female youth in the United Kingdom. *J Adolesc Health* 2013; 52(2):151-7.

<sup>117</sup> Lund I, Scheffels J. Young smokers and non-smokers perceptions of typical users of plain vs. branded cigarette packs: a between-subjects experimental survey. *BMC Public Health* 2013; 13:1005.

<sup>118</sup> Hammond D, Doxey J, Daniel S, Bansal-Travers M. Impact of female-oriented cigarette packaging in the United States. *Nicotine Tob Res* 2011; 7:579-88.

<sup>119</sup> White CM, Hammond D, Thrasher JF, Fong GT. The potential impact of plain packaging of cigarette products among Brazilian young women: an experimental study. *BMC Public Health* 2012; 12:737.

<sup>120</sup> Doxey J, Hammond D. Deadly in Pink: the impact of female oriented packaging among young women. *Tob Control* 2011; 5:353-60.

<sup>121</sup> Wakefield MA, Germain D, Durkin SJ. How does increasingly plainer cigarette packaging influence adult smokers' perceptions about brand image? An experimental study. *Tob Control* 2008; 17:416-21.

<sup>122</sup> Guillaumier A, Bonevski B, Paul C, Durkin S, D'Este C. Socioeconomically disadvantaged smokers' ratings of plain and branded cigarette packaging: an experimental study. *BMJ Open* 2014; 4(2): e004078.

among Canadian youth to examine the role of packaging as a reason for smoking.<sup>123</sup> The study found that pack type was an important attribute in reasons for quitting among adults and youth smokers, particularly when paired with a pictorial warning. Discrete choice methodology was also used to assess consumer demand among young adult smokers in New Zealand. Pack options with fewer branding elements were associated with less demand and were more likely to elicit cessation behaviour.<sup>124</sup> A third discrete-choice experiment was conducted in 2013 among young adult females in Canada, including smokers and non-smokers, in which plain vs. branded packaging, pack shape and size, health warnings, price, and the type of brand were tested. Plain packaging had a significant effect on intentions to try the product among smokers and non-smokers, and perceptions of risk.<sup>125</sup>

### Experimental auction study

A between-subjects auction experiment was conducted with adult smokers in the US to examine changes in consumer demand associated with health warnings and plain packaging.<sup>126</sup> Experimental auction studies are an established methodology in the field of economics for assessing consumer behaviour.<sup>127</sup> In this study, smokers participated in a “real” auction to purchase cigarettes and were assigned to different experimental conditions, including a plain and branded pack condition. The study found that plain packaging reduced the demand for cigarettes above and beyond the effect of pictorial health warnings.

### Pack offer tasks

Four different studies have used a version of a “pack-offer” task to assess the demand for plain packaging. In each of these studies, youth participants were offered a choice of packs, typically at the conclusion of the study. Although no cigarettes were actually distributed in any of these studies, the pack-offer task nevertheless serves as a behavioural task given that participants believed they would be receiving a pack when making their selection. A pack-offer task was used in a 1995 study conducted among US youth.<sup>128</sup> When asked which pack they would like to take home, 80% of youth chose an “established” branded pack, 17% chose a “novel” branded pack and only 3% took home the plain pack. A more recent experimental study was conducted in the US, in which young female adults were offered a choice of branded and plain packages.<sup>129</sup> Participants were 3 times more likely to select branded packs than plain packs and, of the 10 brands most likely to be selected, all were branded packs. A similar pack offer task was conducted in an experimental study with young women in Brazil.<sup>130</sup> As in the US study, young women were three times more likely to select branded packs than plain packs. Finally, a between-subject pack offer task was conducted with female youth in the UK. Participants were randomized to receive an offer of 4 plain packs or 4 branded packs, and the outcome was whether they accepted the offer and

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<sup>123</sup> Expert Panel Report – prepared for Health Canada. When packages can’t speak: possible impacts of plain and generic packaging of tobacco products – conjoint experiment. 1995.

<sup>124</sup> Hoek J, Wong C, Gendall P, Louviere J, Cong K. Effects of dissuasive packaging on young adult smokers. *Tob Control* 2011; 20:183-8.

<sup>125</sup> Kotnowski K, Hammond D, Fong GT, Gallopel-Morvan K. The efficacy of standardized cigarette packaging among young women in Canada: A discrete choice experiment. Society for Research on Nicotine & Tobacco Annual Meeting; 2014 Feb 7; Seattle WA.

<sup>126</sup> Thrasher J, Rousu M, Hammond D. Estimates of reduction in demand associated with different cigarette package warning label formats: an experimental auction study among adult smokers in the US. 2009 [Manuscript in preparation]. *Health Policy* 2011;102(1):41-8.

<sup>127</sup> 1) Smith VL. An Experimental Study of Competitive Market Behavior. *Journal of Political Economy* 1962; 70:11-137. 2) Smith VL. Experimental Auction Markets and the Walrasian Hypothesis. *J Political Economy* 1965; 73:387-93.

<sup>128</sup> Rootman I, Flay BR et al. A study on youth smoking: plain packaging, health warnings, event marketing and price reductions. Toronto: Centre for Health Promotion, University of Toronto, 1995.

<sup>129</sup> Hammond D, Doxey J, Daniel S, Bansal-Travers M. Impact of female-oriented cigarette packaging in the United States. *Nicotine Tob Res* 2011; 7:579-88.

<sup>130</sup> White CM, Hammond D, Thrasher JF, Fong GT. The potential impact of plain packaging of cigarette products among Brazilian young women: an experimental study. *BMC Public Health* 2012; 12:737.

selected any of the 4 packs. Female youth were significantly less likely to accept an offer of cigarettes when offered cigarettes in plain versus branded packaging.<sup>131</sup>

### Naturalistic studies of plain packaging

Three naturalistic trials of plain packaging have been conducted. In a Scottish study with young female smokers, smokers used brown 'plain' packs for two weeks and their regular packs for two weeks in "real-life" settings.<sup>132</sup> The use of plain packaging resulted in more avoidant behaviours, such as hiding or covering the pack, and cessation behaviours, such as foregoing cigarettes, smoking less around others, thinking about quitting and reduced consumption, while using the plain packs.<sup>133</sup> A naturalistic study of RYO smokers in France, in which smokers used plain RYO packaging for 10 days, found that the use of plain packs was associated with a greater motivation to reduce consumption and quit smoking.<sup>134</sup> Finally, a second naturalistic study was conducted in the UK using a randomized controlled trial design. A total of 128 adult smokers in the UK were randomly assigned to use plain or branded packs for a 24-hour period.<sup>135</sup> Smokers in the plain condition rated the experience of smoking from the cigarette pack more negatively and rated the health warning as more impactful. Smokers randomized to use plain packs smoked fewer cigarettes and inhaled more smoke per cigarette; however, these findings were not statistically significant due to inadequate sample size. Findings from these naturalistic studies are generally consistent with self-reported measures from research conducted in France, in which adult smokers and non-smokers reported that plain packages would motivate smokers to quit or reduce smoking.<sup>136,137</sup>

### Packaging as a cue for smoking & relapse

There is ample evidence from clinical studies that environmental cues play a strong role in smoking relapse<sup>138</sup> and that cigarette packages serve as a salient cue for smokers.<sup>139</sup> For example, Carter et al.<sup>140</sup> found that pictures of cigarette packs increase ratings of cigarette cravings for both "nicotine deprived" and "non-deprived" smokers. A wide range of other clinical studies using experimental designs have found that pack and brand-related imagery enhance cardiovascular reactivity and increase smoking urges.<sup>141</sup> Cue reactivity has also

<sup>131</sup> Hammond D, Daniel S, White CM. The effect of cigarette branding and plain packaging on female youth in the United Kingdom. *J Adolesc Health* 2013; 52(2):151-7.

<sup>132</sup> Moodie C, Mackintosh AM, Hastings G, Ford A. Young adult smokers' perceptions of plain packaging: a pilot naturalistic study. *Tob Control* 2011; 20(5):367-73.

<sup>133</sup> Moodie CS, Mackintosh AM. Young adult women smokers' response to using plain cigarette packaging: a naturalistic approach. *BMJ Open* 2013; 3(3):e002402.

<sup>134</sup> Gallopel-Morvan K, Eker F, Béguinot E, Martinet Y. Perceptions of plain packaging among young adult roll-your-own smokers in France: A naturalistic approach. *Tob Control* [Under Review].

<sup>135</sup> Maynards OM, Leonards U, Attwood S, Bauld L, Hogarth L, Munafò MR. Plain packaging of cigarettes and smoking behaviour: A randomised controlled trial. *ISRCTN 52982308*.

<sup>136</sup> Gallopel-Morvan K, Moodie C, Hammond D, Eker F, et al. Consumer perceptions of cigarette pack design in France: a comparison of regular, limited edition and plain packaging. *Tob Control* 2012; 21(5):502-6.

<sup>137</sup> Gallopel-Morvan K, Béguinot E, Eker F, Martinet Y, Hammond D. Effectiveness perception of plain packaging of tobacco products: findings from France [Perception de l'efficacité des parquets de cigarettes standardisées. Une étude dans un contexte français]. *Bulletin Épidémiologique Hebdomadaire* 2011; 20-21:244-247.

<sup>138</sup> For e.g.: (1) Shiffman S, Paty JA, Gnys M, Kassel JA, Hickcox M. First lapses to smoking: within-subjects analysis of real-time reports. *J Consult Clin Psych* 1996; 64:366-79; (2) Ferguson, SG and Shiffman S. Cue-induced cravings for cigarettes. *Current Cardiovascular Risk Reports* 2009; 3:385-90. (3) Ferguson SG, Shiffman S. The relevance and treatment of cue-induced cravings in tobacco dependence. *J Subst Abuse Treat* 2009; 36:235-43.

<sup>139</sup> (1) Erbllich J, Montgomery GH. Cue-induced cigarette cravings and smoking cessation: the role of expectancies. *Nicotine Tob Res* 2012; 14:809-15. (2) Litvin EB, Brandon TH. Testing the influence of external and internal cues on smoking motivation using a community sample. *Exp Clin Psychopharm* 2010; 18:61-70.

<sup>140</sup> Carter BL, Robinson JD, Lam CY, Wetter DW, Tsan JY, Day SX, Cinciripini PM. A psychometric evaluation of cigarette stimuli used in a cue reactivity study. *Nicotine Tob Res* 2006;8:361-9.

<sup>141</sup> For example: (1) Lee J-H, Lim Y, Wiederhold BK, Graham SJ. A functional magnetic resonance imaging (fMRI) study of cue-induced smoking cravings in virtual environments. *Appl Psychophys Biof* 2005;30:195-204. (2) Watson NL, Carpenter MJ, Saladin ME, Gray KM, Upadhyaya HP. Evidence for greater



been shown to predict the likelihood of successful cessation.<sup>142</sup> Indeed, a systematic review of relapse prevention interventions for smoking cessation published by the Cochrane Collaboration concluded that: “The verdict is strongest for interventions focusing on identifying and resolving tempting situations.” (p.1)<sup>143</sup>

One experimental clinical study used a similar research paradigm to test differences between plain and branded packaging as a cue for smoking among smokers who had been abstinent for at least 12 hours prior to the study.<sup>144</sup> Exposure to plain packages was associated with lower urges to smoke and craving than exposure to preferred and non-preferred branded packs.

## Summary

Evidence from a range of methodologies indicates that plain packaging reduces consumer demand. Evidence from a limited number of naturalistic studies suggest that plain packaging may promote smoking cessation among established smokers, although additional studies are required to demonstrate this effect. Findings from clinical studies also indicates that branded tobacco packaging is a reliable cue for smoking and can prompt urges to smoke among former smokers, and that exposure to plain packages reduces urges and motivation to smoke compared to branded packages.

