

Section 4
Non-Price Determinants of Demand

Chapter 7
**The Impact of Tobacco Industry Marketing
Communications on Tobacco Use**

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The tobacco industry employs a wide array of communications tools to market its products to the public, from mass media advertising, sponsorship, sales promotions, and packaging, to Internet and new media strategies. Researchers have examined the influence of industry communications strategies on tobacco use, particularly among young people, as well as policy interventions to restrict tobacco industry marketing. Topics covered in this chapter include:

- Econometric studies of the impact of tobacco marketing on tobacco use
- Econometric studies of tobacco marketing bans and related policies
- Population-level cross-sectional and longitudinal studies on consumer response to tobacco marketing, particularly among young potential smokers and current smokers
- The impact of other tobacco marketing efforts such as sponsorship, loyalty incentives, and tobacco advertising and placement in entertainment media.

An extensive body of research shows that tobacco marketing and tobacco use are causally linked, and that comprehensive marketing bans are effective in reducing tobacco use. Findings from this research support the implementation of the World Health Organization Framework Convention on Tobacco Control, which, under Article 13, legally binds Parties to the treaty to implement a comprehensive ban on tobacco advertising, promotion, and sponsorship, or restrictions for Parties that are not in a position to implement a comprehensive ban due to their constitution or constitutional principles.

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Introduction

The term “tobacco marketing communications” encompasses the diversity of tobacco industry strategies to communicate with both current and potential customers, including conventional mass media advertising, sponsorship, sales promotions, packaging, and a range of other activities. Since the 1920s, critics have argued that the tobacco industry has tried to “transform the school girls, the growing boys, and the youth of the country into confirmed cigarette addicts, regardless of established medical and health findings.”^{1,p.2991} Concerns about tobacco industry marketing have sparked research in many fields, including economics, public health, psychology, sociology, and marketing. Findings from this research, in turn, have led governments to implement restrictions on tobacco marketing communications.

As this chapter will describe, a wealth of research demonstrates a causal link between tobacco marketing and tobacco use,²⁻⁸ which has led a growing number of governments, including many low- and middle-income countries (LMICs), to ban tobacco marketing. Indeed, the World Health Organization (WHO) Framework Convention on Tobacco Control (WHO FCTC) explicitly recognizes that a “comprehensive ban on advertising, promotion and sponsorship would reduce the consumption of tobacco products,”^{9,p.11} Article 13 of the WHO FCTC (Tobacco advertising, promotion, and sponsorship) must be implemented within 5 years after the Convention enters into force for that Party. The guidelines for implementing Article 13 assist Parties to the treaty in introducing and enforcing comprehensive bans on tobacco advertising, promotion, and sponsorship (TAPS); for those Parties that are not able to undertake comprehensive bans because of their constitutions or constitutional principles, the guidelines assist them with applying restrictions that are as comprehensive as possible.^{9,10}

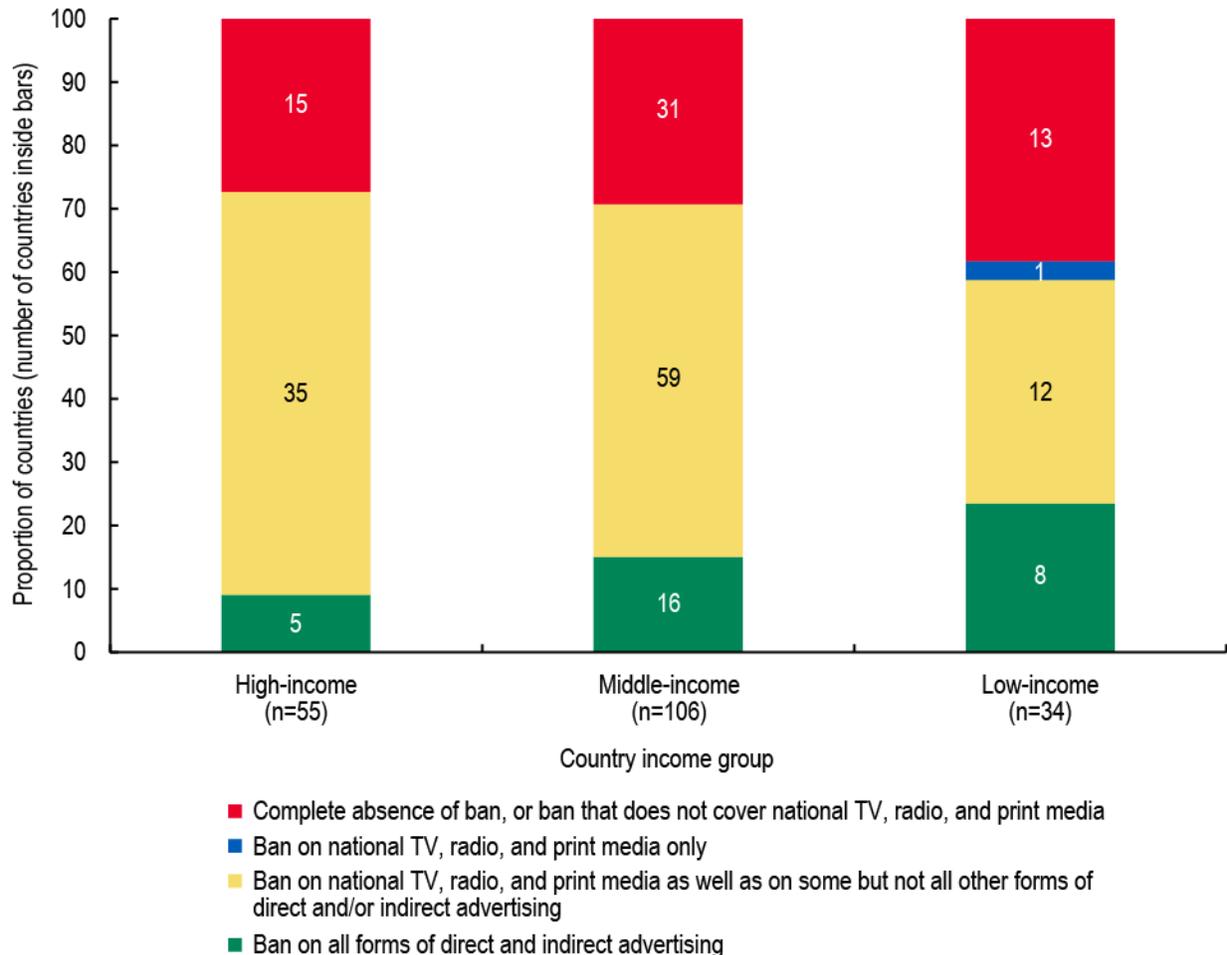
Comprehensive bans on TAPS are a cost-effective means of tobacco control. WHO has concluded that TAPS bans are one of the “best-buy” measures to reduce tobacco use—that is, these bans accrue the most benefit for the lowest cost. This conclusion was based on analyses of data from LMICs which demonstrated that average annual cost of all best-buy tobacco control interventions (which include TAPS bans) in LMICs was 0.12 U.S. dollars (US\$) per person annually (in 2012 US\$).¹¹

This chapter first discusses implementation of restrictions on tobacco marketing around the world. It then examines the findings of four broad types of research into the relationship between tobacco marketing communications and tobacco use and related outcomes: (1) econometric studies that assess the influence of tobacco marketing on tobacco consumption; (2