## Post-implementation: the impact of plain packaging regulations in Australia

Plain packaging regulations were implemented for the first time by Australia in December 2012. To date, three published studies have examined the impact of plain packaging in Australia. The first study consisted of a survey with adult smokers in the early implementation phase of plain packaging.<sup>145</sup> The study compared responses from smokers who were using plain packs (approximately three-quarters of the sample), with responses from smokers who had yet to use plain packs. Smokers using plain packs perceived their cigarettes to be lower in quality, tended to perceive their cigarettes as less satisfying than a year ago, were more likely to have thought about quitting at least once a day in the past week, and rated quitting as a higher priority in their lives. Plain

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cue reactivity among low-dependent vs. high-dependent smokers. *Addict Behav* 2010;35:673-7. (3) Sayette MA, Loewenstein G, Kirchner TR, Travis T. Effects of smoking urge on temporal cognition. *Psych Addict Behav* 2005; 19:88-93. (4) Jenks RA, Higgs S. Reactivity to smoking- and food-related cues in currently dieting and non-dieting young women smokers. *J Psychopharm* 2011; 25(4):520-9. (5) King A, McNamara P, Angstadt M, Phan KL. Neural substrates of alcohol-induced smoking urge in heavy drinking nondaily smokers. *Neuropsychopharm* 2010; 35:692-701. (6) Traylor AC, Bordnick PS, Carter BL. Using virtual reality to assess young adult smokers' attention to cues. *CyberPsychology & Behavior* 2009; 12:373-8. (7) Santa Ana EJ, Rounsaville BJ, Frankforter TL, Nich C, Babuscio T, Poling J, Gonsai K, Hill KP, Carroll KM. D-Cycloserine attenuates reactivity to smoking cues in nicotine dependent smokers: A pilot investigation. *Drug Alcohol Depend* 2009; 104:220-7. (8) Warthen MW, Tiffany ST. Evaluation of cue reactivity in the natural environment of smokers using ecological momentary assessment. *Exp Clin Psychopharm* 2009; 17:70-7. (9) Reid MS, Palamar J, Raghavan S, Flammio F. Effects of topiramate on cue-induced cigarette craving and response to a smoked cigarette in briefly abstinent smokers. *Psychopharm* 2007;192:147-8. (10) Carter BL, Robinson JD, Lam CY, Wetter DW, Tsan JY, Day SX, Cinciripini PM. A psychometric evaluation of cigarette stimuli used in a cue reactivity study. *Nicotine Tob Res* 2006; 8:361-9. (11) Upadhyaya HP, Drobos DJ, Wang W. Reactivity to in vivo smoking cues in older adolescent cigarette smokers. *Nicotine Tob Res* 2006;8:135-40; (12) Carpenter MJ, Saladin ME, DeSantis S, Gray KM, LaRowe SD, Upadhyaya HP. Laboratory-based, cue-elicited craving and cue reactivity as predictors of naturally occurring smoking behavior. *Addict Behav* 2009; 34:536-41.

<sup>142</sup> For example: (1) Abrams DB, Monti PM, Carey KB, Pinto RP, Jacobus SI. Reactivity to smoking cues and relapse: two studies of discriminant validity. *Behaviour Research and Therapy* 1988;26:225-33. (2) Abrams DB, Monti PM, Pinto RP, Elder J, Brown R, Jacobus S. Psychosocial stress and coping in smokers who relapsed or quit. *Health Psychology* 1987; 6:289-303. (3) Niaura R, Abrams D, Demuth B, Pinto R & Monti P. Responses to smoking-related stimuli and early relapse to smoking. *Addict Behav* 1989; 14:419-28. (4) Niaura R, Abrams D, Monti P & Pedraza M. Reactivity to high risk situations and smoking outcome. *J Substance Abuse* 1989; 1:393-405.

<sup>143</sup> Hajek P, Stead LF, West R, Jarvis M, Lancaster T. Relapse prevention interventions for smoking cessation. *The Cochrane Library* 2009, Issue 1. Art. No.: CD003999. DOI: 10.1002/14651858.CD003999.pub3.

<sup>144</sup> Brose LS, Chong CB, Aspinall E, Michie S, McEwen A. Effects of standardised cigarette packaging on craving, motivation to stop and perceptions of cigarettes and packs. *Psychol Health* 2014 Feb 24. [Epub ahead of print]

<sup>145</sup> Wakefield MA, Hayes L, Durkin S, Borland R. Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study. *BMJ Open* 2013; 3(7): e003175.

pack smokers were also more likely to support the policy than branded pack smokers. Smokers of branded and plain packs did not differ on measures of less immediate smoking intentions or the frequency of thoughts about health risks.

The second study examined rates of “pack display” and the number of smoking patrons in cafés, restaurants, and bars with outdoor seating.<sup>146</sup> Data was collected in public areas before and after the implementation of plain packaging. Smoking in outdoor areas of cafés, restaurants, and bars declined in the post-implementation period, as did number of packs that were publicly visible.

The third study used a time-series analysis to compare calls to the toll-free “Quitline” in two Australian states between the period before and after implementation of plain packaging in Australia.<sup>147</sup> Calls to the Quitline increased 78% after plain packaging was implemented, adjusting for other factors. Quitline calls peaked 4-weeks after the implementation deadline for plain packaging, but the increase was prolonged at 6-months post-implementation. The introduction of graphic health warnings in 2006 had the same relative increase in calls; however, the impact of plain packaging was sustained for a longer time.

## Summary

Given the novelty of plain packaging regulations in Australia, there are few studies to assess the impact of plain packaging. To date, three published studies provide preliminary evidence suggesting that plain packaging has had a positive public health impact in Australia. Of the three studies, objective data indicating a significant increase in calls to the Quitline—an effective form of smoking cessation<sup>148</sup>—are most compelling. No studies have examined the impact of plain packaging within the context of smoking initiation.

## Plain pack colour

Several studies have examined whether the background colour to which plain packs are standardized has any impact on relevant outcomes. These studies are consistent in demonstrating that darker, non-white colours are perceived as significantly less appealing and more effective.<sup>149</sup> For example, in a study conducted among UK youth and adults, plain brown packs were perceived as less appealing than plain white packs and were also associated with higher perceptions of risk.<sup>150</sup> Qualitative research with young adult smokers in Scotland found that dark brown plain packs were perceived as more unappealing than light brown and dark and light grey packs by all focus groups.<sup>151</sup> The Australian government also commissioned several studies to test different colours prior to the implementation of plain packaging, and found that darker colours were associated with more favourable impressions from a public health perspective, in terms of enhancing perceptions of risk and

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<sup>146</sup> Zacher M, Bayly M, Brennan E, Dono J, Miller C, Durkin S, Scollo M, Wakefield. Personal tobacco pack display before and after the introduction of plain packaging with larger pictorial health warnings in Australia: an observational study of outdoor café strips. *Addiction* 2014; 109(4):653-62.

<sup>147</sup> Young J, Stacey I, Dobbins TA, Dunlop S, Dossa AL, Currow DC. Association between tobacco plain packaging and Quitline calls: a population-based, interrupted time-series analysis. *Med J Aust* 2014; 200(1):29-32.

<sup>148</sup> Stead LF, Hartmann-Boyce J, Perera R, Lancaster T. Telephone counselling for smoking cessation. *Cochrane Database Syst Rev* 2013 Aug 12;8:CD002850.

<sup>149</sup> Centre for Health Promotion. Effects of plain packaging on the image of tobacco products among youth. Centre for Health Promotion, University of Toronto, 1993.

<sup>150</sup> Hammond D, Dockrell M, Arnott D, Lee A, McNeil A. Cigarette pack design and perceptions of risk among UK adults and youth. *Eur J Public Health* 2009; 6:631-637.

<sup>151</sup> Moodie C, Ford A. Young adult smokers' perceptions of cigarette pack innovation, pack colour and plain packaging. *Australasian Marketing Journal*. 2011; 3:174-180.

minimizing consumer appeal.<sup>152</sup> Finally, a within-subject experiment conducted with youth smokers and non-smokers in the UK found that drab-brown plain packs were rated as less smooth, had greater health risks, higher tar delivery, and were more effective in displaying health warnings compared to plain white packs.<sup>153</sup> These studies are consistent with the broader literature on the effect of pack colour, including tobacco industry research, which indicates that white and lighter colour products are perceived as “healthier” and cleaner.<sup>154</sup> Therefore, while the primary objective of standardizing colour would be to have uniform appearance, to minimize the belief that some products are less harmful than others, using a darker colour may reduce the overall appeal of all packages.

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<sup>152</sup> (1) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 2: Consumer perceptions of plain pack colour. Australian Government Department of Health and Ageing, Canberra, 2011. (2) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 4: Consumer perceptions of plain pack colour with brand elements. Australian Government Department of Health and Ageing, Canberra, 2011. (3) Parr V, Tan B, Ell P, Miller K. Market research on determine effective plain packaging of tobacco products – Study 5: Face-to-face: consumer appraisal of plain packs with new health warnings using prototype packs. Australian Government Department of Health and Ageing, Canberra, 2011.

<sup>153</sup> Hammond D, White C, Anderson W, Arnott D, Dockrell M. The perceptions of UK youth of branded and standardized, 'plain' cigarette packaging. *Eur J Public Health* 2013; 1-7.

<sup>154</sup> See section on industry documents, as well as Chapter 5 in: U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012.

# REVIEW OF EVIDENCE FROM TOBACCO INDUSTRY

## Empirical evidence on plain packaging

To date, no empirical studies conducted by, or on behalf of, tobacco companies have been published. One original empirical article commissioned by the tobacco industry was identified.<sup>155</sup> An online experiment was conducted in which tobacco products were displayed with varying levels of branding and adult smokers and non-smokers in the UK ranked their preferences. The conclusion of this report was that the removal of branded information shifted consumer preferences from premium brands to “cheaper” brands. Given that price is the most commonly used measure of consumer demand, this study suggests that plain packaging may reduce consumer demand for cigarettes. The study did not test cigarettes among non-smokers. Two additional research reports commissioned by Philip Morris International were identified; however, the reports included “simulation models” criteria and did not meet the criteria for original empirical evidence.<sup>156</sup>

## Tobacco company business documents

Over the past 20 years, tobacco companies have released more than 14 million “internal” documents through court disclosure requirements in various legal proceedings. Most documents span the period from the 1950’s through 2009, and represent a rich source of information on business practices, marketing strategy, and internal research and development activities.<sup>157</sup> These corporate documents make an important contribution to the evidence base on tobacco packaging. The following section provides a brief review of selected documents relevant to plain packaging.

## The importance of tobacco packaging

Tobacco industry research and marketing documents unequivocally demonstrate the importance of tobacco packaging as a marketing tool.<sup>158</sup> For example, a recent British American Tobacco (BAT) presentation to global investors identified packaging and limited edition packs as a key component of industry innovation and growth.<sup>159</sup> A variety of documents also discuss packaging within the context of recruiting new smokers.<sup>160</sup> For example, a summary of consumer product testing prepared by Philip Morris stated: “Advertising, packaging, price can get people to try a product...” (p.1)<sup>161</sup> Marlboro—the world’s largest cigarette brand and one of the leading global brands in any consumer domain—provides an illustrative case study for the importance of

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<sup>155</sup> London Economics. The role of packaging imagery on consumer preferences for experience goods: A consumer behavioural experiment. January 2012. Prepared on behalf of Philip Morris International. Available from: <http://londoneconomics.co.uk/publication/the-role-of-packaging-imagery-on-consumer-preferences-for-experience-goods-2/>

<sup>156</sup> 1) Padilla J. The impact of plain packaging of cigarettes in Australia: a simulation exercise. Brussels: LECG Consulting Belgium. Prepared on behalf of Philip Morris International; 2010. 2) Padilla J. The impact of plain packaging of cigarettes in UK: a simulation exercise. Brussels: LECG Consulting Belgium. Prepared for Philip Morris International; 2010.

<sup>157</sup> For example: Hurt RD, Robertson CR. Prying open the door to the tobacco industry’s secrets about nicotine. *JAMA* 1998; 280:1173-81.

<sup>158</sup> <http://legacy.library.ucsf.edu/tid/pni01f00>; <http://legacy.library.ucsf.edu/tid/btv17d00>; <http://legacy.library.ucsf.edu/tid/tiz92e00>; <http://legacy.library.ucsf.edu/tid/yio37d00>; <http://legacy.library.ucsf.edu/tid/wxt39e00>; <http://legacy.library.ucsf.edu/tid/kjm04a99>; <http://legacy.library.ucsf.edu/tid/jzw63a99>; <http://legacy.library.ucsf.edu/tid/qgy71f00/pdf?search=%222024262678%22>

<sup>159</sup> British American Tobacco. USD Global Bond presentation. November 2008.

<sup>160</sup> <http://legacy.library.ucsf.edu/tid/czr21c00>; <http://legacy.library.ucsf.edu/tid/agr83f00>

<sup>161</sup> <http://legacy.library.ucsf.edu/tid/kbx68h00/pdf?search=%222042790197%22>

packaging.<sup>162</sup> A review of marketing for Marlboro Red and Marlboro Lights highlights the role of packaging in brand communication, as well as how packaging strategies can help address challenges in recruiting more “starters”.<sup>163</sup>

Corporate documents indicate that the importance of packaging increases in jurisdictions with comprehensive advertising and marketing restrictions, such as Ireland.<sup>164</sup> As a BAT marketing executive put it, “Our final communication vehicle with our smoker is the pack itself.”(p.21)<sup>165</sup> A BAT internal review of trends in cigarette packaging in the 1990’s predicted that: “Advertising and promotion bans and restrictions will rapidly increase. The pack will increasingly become the main communicator”(p.2)<sup>166</sup> An earlier BAT document from 1979 on new opportunities in marketing elaborated:

*Under conditions of total ban, pack designs and the brand house and company 'livery' have enormous importance in reminding and reassuring the smokers. Therefore the most effective symbols, designs, colour schemes, graphics and other brand identifiers should be carefully researched so as to find out which best convey the elements of goodwill and image. Where necessary, new designs must be created and tested so as to enhance and complement the identifiers. An objective should be to enable packs, by themselves, to convey the total product message.(p.8)<sup>167</sup>*

A BAT brand development course in 1986 offered similar conclusions:

*In the context of advertising ban markets the cigarette pack itself assumes great importance. This is because it is likely to be the last means of communicating with the consumer. Consequently techniques need to be developed in order to ensure that the pack design is used in the most effective way to communicate with the consumer. There are two elements to pack design and they are: a) the brand imagery it conveys; and b) its visual impact.<sup>168</sup>*

A 1987 summary of Philip Morris’ “International Social Acceptability Research” program also highlights the growing importance of packaging as a promotional tool:

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<sup>162</sup> N Hafez, P M Ling How Philip Morris built Marlboro into a global brand for young adults: implications for international tobacco control. *Tob Control* 2005;14:262-271.

<sup>163</sup> <http://legacy.library.ucsf.edu/tid/wxt39e00>;  
<http://legacy.library.ucsf.edu/tid/zpo10j00/pdf?search=%22marlboro%20lights%20is%20the%20leading%20low%20tar%20cigarette%20in%20the%20%20s%20the%20brand%20has%20experienced%20continuous%20share%20growth%20since%20its%20launch%20in%201971%20when%20the%20low%20tar%20category%20was%20in%20its%20infancy%22>

<sup>164</sup> <http://legacy.library.ucsf.edu/tid/myk30a99/pdf?search=%22principles%20of%20measurement%20of%20visual%20standout%20in%20pack%20design%22>; <http://legacy.library.ucsf.edu/tid/qar70a99>; <http://legacy.library.ucsf.edu/tid/jzy81f00>; <http://legacy.library.ucsf.edu/tid/yhs55e00>;  
<http://legacy.library.ucsf.edu/tid/koq53a99>; <http://legacy.library.ucsf.edu/tid/phv06e00>; <http://legacy.library.ucsf.edu/tid/rms14d00>;  
<http://legacy.library.ucsf.edu/tid/yjs32e00>; <http://legacy.library.ucsf.edu/tid/jpy93a99>; <http://legacy.library.ucsf.edu/tid/mtk73a99>;  
<http://legacy.library.ucsf.edu/tid/ztn93a99>; <http://legacy.library.ucsf.edu/tid/ejm04a99>; <http://legacy.library.ucsf.edu/tid/knz13a99>;  
<http://legacy.library.ucsf.edu/tid/twg13j00>; <http://legacy.library.ucsf.edu/tid/rsm63a99>;  
<http://legacy.library.ucsf.edu/tid/nke00a99/pdf?search=%22marketing%20of%20cigarettes%20in%20countries%20with%20total%20ad%20bans%22>;  
<http://legacy.library.ucsf.edu/tid/uak46b00/pdf?search=%22starter%20packaging%22>;  
<http://legacy.library.ucsf.edu/tid/eky31a99/pdf?search=%22the%20influence%20of%20brand%20identification%20and%20imagery%20on%20subjective%20evaluation%20of%20cigarettes%22>; <http://legacy.library.ucsf.edu/tid/mtk73a99>

<sup>165</sup> Hult M. Marketing issues: Corporate affairs conference. May 27, 1994.

<http://legacy.library.ucsf.edu/tid/jga42e00/pdf?search=%22our%20final%20communication%20vehicle%20with%20our%20smoker%20is%20the%20pack%20itself%22>

<sup>166</sup> <http://legacy.library.ucsf.edu/tid/nuu04a99>

<sup>167</sup> <http://legacy.library.ucsf.edu/tid/ltp21f00/pdf?search=%22guidelines%20on%20communication%20restrictions%20and%20new%20opportunities%20in%20marketing%22>

<sup>168</sup> <http://legacy.library.ucsf.edu/tid/fas33a99/pdf?search=%22product%20technology%20brand%20development%20course%22>

*The following key elements are of prime importance in the enhancement of the smoker's self-perceptions: the package, including brand name, logo, colour, design, crest, box, soft pack, etc.... As media restrictions continue to increase in many major world markets, our packaging becomes increasingly important as: a vehicle for communication, a statement about the smoker's personality and lifestyle, an expression of social acceptability.*<sup>169</sup>

## Perceptions of risk

Tobacco company documents on consumer perceptions of “light”, “mild” and “low tar” cigarettes have been reviewed extensively in other documents.<sup>170</sup> In addition to this evidence, industry documents also describe the specific importance of pack colour in shaping consumer perceptions of risk.<sup>171</sup> For example, BAT's Research & Development group summarized principles for effective pack design and noted that: “Lower delivery products tend to be featured in blue packs. Indeed, as one moves down the delivery sector then the closer to white a pack tends to become. This is because white is generally held to convey a clean, healthy association.”<sup>172</sup> Different shades of the same colour and the proportion of white space on the package are commonly used to manipulate perceptions of a product's strength and potential risk. Industry research demonstrates that the colour and design of the package are effective to the point where they influence sensory perceptions from smoking a cigarette, a process known as “sensory transfer.”<sup>173</sup> For example, when consumers smoke cigarettes placed in lighter-coloured packs, they perceive these cigarettes to taste “lighter” and less harsh than the same cigarettes presented in darker-coloured packs.

## Brand imagery

One of the primary objectives of tobacco marketing is to establish brand imagery and to promote product appeal. Brand imagery refers to the extrinsic properties of a brand that shape consumer perceptions. A comprehensive review of tobacco promotion activities highlighted the importance of brand imagery:

*The brand image of most tobacco products represents the end result of a multifaceted marketing effort involving brand identity, logos, taglines and slogans, pictorial elements, and the use of color. The development, enhancement, and reinforcement of this and imagery are primary objectives of tobacco promotion. (p.13)*<sup>174</sup>

<sup>169</sup>Wakefield M1, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. *Tob Control* 2002; 11 Suppl 1:173-80. 2) <http://legacy.library.ucsf.edu/tid/yyq26e00>;

<sup>170</sup>National Cancer Institute. Risks Associated with Smoking Cigarettes with Low Machine-Measured Yields of Tar and Nicotine. *Smoking and Tobacco Control Monograph 13* Bethesda: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2001.

<sup>171</sup><http://legacy.library.ucsf.edu/tid/pxu83e00/pdf?search=%22the%20colour%20of%20the%20pack%20clearly%20influences%20perceptions%20of%20the%20product%20s%20strength%22>

<sup>172</sup><http://legacy.library.ucsf.edu/tid/zlh37a99/pdf?search=%22lower%20delivery%20products%20tend%20to%20be%20featured%20in%20blue%20packs%20indeed%20as%20one%20moves%20down%20the%20delivery%20sector%20then%20the%20closer%20to%20white%20a%20pack%20tends%20to%20become%20this%20is%20because%20white%20is%20generally%20held%20to%20convey%20a%20clean%20healthy%20association%22>

<sup>173</sup>1) Wakefield M, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. *Tobacco Control*. 2002 Mar;11(Suppl 1):i73-i80. 2) McBride C. A summary of brand imagery studies on Canadian products. Imperial Tobacco Limited Research and Development Division. 1987 Sept. Bates No. 570506735-6787.

<http://legacy.library.ucsf.edu/tid/mdb51f00/pdf?search=%22a%20summary%20of%20brand%20imagery%20studies%20on%20canadian%20products%22>.

<sup>174</sup>National Cancer Institute. The Role of the Media in Promoting and Reducing Tobacco Use. *Tobacco Control Monograph No. 19*. Bethesda (MD): U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2008. NIH Publication No. 07-6242.

Tobacco advertising and marketing use brand imagery to appeal to consumers' psychological or social needs. As described in the 2014 Surgeon General's report, tobacco advertising "fulfills many of the aspirations of adolescents and children by effectively using themes of independence, liberation, attractiveness, adventurousness, sophistication, glamour, athleticism, social acceptability and inclusion, sexual attractiveness, thinness, popularity, rebelliousness, and being "cool".<sup>175</sup> As Judge Kessler noted in her 2006 ruling, "Research in psychology and cognitive neuroscience demonstrates how powerful such imagery can be, particularly for young people, in suppressing perception of risk and encouraging behavior."<sup>176</sup>

Industry documents are replete with references to the fundamental importance of brand imagery to their product development and marketing strategy.<sup>177</sup> For example, a confidential document from BAT's Group Research & Development Centre, describes the central role of the pack in conveying brand imagery:

*Historically, cigarette pack design has assumed a great deal of importance in the marketing process. This is because brand imagery is salient in the mind of the consumer... Much of the imagery has traditionally been developed through advertising. However, it has been understood that this imagery must be carried right through to the brand... The main focus of attention, therefore, has been on the pack which carries the product.*(p.2)<sup>178</sup>

Brand imagery is particularly important in targeting youth and young adults.<sup>179</sup> In many cases, initial brand preferences are based less on the sensory properties of using the product than on perceptions of the package and brand:

*...one of every two smokers is not able to distinguish in blind (masked) tests between similar cigarettes....for most smokers and for the decisive group of new, younger smokers, the consumer's choice is dictated more by psychological, image factors than by relatively minor differences in smoking characteristics.*(p.5)<sup>180</sup>

Tobacco company research indicates that brand imagery is critical to segmenting brands and targeting specific sub-groups, such as young women.<sup>181</sup>

<sup>175</sup>U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; January 2014.

<sup>176</sup>United States v. Philip Morris USA, 449 F. Supp. 2d 1,(D.D.C., 2006) 980. Available online:

[http://www.tobaccocontrol.org/files/live/litigation/596/US\\_United%20States%20v.%20Philip%20Morris.pdf](http://www.tobaccocontrol.org/files/live/litigation/596/US_United%20States%20v.%20Philip%20Morris.pdf)

<sup>177</sup><http://legacy.library.ucsf.edu/tid/kir83e00>, <http://legacy.library.ucsf.edu/tid/tyt25e00>; <http://legacy.library.ucsf.edu/tid/vvs22e00>;

<http://legacy.library.ucsf.edu/tid/rsm63a99>; <http://legacy.library.ucsf.edu/tid/jse73f00>;

<http://legacy.library.ucsf.edu/tid/jlf17a99/pdf?search=%22500062148%22>

<sup>178</sup><http://legacy.library.ucsf.edu/tid/zlh37a99/pdf?search=%22lower%20delivery%20products%20tend%20to%20be%20featured%20in%20blue%20packs%20indeed%20as%20one%20moves%20down%20the%20delivery%20sector%20then%20the%20closer%20to%20white%20a%20pack%20tends%20to%20become%20this%20is%20because%20white%20is%20generally%20held%20to%20convey%20a%20clean%20healthy%20association%22>

<sup>179</sup>Wakefield M, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. Tob Control 2002; 11(Suppl 1):i73-i80. (2) Pollay RW. The role of packaging seen through industry documents. Mar 2001. Expert Report prepared for: JTI-Macdonald., Imperial Tobacco Canada Ltd and Rothmans, Benson & Hedges Inc. v. Attorney General of Canada and Canadian Cancer Society (intervenor). Supreme Court, Province of Quebec, District of Montreal. Defense Exhibit D-116.

<sup>180</sup>British American Tobacco [BAT], n.d., Bates No. 500062147/2159, p. 5

<sup>181</sup>Toll BA, Ling PM. The Virginia Slims identity crisis: an inside look at tobacco industry marketing to women. Tob Control. 2005 Jun;14(3):172-80;

[http://tobaccodocuments.org/product\\_design/11832060.html](http://tobaccodocuments.org/product_design/11832060.html); [http://tobaccodocuments.org/product\\_design/244232.html](http://tobaccodocuments.org/product_design/244232.html);

[http://tobaccodocuments.org/product\\_design/501983273-3308.html](http://tobaccodocuments.org/product_design/501983273-3308.html); <http://legacy.library.ucsf.edu/tid/ijb34a99/pdf>;

<http://legacy.library.ucsf.edu/tid/hyp46b00/pdf?search=%22starter%20packaging%22>;

<http://legacy.library.ucsf.edu/tid/plr46b00/pdf?search=%22starter%20packaging%22>;

<http://legacy.library.ucsf.edu/tid/iht76b00/pdf?search=%22starter%20packaging%22>;

*As in previous studies, the pack generated a very positive response from respondents. They praised it for its delicate prettiness and its classy femininity. And they were attracted to its “simple” and “clean” design.... The slim size of the pack was generally seen as clear benefit: it fits a woman’s hand better and takes up less room in her purse.... User Imagery: After viewing the pack and carton, respondents tended to develop the same general user imagery that has been found in previous studies. They see Capri as a cigarette that is unambiguously for women....But when asked for specific imagery, they tend to imagine the typical Capri smokers as... tasteful and fashion-conscious,... confident and independent.(p.14-16)<sup>182</sup>*

Colour is among the most important packaging attributes for establishing brand imagery. Tobacco companies conduct extensive market research on the effect of colours. For example, silver and gold colours can be used to convey status and prestige, particularly for “premium” brands.<sup>183</sup> Red packages and logos can convey excitement, strength, wealth, and power, whereas pastel colours are associated with freshness, innocence, and relaxation, and are more common among brands that appeal to females.<sup>184</sup>

## Social norms

Social norms have a strong influence on behaviour, particularly among youth and young adults. Social norms represent our expectations about how others will evaluate our behaviour, and are a central tenet in social psychology and models of health behaviour. Social norms have also been an important target of tobacco marketing and advertising campaigns, in order to promote smoking as a socially desirable behaviour.

Tobacco industry business documents highlight the extent to which tobacco marketing and branding strategies are designed to shape social norms. Cigarettes are widely referred to as a “badge” product that allows smokers to portray an image to others and to associate oneself with the social identity of a brand.<sup>185</sup> Strategic research and marketing documents highlight the importance of manipulating social acceptability in order to recruit young adults.<sup>186</sup> For example, a marketing plan for RJ Reynolds prepared in 1983 describes how brand imagery can promote peer-approval, one of the main factors identified by the industry in reasons for smoking.<sup>187</sup> Many research and marketing documents also describe the importance of marketing and brand strategies to alleviate the “social guilt” and “social pressures” against smoking.<sup>188</sup> Documents from British American Tobacco (BAT) describe social acceptance as a primary need, and the importance of marketing strategy for meeting this “need”, including psychological reassurance and benefits, and targeting of brands.<sup>189</sup>

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<sup>182</sup>[http://tobaccodocuments.org/product\\_design/11832060.html](http://tobaccodocuments.org/product_design/11832060.html)

<sup>183</sup> Pollay RW. The role of packaging seen through industry documents. Mar 2001. Expert Report prepared for: JTI-Macdonald., Imperial Tobacco Canada Ltd and Rothmans, Benson & Hedges Inc. v. Attorney General of Canada and Canadian Cancer Society (intervenor). Supreme Court, Province of Quebec, District of Montreal. Defense Exhibit D-116.

<sup>184</sup> Gordon et al. 1994; Kindra et al. 1994), (Goldberg et al. 1995; Pierce et al. 2010

<sup>185</sup> Wakefield M, Morley C, Horan JK, Cummings KM. The cigarette pack as image: new evidence from tobacco industry documents. Tobacco Control. 2002 Mar;11(Suppl 1):i73-i80.

<sup>186</sup> <http://legacy.library.ucsf.edu/tid/rko20j00/pdf?search=%22peer%20brand%20strategy%22>

<sup>187</sup> RJ Reynolds. Brand Strategies. Bates No. 502441275/1352 Available at:

<http://legacy.library.ucsf.edu/tid/pvq46b00/pdf?search=%22starter%20packaging%22>

<sup>188</sup> <http://legacy.library.ucsf.edu/tid/mkg13d00/pdf?search=%22social%20norm%20brand%20strategy%22>;

<http://legacy.library.ucsf.edu/tid/fnz18c00/pdf?search=%22social%20norm%20brand%20strategy%22>;

<http://legacy.library.ucsf.edu/tid/eie95i00/pdf?search=%22social%20norm%20brand%20strategy%22>

<sup>189</sup> <http://legacy.library.ucsf.edu/tid/nbx49d00/pdf?search=%22social%20norm%20brand%20strategy%22f>



Industry business documents also describe the importance of packaging in helping to shape social norms and promote social acceptance of smoking:

*Package innovation. We have many new creative ideas in packaging, and in today's marketing environment our new products' packaging has to work very hard for us. We must test it in its finished form to ensure that it has: smoker acceptance [and] social acceptance.”(p.17)<sup>190</sup>*

## Summary

Corporate documents released by tobacco companies provide consistent, unambiguous evidence that packaging is 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.

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<sup>190</sup><http://legacy.library.ucsf.edu/tid/yyq26e00>

# METHODOLOGICAL QUALITY OF THE EVIDENCE

## Research designs

The plain packaging literature includes a heterogeneous mix of research designs, with a wide variety of outcomes from different research domains. Plain packaging has been assessed using consumer perceptions, physiological measures of visual attention and neuroimaging, behavioural tasks, as well as population-level cessation behaviour. A substantial proportion of these studies use experimental research designs, with high levels of internal validity, strengthening the level of causal inference that can be made. The diversity of the research designs and outcomes is a considerable strength of the evidence base.

Studies on packaging have been conducted with diverse samples, including youth and adults, as well as smokers and non-smokers. Ideally, a greater number of studies would have been conducted in Ireland. However, Western countries are very similar in terms of the trajectories of smoking initiation, patterns of use, and smoking cessation. Industry practices with respect to the use of packaging are also similar. Therefore, it is reasonable to generalize the research findings on packaging from other Western countries to Ireland. The consistency of findings across different countries supports this hypothesis. Research conducted in jurisdictions with similar regulations tobacco marketing and advertising— particularly the United Kingdom—is important in this regard. It should also be noted—however obvious—that evidence on the actual impact of plain packaging in Ireland cannot be collected prior to actual implementation of a regulation. Therefore, comparisons with other countries are informative for this critical source of evidence.

In regards to the total volume of evidence, the number of original empirical studies is sufficient to provide an informed opinion. Although it is always desirable to have a greater number of studies, the volume of research is reasonable given that plain packaging is a relatively new regulatory proposal.

Until recently, the lack of post-implementation data was a limitation of the evidence base; however, the introduction of plain packaging in Australia has provided the opportunity to assess the impact of plain packaging regulations, with three published studies to date.

## Strength of findings

The strength or magnitude of an association is another potential indicator of causation: the larger the effect, the easier it becomes to detect an association. Based on the current literature, there is a very strong association between plain packaging and the efficacy of health warnings, reductions in consumer appeal, and consumer demand. The strength of association with respect to plain packaging and perceptions of risk is strong.

## Consistency and coherence

Consistent findings across different studies and the level of coherence across different research methods are important criteria when assessing causality.<sup>191</sup> Collectively, the evidence base indicates a high level of consistency across most outcomes examined in the literature. Coherence between different research domains, such as clinical findings and “naturalistic” studies, increases the likelihood that an association will be causal in nature. The coherence of findings across different research domains that have examined the impact of packaging is high and represents a considerable strength of the evidence base. Given the diversity of research designs, the level of coherence throughout the research spectrum is impressive. There is also a high level of consistency between “independent” research and corporate documents from tobacco companies, detailing internal research and marketing practices.

## Plausibility

Plausibility is another important criterion when assessing causality.<sup>192</sup> It is plausible to assume that promotional marketing that is designed to minimize perceptions of risk and increase consumer demand will have an impact on smoking behaviour. It is also highly plausible that tobacco marketing which succeeds in promoting smoking among young adults would also be effective in promoting smoking among youth, who are generally more susceptible to tobacco marketing and branding.<sup>193</sup> Plausibility of this effect is supported by a large evidence base demonstrating a causal association between tobacco marketing and youth smoking, described elsewhere in this report.

The highly addictive nature of cigarettes also increases the plausibility that packaging can promote smoking initiation. Given the pharmacological properties of nicotine and the rapidity with which tobacco dependence can develop, to be effective, packaging and other forms of tobacco marketing only need to increase the likelihood that youth will try or accept an offer of a cigarette.

Brand image is built slowly over time and collectively by the accumulation of exposures and associations communicated in tobacco marketing.<sup>194</sup>

Finally, the plausibility of an association between packaging and behaviour is supported by corporate documents on research and marketing strategy released by the tobacco companies through court disclosure. The evidence contained in these documents on the importance of packaging is also consistent with literature from marketing and social psychology, which indicates that consumer behaviour is often strongly influenced by subtle environmental cues that lie outside our conscious decision-making process.<sup>195</sup> Social judgments and attitudes towards a consumer product can be established unconsciously through exposure to brands.<sup>196</sup>

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<sup>191</sup>Hill, A.B. (1965). "The environment and disease: association or causation?". *Proceedings of the Royal Society of Medicine* 58: 295–300.

<sup>192</sup>Hill, A.B. (1965). "The environment and disease: association or causation?". *Proceedings of the Royal Society of Medicine* 58: 295–300.

<sup>193</sup>(1) Cummings KM, Morley C, Horan J, *et al.* Marketing to America's youth: evidence from corporate documents. *Tobacco Control* 2002;11(suppl 1):i5–17.  
(2) DiFranza JR, Eddy JJ, Brown LF, *et al.* Tobacco acquisition and cigarette brand selection among the youth. *Tobacco Control* 1994;3:334–8.

<sup>194</sup>National Cancer Institute. The Role of the Media in Promoting and Reducing Tobacco Use. Tobacco Control Monograph No. 19. Bethesda (MD): U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2008. NIH Publication No. 07-6242.

<sup>195</sup>Dijksterhuis A, Smith PK, van Baaren RB, Wigboldus DHJ. The Unconscious Consumer: Effects of Environment on Consumer Behavior. *Journal of Consumer Psychology* 2005; 15: 193-202.

<sup>196</sup>Bargh J. Losing consciousness: automatic influences on consumer judgement, behavior, and motivation. *Journal of Consumer Research* 2002; 29: 280-285.

# INDUSTRY ARGUMENTS

The tobacco industry has vehemently opposed plain packaging regulations.<sup>197</sup> The current section summarizes the main industry positions and arguments contained in submissions to consultations, legal proceedings, and other publicly available documents.<sup>198</sup>

## Feasibility

Prior to the implementation of plain packaging regulations in Australia, the industry argued that implementing plain packaging would not be feasible and would create consumer and retailer “confusion”.<sup>199</sup> In particular, the industry argued that plain packaging would create difficulty and delays in identifying cigarette brands, and purchase transaction times would increase. Research was conducted to examine the impact on transaction time and found a decrease, rather than an increase in transaction time in both experimental settings and in actual retail settings before and after the implementation of plain packaging in Australia.<sup>200</sup> A third study conducted before and after implementation found a modest delay in pack retrieval time immediately after implementation, but a return to baseline levels by the second week of implementation, suggesting no lasting effect.<sup>201</sup>

## Lack of credible evidence

Tobacco companies have stated that there is no credible evidence to support plain packaging regulations.<sup>202</sup> For example, Imperial Tobacco’s submission to the Chantler review stated:

*Imperial Tobacco does not believe there is any credible or reliable evidence that standardised tobacco packaging will achieve the Government's stated objectives of reducing smoking prevalence among young people or assisting smokers who have, or are trying to, quit. (p.9)*<sup>203</sup>

<sup>197</sup> For example: (1) British American Tobacco (BAT). Plain packaging of tobacco products.

[http://www.bat.com/group/sites/uk\\_\\_3mfnf.nsf/vwPagesWebLive/DO7J7DCZ](http://www.bat.com/group/sites/uk__3mfnf.nsf/vwPagesWebLive/DO7J7DCZ) (2) Japan Tobacco International (JTI). Plain packaging. <http://www.jti.com/how-we-do-business/regulating-tobacco-products/plain-packaging/> (3) Philip Morris International (PMI). Generic packaging. [http://www.pmi.com/eng/tobacco\\_regulation/regulating\\_tobacco/Pages/generic\\_packaging.aspx](http://www.pmi.com/eng/tobacco_regulation/regulating_tobacco/Pages/generic_packaging.aspx)

<sup>198</sup> See also: Hatchard JL, Fooks GJ, Evans-Reeves KA, Uluçanlar S, Gilmore AB. A critical evaluation of the volume, relevance and quality of evidence submitted by the tobacco industry to oppose standardised packaging of tobacco products. *BMJ Open*. 2014 Feb 12;4(2):e003757

<sup>199</sup> 1) See description in: Carter OB, Mills BW, Phan T, Bremner JR. Measuring the effect of cigarette plain packaging on transaction times and selection errors in a simulation experiment. *Tobacco Control*. 2012; 21(6):572-7. (2) JTI Ireland Limited. (2014, January 15). Response to the Oireachtas Joint Committee on Health and Children Request for Written Submissions on the Outline Heads of the Public Health (Standardised Packaging of Tobacco) Bill 2013. Available online:

[http://www.jti.com/files/8313/9204/2531/JTI\\_Submission\\_to\\_the\\_Oireachtas\\_Joint\\_Committee\\_on\\_Health\\_and\\_Children.pdf](http://www.jti.com/files/8313/9204/2531/JTI_Submission_to_the_Oireachtas_Joint_Committee_on_Health_and_Children.pdf)

<sup>200</sup> 1) Carter OB, Mills BW, Phan T, Bremner JR. Measuring the effect of cigarette plain packaging on transaction times and selection errors in a simulation experiment. *Tobacco Control*. 2012; 21(6):572-7. 2) Carter O, Welch M, Mills B, Phan T, Chang P. Plain packaging for cigarettes improves retail transaction times. *BMJ*. 2013; 346:f1063.

<sup>201</sup> Wakefield M, Bayly M, Scollo M. Product retrieval time in small tobacco retail outlets before and after the Australian plain packaging policy: real-world study. *Tobacco Control*. 2014; 23(1):70-6.

<sup>202</sup> 1) British American Tobacco. British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. [http://www.bat.com/group/sites/uk\\_\\_3mfnf.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk__3mfnf.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement) (2) Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf) (3) Philip Morris International (PMI). Generic packaging. [http://www.pmi.com/eng/tobacco\\_regulation/regulating\\_tobacco/Pages/generic\\_packaging.aspx](http://www.pmi.com/eng/tobacco_regulation/regulating_tobacco/Pages/generic_packaging.aspx)

<sup>203</sup> Imperial Tobacco. The evidence is plain: The ineffectiveness of standardised packaging for public health. A response to the Chantler Review on standardised packaging of tobacco products. [http://www.imperial-tobacco.co.uk/files/The\\_Evidence\\_is\\_Plain.pdf](http://www.imperial-tobacco.co.uk/files/The_Evidence_is_Plain.pdf)

Tobacco companies cite several reasons for dismissing existing evidence as unreliable or not credible, primarily because of “serious methodological flaws” and “public health bias”. The methodological quality of the existing literature is reviewed and summarized elsewhere in this report. No study is without limitations, and individual studies within any body of literature will vary in their methodological strengths. However, many of the limitations identified in tobacco company submissions are minor and inherent to research in this domain. Other limitations are either irrelevant, incorrect, or based on a flawed interpretation of the study designs. Indeed, tobacco company submissions to the Chantler review present scientific evidence in a highly dubious way. For example, the Imperial Tobacco submission states that the “Australian experience has proven that standardised packaging has had no effect” (p.15) with respect to smoking prevalence.<sup>204</sup> However, the same report also acknowledges that the data they refer to has yet to be collected and released:

*The latest national statistics from Australia covering smoking prevalence only cover the period up to the end of 2012 and there has been no data or anecdotal evidence on youth smoking rates in Australia after 2011.”* (p. 4)<sup>205</sup>

At best, this statement is out-of-date given more recent evidence published in the British Medical Journal on changes in the use of quitlines following the implementation of plain packaging. More accurately, this type of statement represents a highly irresponsible and biased characterization of “evidence”, consistent with the general treatment of scientific evidence contained in these submissions.

Overall, it is striking that none of the tobacco companies accept any one of the more than 70 studies on plain packaging to be “credible” or “reliable”. And yet, dozens of the papers rejected by tobacco companies have been published in peer-reviewed scientific journals. The suggestion that not one of these studies provides reliable evidence is to suggest that reviewers and editorial boards at all of these publications—including several of the most prestigious medical and public health journals in the world—have been negligent in their duties. This is not a tenable position in my opinion. Overall, the tobacco companies’ criteria for “reliable” evidence are inconsistent with the standards of leading scientific journals and depict a systematic attempt to discredit the literature in this area. It should also be noted that industry submissions fail to take into account evidence in their own corporate documents or the vast literature on the effects of tobacco marketing on smoking initiation, for example.

## **Failure of individual studies to establish causality**

Plain packaging studies have been criticized based on the inability of any one study to establish causality. This line of argument is consistent with tobacco companies’ critiques of scientific evidence on the causal role of smoking in cancer.<sup>206</sup>

The literature includes a significant number of experimental trials, as described above, which provide a high degree of “internal validity” and allow for stronger causal inferences. However, causality is rarely, if ever,

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<sup>204</sup>Imperial Tobacco. The evidence is plain: The ineffectiveness of standardised packaging for public health. A response to the Chantler Review on standardised packaging of tobacco products. [http://www.imperial-tobacco.co.uk/files/The\\_Evidence\\_is\\_Plain.pdf](http://www.imperial-tobacco.co.uk/files/The_Evidence_is_Plain.pdf)

<sup>205</sup>Imperial Tobacco. The evidence is plain: The ineffectiveness of standardised packaging for public health. A response to the Chantler Review on standardised packaging of tobacco products. [http://www.imperial-tobacco.co.uk/files/The\\_Evidence\\_is\\_Plain.pdf](http://www.imperial-tobacco.co.uk/files/The_Evidence_is_Plain.pdf)

<sup>206</sup>Cummings KM1, Brown A, O'Connor R. The cigarette controversy. *Cancer Epidemiol Biomarkers Prev* 2007 Jun; 16(6): 1070-6.

established on the basis of a single study; rather, it should be evaluated based upon a body of research.<sup>207</sup> There are few, if any disciplines, in which a single study is capable of conclusively demonstrating causal association. This is particularly true in the fields of medicine and public health when trying to characterize causal mechanisms with multiple determinants, such as tobacco use. Dr. Bradford Hill, who wrote one of the seminal papers on causal criteria in the field of epidemiology (indeed, these criteria are widely known as the “Bradford Hill criteria”) wrote about the risks of setting unattainably high standards for assessing causality:

*“In asking for very strong evidence I would, however, repeat emphatically that this does not imply crossing every ‘t’, and swords with every critic, before we act. All scientific work is incomplete – whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time.”* (p. 300)<sup>208</sup>

## Consumer perceptions and attitudes are not reliable outcomes

Industry reports have criticized many of the existing studies on the basis that consumer perceptions are not valid, reliable outcomes. For example, BAT has stated: “Many of these studies look at aspects like intentions, attitudes and impressions. They measure perceptions which are not predictive of actual behaviour” (p.6)<sup>209</sup>

Consumer perceptions in the form of attitudes and beliefs have a central role in models of health behaviour, and have been shown to predict future smoking behaviour, both with respect to smoking cessation among established smokers and smoking uptake among youth and young adults.<sup>210</sup> Perhaps more relevant, there are thousands of corporate documents from the tobacco industry that highlight the importance of consumer perceptions in their own work. Indeed, testing consumer perceptions of packaging is a standard step in the development of any new product line or changes to a product, or the launch of a new marketing strategy. A vast number of tobacco company studies use the same or very similar measures to those used in the “independent” peer-reviewed literature and which are heavily criticized by the industry experts. Industry documents highlight the importance of consumer perceptions in three key areas directly relevant to the evidence base on plain packaging: 1) general measures of consumer demand, including “intentions” to purchase or try products<sup>211</sup>; 2) measures of brand appeal and smoker image<sup>212</sup>; and 3) consumer perceptions of taste and harshness which are

<sup>207</sup>Austin Bradford Hill. “The Environment and Disease: Association or Causation?” Proceedings of the Royal Society of Medicine, 58 (1965), 295-300.

<sup>208</sup>Austin Bradford Hill. “The Environment and Disease: Association or Causation?” Proceedings of the Royal Society of Medicine, 58 (1965), 295-300

<sup>209</sup> British American Tobacco. British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. [http://www.bat.com/group/sites/uk\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk_3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement)

<sup>210</sup>1) U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA; 2012. (2) IARC Handbooks of Cancer Prevention, Tobacco Control, Volume 12: Methods for Evaluating Tobacco Control Policies. Lyon, France; 2008. Accessible at: <http://www.iarc.fr/en/publications/pdfs-online/prev/handbook12/index.php>

<sup>211</sup>For example: <http://legacy.library.ucsf.edu/tid/mtf98h00/pdf?search=%22consumer%20perceptions%20brand%20imagery%22>;

<http://legacy.library.ucsf.edu/tid/jzq39e00/pdf?search=%22consumer%20perceptions%20pack%20design%22>;

[http://tobaccodocuments.org/product\\_design/11832060.html](http://tobaccodocuments.org/product_design/11832060.html); <http://legacy.library.ucsf.edu/tid/ijb34a99/pdf>;

<http://legacy.library.ucsf.edu/tid/ajc93e00>; <http://legacy.library.ucsf.edu/tid/bgy75e00>; <http://legacy.library.ucsf.edu/tid/vbq59h00>;

<http://legacy.library.ucsf.edu/tid/uqz69h00>; <http://legacy.library.ucsf.edu/tid/kmg61b00>; <http://legacy.library.ucsf.edu/tid/mhf59h00>;

<http://legacy.library.ucsf.edu/tid/yul03e00>; <http://legacy.library.ucsf.edu/tid/ksx13f00>; <http://legacy.library.ucsf.edu/tid/ang59d00>;

<http://legacy.library.ucsf.edu/tid/vbj92e00/pdf>; <http://legacy.library.ucsf.edu/tid/cbe76a00>; <http://legacy.library.ucsf.edu/tid/rkf25f00>;

<http://legacy.library.ucsf.edu/tid/cpz94e00>; <http://legacy.library.ucsf.edu/tid/xax16e00>; <http://legacy.library.ucsf.edu/tid/gsu95c00>;

<http://legacy.library.ucsf.edu/tid/vjw98h00>; <http://legacy.library.ucsf.edu/tid/kdv49h00>; <http://legacy.library.ucsf.edu/tid/ssd87h00>

used by many consumers as cues for reduced harm.<sup>213</sup> In some cases the industry research protocols involve actual trial of cigarettes; however, in many others, participants are shown images or packages of the product being tested, similar to protocols used in “independent” research. For example, measures of intention are routinely used in marketing/economics research, including by tobacco companies’ own Expert Witnesses who have criticized the use of these measures in plain packaging research.<sup>214</sup>

As is the case with “independent” researchers, tobacco companies use consumer perception measures because, in most cases, it is not feasible to measure changes in smoking initiation, cessation, or even changes in consumption levels when testing the impact of marketing. Indeed, I am not aware of any industry studies of marketing that have examined actual changes in smoking behaviour with respect to smoking initiation or smoking cessation. For example, there is no ethical or feasible way to test the appeal of packaging or products among youth other than to measure perceptions of appeal and interest in trying the product. Therefore, one uses more “proximal” indicators that reflect an individual’s perceptions and the value they place on a product, on the basis that these measures either increase or decrease the likelihood of use.

Overall, industry documents depict a routine reliance on the types of measures used in “independent” packaging studies—those that are criticized by industry experts as “unreliable—to guide product strategy, development, design, and marketing. More generally, public statements that perceptions of risk are “unreliable” are inconsistent with the industry’s marketing strategies over the past 50 years, which have sought to influence and shape consumer perceptions in an effort to recruit and retain smokers.<sup>215</sup>

## Lack of behavioural outcomes

Perhaps the most common industry criticism of the plain packaging literature is a lack of reliable studies with behavioural outcomes. For example, BAT’s submission to the Chantler review stated: “The fundamental shortcoming of most of these studies is that they fail to observe plain packs in a natural setting. They lack real world evidence and do not evaluate the impact of plain packaging policy in practice.” (p.5)<sup>216</sup>

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<sup>213</sup><http://legacy.library.ucsf.edu/tid/rbq88h00>; Canter, Achenbaum, Associates Inc., "An Assessment of Merit’s Current Market Situation," 2040333209 – 3248. 4 Pauline D’Albis, "Merit In-Switching Study – Topline of Findings," 8/30/94, 2048945388 – 9212; R.S. Fountaine, "Packaging of Marlboro 100’s," 12/8/70, 2040420329 – 0345; Leo Burnett, "Merit Brand Image Study," 9/16/87, 2072735414 – 5500; Jones, Houck, and Martin, "Low Delivery Cigarette and Increased Nicotine/Tar Ratios, a Replication," 10/75, 1003288950 – 8967; "Project Magic," 6/85, 2501008130 – 8154; Ryan, Jones, Martin, and Dunn, "Behavioral Research Annual Report," 7/18/75, 1003288378 – 8405; Abby Ellison Qualitative Research, Inc., "A Qualitative Analysis of the Light/Low Tar Category with Particular Emphasis on Consumer Reactions to Advertising Language and Prototype Concepts for Salem Lights," 11/77, 501226743 – 6772; Leber Katz Partners Advertising, "A Study Investigating Possibilities for Alternative Creative Strategies for Vantage Cigarettes," 500483356 – 3383; M.J. Weaver, "Cigarette Smoking, Health, and Dissonance (Project Libra): IV. Further Analysis, Conclusions and Recommendations," 8/25/81, 650018899 – 8950; "A Brief Look at the Dynamics of the Cigarette Industry 1977," 670306374 – 6389; Short P, "Smoking and health item 7: The effect of marketing," 1977, 100427792 -7800; Daniel & Charles Assoc Ltd. (for American Tobacco Company), "Smoking and health item 7: The effect of marketing," 1981, 990901344/1367; Nowland Organization, "SHF cigarette marketplace opportunities search and situation analysis," 1976, 84053709-3744.

<sup>214</sup>For example: (1) Auger P, Burke P, Devinney TM, Louviere J. What Will Consumers Pay for Social Product Features? Journal of Business Ethics 2003; 42, 3. (2) Devinney TM. Analysis of Consumer Research Evidence on the Impact of Plain Packaging for Tobacco Products. Commissioned by Japan Tobacco Limited. January 2014. [http://www.jti.com/files/7413/8971/2578/2014\\_01\\_03\\_-\\_Devinney\\_-\\_Analysis\\_of\\_Consumer\\_Research\\_Evidence\\_on\\_Impact\\_of\\_plain\\_packaging.pdf](http://www.jti.com/files/7413/8971/2578/2014_01_03_-_Devinney_-_Analysis_of_Consumer_Research_Evidence_on_Impact_of_plain_packaging.pdf)

<sup>215</sup>1) National Cancer Institute. Risks Associated with Smoking Cigarettes with Low Machine-Measured Yields of Tar and Nicotine. Smoking and Tobacco Control Monograph 13 Bethesda: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2001. (2) United States v. Philip Morris, 449 F. Supp. 2d 1 (D.D.C. 2006).

<sup>216</sup>British American Tobacco. British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. [http://www.bat.com/group/sites/uk\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk_3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement)

In some cases, industry submissions criticizing the independent literature have failed to identify behavioural outcomes in studies, while in other cases they have sought to discredit the type of behavioural outcomes that have been used. In fact, there is a large and growing number of studies that have assessed behavioural outcomes associated with plain packaging. To date, plain packaging has been assessed using eye-tracking technology<sup>217,218,219</sup>, fMRI<sup>220</sup>, an experimental auction study<sup>221</sup>, four pack offer studies<sup>222</sup> and multiple randomized trials in naturalistic settings.<sup>223</sup> Perhaps most important, two studies provide objective assessments of behaviours after the implementation of plain packaging in Australia.<sup>224</sup>

Three behavioural outcomes rejected by tobacco companies warrant particular attention. First, the tobacco companies reject the experimental auction methodology used by Thrasher et al.<sup>225</sup> This methodology was pioneered by Vernon Smith, who won the Nobel Prize in Economics in 2002 for refining experimental economics methods.<sup>226</sup> A key benefit of experimental auctions comes from placing consumers in a real auction, with winners and losers, and where the winners *pay* for products. This prevents hypothetical bias of “willingness to pay” studies by providing financial consequences for self-reported valuation of a product. Overall, auction studies represent a behavioural outcome that has been firmly established as a valid indicator of consumer demand in a wide range of consumer domains.

Second, the industry has failed to acknowledge the relevance of “pack offer” tasks as a valid behavioural outcome. In these studies, youth and young adults are offered a pack of cigarettes, and given the choice of a number of packs. In some studies, each participant has a choice between plain and branded packs. In another study, participants were offered either plain or branded packs, and the outcome was whether they accepted the offer of any cigarettes. Although studies of consumer demand with established smokers typically examine price or willingness-to-pay as an outcome, the pack offer task is more closely relevant to the process of smoking initiation among youth: initiation rarely starts with an actual purchase and more commonly begins with experimentation from a cigarette that is offered. Therefore, the pack offer task is directly relevant to the experience of smoking initiation.

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<sup>217</sup> Munafò MR, Roberts N, Bauld L, Leonards U. Plain packaging increases visual attention to health warnings on cigarette packs in non-smokers and weekly smokers but not daily smokers. *Addiction* 2011; 106:1505-10.

<sup>218</sup> Maynard OM, Munafò MR, Leonards U. Visual attention to health warnings on plain tobacco packaging in adolescent smokers and non-smokers. *Addiction*. 2013; 108(2):413-9.

<sup>219</sup> Maynard OM, Attwood A, O'Brien L, Brooks S, Hedge C, Leonards U, Munafò MR. Avoidance of cigarette pack health warnings among regular cigarette smokers. *Drug and Alcohol Dependence* 2014; 136: 170-174.

<sup>220</sup> Maynard OM, Munafò MR. Effects of cigarette packaging on neural responses to health warnings. Economic and Social Research Council, Medical Research Council, Action on Smoking and Health.

<sup>221</sup> Thrasher J, Rousu M, Hammond D. Estimates of reduction in demand associated with different cigarette package warning label formats: an experimental auction study among adult smokers in the US. *Health Policy* 2011;102(1):41-8.

<sup>222</sup> Rootman I, Flay BR et al. A study on youth smoking: plain packaging, health warnings, event marketing and price reductions. Toronto: Centre for Health Promotion, University of Toronto, 1995.

<sup>223</sup> 1) Moodie C, Mackintosh AM, Hastings G, Ford A. Young adult smokers' perceptions of plain packaging: a pilot naturalistic study. *Tob Control* 2011; 20(5):367-73. (2) Maynards OM, Leonards U, Attwood S, Bauld L, Hogarth L, Munafò MR. Plain packaging of cigarettes and smoking behaviour: A randomised controlled trial. *ISRCTN* 52982308.

<sup>224</sup> 1) Zacher M, Bayly M, Brennan E, Dono J, Miller C, Durkin S, Scollo M, Wakefield. Personal tobacco pack display before and after the introduction of plain packaging with larger pictorial health warnings in Australia: an observational study of outdoor café strips. *Addiction* 2014. (2) Young J, Stacey I, Dobbins TA, Dunlop S, Dessaix AL, Currow DC. Association between tobacco plain packaging and Quitline calls: a population-based, interrupted time-series analysis. *Med J Aust* 2014;200(1):29-32.

<sup>225</sup> Thrasher J, Rousu M, Hammond D. Estimates of reduction in demand associated with different cigarette package warning label formats: an experimental auction study among adult smokers in the US. 2009 [Manuscript in preparation]. *Health Policy* 2011;102(1):41-8.

<sup>226</sup> 1) Smith VL. An Experimental Study of Competitive Market Behavior. *Journal of Political Economy* 1962; 70:11-137. 2) Smith VL. Experimental Auction Markets and the Walrasian Hypothesis. *Journal of Political Economy* 1965; 73:387-93.



Third, the industry submissions do not include recent evidence indicating that calls to state-run Quitlines in Australia increased after the implementation of plain packaging. These data add a critically important behavioural outcome that is both objective and entirely “naturalistic” with respect to post-implementation research. The findings are particularly relevant given that randomized controlled trials have established that calls to Quitlines increase the odds of smoking cessation.<sup>227</sup> Therefore, if plain packaging has increased calls to a Quitline, it can be inferred that plain packaging has increased smoking cessation.

Overall, industry submissions have failed to take into account the use of behavioural outcomes in the scientific literature on plain packaging, and efforts to either deny or discredit these outcomes are not credible.

## Tobacco marketing does not influence youth smoking

Companies have stated that branded packaging only serves to differentiate products *after* the consumer has already made the decision to smoke. In other words, packaging only serves to redistribute customers through brand switching and has no impact on attracting new customers.<sup>228</sup>

The argument that tobacco advertising and marketing does not increase the overall demand for tobacco products has been used by tobacco companies in the past to oppose restrictions on various forms of tobacco advertising and marketing.<sup>229</sup> Companies have argued that social influences are the cause of smoking initiation, rather than industry activities to promote smoking. For example, a report from Imperial Tobacco suggests that family structure and peer pressure are among the key determinants of youth smoking.<sup>230</sup> Similarly, the BAT submission notes that “the primary drivers of initiation among youth were friends and family smoking.” (p.4)<sup>231</sup>

First, the BAT assertion that packaging does not affect youth smoking relies upon a Eurobarometer survey question which is the type of “stated view” that BAT and JTI dismiss as “unreliable” in the same reports when critiquing the evidence base on plain packaging.<sup>232</sup> It is inconsistent to dismiss this type of data when arguing *against* plain packaging only to rely on it to demonstrate that marketing has no impact.

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<sup>227</sup>Stead LF, Hartmann-Boyce J, Perera R, Lancaster T. Telephone counselling for smoking cessation. Cochrane Database Syst Rev 2013 Aug 12;8:CD002850.

<sup>228</sup>1) British American Tobacco. British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. [http://www.bat.com/group/sites/uk\\_\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk__3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement) (2) Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf)

<sup>229</sup>For example: (1) Statement of Facts and Grounds. Claimant: Imperial Tobacco Limited. In the High Court of Justice Queen's bench division administrative court (UK). (page 19). (2) Statement of Facts and Grounds. Claimant: Philip Morris Limited. In the High Court of Justice Queen's bench division administrative court (UK). (pp. 27, 34). (3) U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. January 2014.

<sup>230</sup>Imperial Tobacco. The evidence is plain: The ineffectiveness of standardised packaging for public health. A response to the Chantler Review on standardised packaging of tobacco products. [http://www.imperial-tobacco.co.uk/files/The\\_Evidence\\_is\\_Plain.pdf](http://www.imperial-tobacco.co.uk/files/The_Evidence_is_Plain.pdf)

<sup>231</sup>British American Tobacco (BAT). British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. Available online: [http://www.bat.com/group/sites/uk\\_\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk__3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement)

<sup>232</sup>For example: (1) see page 6: British American Tobacco (BAT). British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. Available online: [http://www.bat.com/group/sites/uk\\_\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk__3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement) (2) See page 9: Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf)

Second, the argument that tobacco marketing has no influence on youth smoking ignores the reach of tobacco marketing and packaging among youth. For example, one US study found that one third of 3-year-olds and more than 90% of 6-year-old children could correctly match a picture of Joe Camel with a picture of a cigarette, similar to levels of brand recognition for Mickey Mouse and Disney.<sup>233</sup>

Third, in invoking the social influence theory, the companies fail to note the influence of marketing in shaping social norms and attitudes towards smoking. As noted elsewhere in this review, tobacco industry business documents highlight the extent to which tobacco marketing and branding strategies are designed to shape social norms:

Fourth, these statements ignore the vast evidence base that demonstrates a causal association between tobacco marketing and youth smoking, as summarized in a 2008 National Cancer Institute Monograph:

*There is extensive scientific data showing (1) adolescents are regularly exposed to cigarette advertising, (2) they find many of these advertisements appealing, (3) advertisements tend to make smoking appealing, and (4) advertisements serve to increase adolescents' desire to smoke.*<sup>234</sup>

Finally, the argument that packaging influences adults, but not youth, is an untenable position. Tobacco companies have acknowledged that plain packaging will reduce consumer demand for cigarettes among established smokers and have sought compensation from the Australian government due to lost revenue. If pack branding is effective in creating positive associations and increasing appeal among adult smokers to the extent that it reduces demand, it is not credible to suggest that the same promotional tools do not create positive associations and increase appeal among youth during the critical period when smoking behaviour is established.

## Price

A report by Imperial Tobacco suggests that plain packaging will reduce differentiation between brands and thus make price more important (leading smokers to cheaper illicit product).<sup>235</sup> The evidence suggests that plain packaging is likely to reduce the proportion of consumers who select higher cost “premium” brand over low cost “discount” brands. However, it does not logically follow that the average price of tobacco products will decrease. If necessary, governments are able to ensure that no price reductions occur through taxation and price controls at their disposal. It is worth noting that a number of jurisdictions have seen shifts from “premium” to “discount” brands, similar to the shift predicted by tobacco companies in response to plain packaging— without seeing any reduction in the average price. The Canadian market is one example: over the past decade, the discount market has increased dramatically at the same time as the average price of legal cigarettes has steadily increased due to increasing taxes. Therefore, it is not the case, as the Claimant argues, that a shift away from “premium” brands will necessarily result in lower average prices.

<sup>233</sup> Fischer PM, Schwartz MP, Richards JW Jr, Goldstein AO, Rojas TH. Brand logo recognition by children aged 3 to 6 years: Mickey Mouse and Old Joe the Camel. JAMA 1991;266(22):3145–8.

<sup>234</sup> National Cancer Institute. The Role of the Media in Promoting and Reducing Tobacco Use. Tobacco Control Monograph No. 19. Bethesda (MD): U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2008. NIH Publication No. 07-6242.

<sup>235</sup> JTI Ireland Limited. (2014, January 15). Response to the Oireachtas Joint Committee on Health and Children Request for Written Submissions on the Outline Heads of the Public Health (Standardised Packaging of Tobacco) Bill 2013. Available online: [http://www.jti.com/files/8313/9204/2531/JTI\\_Submission\\_to\\_the\\_Oireachtas\\_Joint\\_Committee\\_on\\_Health\\_and\\_Children.pdf](http://www.jti.com/files/8313/9204/2531/JTI_Submission_to_the_Oireachtas_Joint_Committee_on_Health_and_Children.pdf)

## Plain packaging will increase smoking prevalence

Tobacco companies have suggested that plain packaging will lead to increases in smoking due to lower price or increased consumption of less expensive brands after “down trading”. For example:

*If, as expert analysis demonstrates, plain packaging leads to average prices of tobacco products (and cigarettes in particular) falling, this might further negatively impact on public health. (p.3)*<sup>236</sup>

*Of particular relevance to the Chantler Review, any price drops caused by plain packaging are at odds with the DH’s aim of reducing smoking initiation by minors, as it has stated that lower prices generally mean increased availability and greater access for minors to tobacco products. (p.14)*<sup>237</sup>

As described above, governments to control the price of cigarettes through taxation policy. If companies were to reduce their price to compensate from declining demand for their products—in response to plain packaging or any other regulatory measures or trend—governments can ensure that the absolute price does not decrease. Therefore, the threat of increased youth smoking from reduced prices would be non-existent.

It is also highly implausible that removing branding from packaging would increase consumption rates among adult smokers. Consumption levels among established smokers are primarily driven by the pharmacological properties of nicotine and the phenomenon of smoker “compensation” to maintain a set level of nicotine intake. Smokers can compensate for differences between products either through changes in the number of cigarettes they smoke, or by smoking each cigarette more intensely. Smoker compensation (also referred to as “titration”) is very well established in the literature and there are many industry documents that establish its existence and discuss its importance.<sup>238</sup> Unless a smoker is explicitly seeking to reduce the number of cigarettes they smoke, such as “cutting back” for the purpose of quitting, the number of cigarettes per day is highly constant for the vast majority of smokers. This has remained true even during price increases over the past decade. Overall, it is highly unlikely that a smoker would increase their consumption due to a decrease in price. Even if this was the case, it is highly likely that the smoker would adjust their smoking behaviour, such that their overall exposure level would be unchanged.

## Illicit trade

Several industry reports posit that plain packaging will increase illicit trade<sup>239</sup> by making counterfeiting easier, and that illicit products may be more dangerous due to lack of regulation.<sup>239</sup> Reproducing logos and other branded elements is already incredibly straightforward to do, such that reproducing different plain packages is not easier or more difficult. “Plain” packs will actually retain a variety of colours and graphic imagery due to the mandated health warnings on packs. Using modern technology, virtually all brands can be counterfeited with very little money, time, or expertise. Indeed, there are reports of counterfeiters producing counterfeit products

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<sup>236</sup> Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf)

<sup>237</sup> Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf)

<sup>238</sup> For example: Hammond D, Collishaw N, Callard C. Tobacco industry research on smoking behaviour and product design. The Lancet 2006; 367: 781–87.

<sup>239</sup> Imperial Tobacco. (2014, January 10). The Evidence is Plain: The ineffectiveness of standardised packaging for public health - A response to the Chantler Review on standardised packaging of tobacco products.

for brands with new packaging/designs within days of their release. To suggest that plain packaging will increase the prevalence of counterfeit brands because it is easier to reproduce “plain” packaging is a misleading argument that has previously been used to oppose the implementation of “pictorial” health warnings in different jurisdictions. The solution to making packages harder to counterfeit lies in sophisticated tax stamps and is aided by the use of colour pictorial health warnings.

## Smokers are already fully informed about the risks of smoking

Tobacco companies have suggested that smokers are already fully informed about the health risks of smoking; therefore, there is no need for plain packaging and more comprehensive health warnings.<sup>240</sup> For example, BAT’s submission to the Chantler review posits “These studies do not establish any information deficit or any misperceptions about the health risks associated with cigarettes.” (p.6)<sup>241</sup> The evidence reviewed elsewhere in this report documents that many consumers still false believe that some products are less harmful than others. In addition, while it is true that most smokers have a general awareness that smoking is harmful, having a general awareness of a risk does not equate with being fully informed about the health effects of smoking. The claim that smokers are fully informed relies on the “weakest”, most vague measures of risk perception: a general awareness that smoking is harmful.<sup>242</sup> Agreeing that smoking is harmful provides no indication of knowledge with respect to the types of health effects, their likelihood, their severity, the extent to which individuals personalize this risk, or the extent to which these health effects decrease following long term abstinence. In short, the level of agreement to statements such as “smoking is harmful to health” is a wholly inadequate measure of whether smokers and non-smokers are informed about the health risks of smoking.

Knowledge of specific health effects caused by smoking remains low. The 2004 Surgeon General’s report on the Health Consequences of Smoking identified 29 specific diseases that are caused by smoking, including 10 different types of cancer.<sup>243</sup> The 2014 Surgeon General’s report highlighted that scientific understanding of the health effects of smoking is still evolving:

*...cigarette smoking has been causally linked to diseases of nearly all organs of the body, to diminished health status, and to harm to the fetus. Even 50 years after the first Surgeon General’s report, research continues to newly identify diseases caused by smoking, including such common diseases as diabetes mellitus, rheumatoid arthritis, and colorectal cancer. (p.7)<sup>244</sup>*

General awareness of a few of these health effects, such as lung cancer, is relatively high: for example, approximately 90% of respondents agree that smoking causes lung cancer.<sup>245</sup> However, knowledge for other

<sup>240</sup>1) Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014 [http://www.jti.com/files/1313/8979/4396/JTI\\_-\\_Submission\\_to\\_Sir\\_Cyril\\_Chantler\\_Review.pdf](http://www.jti.com/files/1313/8979/4396/JTI_-_Submission_to_Sir_Cyril_Chantler_Review.pdf) (2) Japan Tobacco International (JTI). Submission to the Chantler Review into the public health impacts of standardised packaging for tobacco products. January 2014

<sup>241</sup>British American Tobacco (BAT). British American Tobacco UK Limited's response to Sir Cyril Chantler's review into standardised packaging of tobacco. Available online: [http://www.bat.com/group/sites/uk\\_\\_3mnfen.nsf/vwPagesWebLive/DO726J59/\\$FILE/medMD9G9FG5.pdf?openelement](http://www.bat.com/group/sites/uk__3mnfen.nsf/vwPagesWebLive/DO726J59/$FILE/medMD9G9FG5.pdf?openelement)

<sup>242</sup>See comments on Patti report at the end of this document.

<sup>243</sup>The health consequences of smoking: a report of the Surgeon General. [Atlanta, Ga.]: Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Washington, D.C., 2004.

<sup>244</sup>U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. January 2014.

<sup>245</sup>Hammond, D. US health warning study: International packaging study. Preliminary Results. January 2011. Submitted to Docket No. FDA-2010-N-0568.

primary health effects is lower. There is limited data on knowledge of health effects in Ireland; however, Australia, which has among the most comprehensive tobacco control and public education measures in the world, provides an illustrative example. Prior to the implementation of plain packaging, only 53% of Australia smokers agreed that smoking causes impotence, only 77% agreed that smoking can cause lung cancer in non-smokers, and only 51% agreed that smoking can cause heart attacks in non-smokers. It should be noted that this level of knowledge was assessed by asking whether smokers agreed that smoking causes a list of health effects (i.e., “Based on what you know or believe, does smoking cause...”). Agreement to a list of health effects is a very lenient measure of knowledge, given that many respondents may simply endorse the health effect due to social desirability bias in surveys. Unprompted recall of these health effects would be far lower. Therefore, even by this liberal measure of knowledge, smokers are not fully informed or “universally” aware of the health effects of smoking.

Smokers and non-smokers demonstrate poor unprompted recall of smoking-related health risks. Asking smokers to recall health effects in an unprompted manner is a stringent and accurate measure of awareness. For example, a US-based study concluded:

*The great majority of smokers and non-smokers realized that smoking can cause life-threatening illnesses, but, except for lung cancer, no specific smoking-linked illness could be named by more than half of our respondents. About half mentioned emphysema, about a quarter mentioned any kind of cancer other than lung, and only about a quarter mentioned any kind of cardiovascular risk. About 10% did not mention cancer at all. (p.354)<sup>246</sup>*

As the paper notes, “If individuals cannot identify the best-known, most severe health effects of smoking without prompting, they are certainly unable to apply that information in deciding whether to smoke.” (p.350) It should be noted that this study did not report any responses for the more than two dozen other diseases caused by smoking, presumably because the frequency of these responses were below the reportable level or completely absent.

Perceptions of risk are not simply a general awareness that smoking is harmful to health, but a function of both perceived likelihood and perceived severity. Expert reports commissioned by the tobacco companies typically focus on findings regarding perceived likelihood or probability of smoking-related disease. These findings should be interpreted with great caution given the general public’s difficulty with providing quantitative estimates of probability, which are often inflated. Studies that have assessed the perceived severity of smoking-related diseases have found that respondents underestimate the severity of primary diseases such as lung cancer and emphysema.<sup>247</sup>

The role of health warnings in communicating risk information goes beyond establishing basic knowledge. Concern about the health risks of smoking is also the most common motivation to quit cited by current and former smokers, as well as the best predictor of long-term abstinence among reasons for quitting.<sup>248</sup> For example, data collected as part of the 2007 ITC Ireland Survey indicates that 74% of all Irish smokers and 94% of

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<sup>246</sup>Weinstein N.D., et al., *Public Understanding of the Illnesses Caused by Cigarette Smoking*, Nicotine & Tobacco Research 349–55 (2004).

<sup>247</sup>Weinstein N.D., et al., *Public Understanding of the Illnesses Caused by Cigarette Smoking*, Nicotine & Tobacco Research 349–55 (2004).

<sup>248</sup>Surry SJ, Grothaus L, McBride C. Reasons for quitting: intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. *Addict Behav* 1997;22:727–39. (2) Hammond D, McDonald PW, Fong GT, et al. The impact of cigarette warning labels and smoke-free bylaws on smoking cessation: evidence from former smokers. *Can J Public Health* 2004;95:201–4. (3) Hyland A, Li Q, Bauer JE, et al. Predictors of cessation in a cohort of current and former smokers followed over 13 years. *Nicotine Tob Res* 2004;6(suppl 3):S363–69.

Irish smokers who intend to quit in the next 6 months cite “concern for personal health” as a motivation for quitting smoking—the most frequently cited motivation to quit, above price and all other reasons.<sup>249</sup>

In addition, among Irish smokers who recently reported smoking a new brand within the past year, more than 20% reported that they chose the brand, at least in part, because “it may not be as bad for health”. Among smokers who reported a recent quit attempt, more than 40% chose the brand because they thought it would “help them to quit”.<sup>250</sup> In short, the false belief that some brands are less harmful than others or make it easier to quit continues to guide consumer decisions among Irish smokers.

Health warnings promote smoking cessation not simply by imparting new information on health effects, but by providing this information at key points in time, including at the point-of-purchase and immediately preceding the act of smoking, when a smoker takes a cigarette from the package. For many smokers who attempt to quit, the health warnings may act in a synergistic manner with other life events, such as the symptoms of an illness or the prompting of a friend or family member to quit. For example, seeing a warning for lung cancer shortly after experiencing the early symptoms of pulmonary disease may prompt a quit attempt or help to sustain a quit attempt already in progress. This is consistent with recent data from the ITC Australia survey: among smokers who were considering quitting smoking, as well as smokers who recently made a quit attempt, approximately, 50% indicated that “information about the risks of products” led them to think about quitting, similar to levels that indicated that the health warnings on cigarette packs led them to think about quitting. If Australian smokers were already aware of the health effects of tobacco use, and communicating the health effects through health warnings had no additional impact, one would not expect half or more of quitters to cite health information and the health warnings as factors in their quit attempt. Therefore, the frequency of exposure helps to increase the effectiveness of package-based health warnings as a risk communication tool.

In my opinion, there is no credible evidence to suggest that Irish smokers have full and complete knowledge of the health effects of smoking, and the evidence clearly indicates that communicating health effects through health warnings remains an effective means of stimulating quitting activity among Australian smokers.

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<sup>249</sup>Hammond D. International Tobacco Control Policy Evaluation Project. ITC Ireland Survey Wave 4 Survey: Summary of findings. 2014.

<sup>250</sup>Hammond D. International Tobacco Control Policy Evaluation Project. ITC Ireland Survey Wave 4 Survey: Summary of findings. 2014.

# CONCLUSIONS

Tobacco advertising and marketing are among the most important factors in the rise of smoking in the 20<sup>th</sup> century. Industry marketing campaigns have sought to communicate three fundamental themes: 1) product satisfaction; 2) reassurance about the health concerns; and 3) positive associations between smoking and desirable outcomes, such as independence, social status, sexual attraction and thinness.<sup>251</sup> Tobacco industry documents and independent evidence indicates that packaging has played a fundamental role in executing each of these themes, and has grown in importance as other forms of advertising and marketing have been prohibited.

The scientific evidence on plain packaging includes more than 70 original empirical articles from a wide variety of research domains. Most of the research on plain packaging is experimental in nature and has been conducted in jurisdictions without plain packaging given that plain packaging regulations were only implemented in December 2013 in Australia. The evidence is highly consistent across different research domain and study designs, as well as between experimental and more recent “post-implementation” studies conducted in Australia.

## Perceptions of risk

Packaging has also played a fundamental role in providing false reassurance to consumers about the risks of smoking, and was a central component of the “light” / “low tar” marketing campaign. Recent data indicates that many smokers in Ireland and other Western countries continue to believe that some brands are less harmful than others and easier to quit, even after the removal of “light” and “mild” descriptors. Experimental evidence indicates that plain packaging is reduces false health beliefs among smokers and non-smokers.

## Health warnings

The evidence indicates that health warnings are more noticeable on plain packs, associated with greater recall of health messages, and may lead to greater cognitive processing, particularly among youth non-smokers. The evidence also indicates that the effect of package branding persists even in the context of large pictorial warnings, and that plain packaging and health warnings have complimentary, but independent effects on consumer perceptions.

## Consumer appeal

Packaging has a powerful influence in establishing brand imagery and promoting appeal among youth and young adults— the critical period when the vast majority of smoking initiation occurs. Corporate documents from tobacco companies indicate that packages have been designed to appeal to “starters” as part of a deliberate marketing strategy to recruit new smokers. The evidence indicates that “plain” packaging is unequivocally less appealing and less socially desirable to youth and young adults. Plain packaging is also associated with less positive brand imagery, including smoker traits, such as cool, stylish, thin, as well as less

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<sup>251</sup> National Cancer Institute. The Role of the Media in Promoting and Reducing Tobacco Use. Tobacco Control Monograph No. 19. Bethesda (MD): U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2008. NIH Publication No. 07-6242.

desirable product associations. The findings suggest that plain packaging are less socially desirable and limit the ability of packaging to target sub-groups of youth and young adults.

## **Demand and smoking behavior**

Evidence from a range of methodologies indicates that plain packaging reduces consumer demand. Several naturalistic studies suggest that plain packaging may promote smoking cessation among established smokers. Findings from clinical studies also indicate that plain packaging can reduce urges to smoke that are normally cued by branded packages. Most compelling, Australian evidence suggests that plain packaging has increased calls to state Quitlines, and may have increased rates of smoking cessation.

## **Summary**

Overall, the existing evidence on plain packaging supports four primary conclusions:

- 1) Plain packaging will reduce smoking initiation among youth and young adults.
- 2) Plain packaging will promote smoking cessation among established smokers.
- 3) Plain packaging will support former smokers to remain abstinent.
- 4) Plain packaging will help to denormalize tobacco use.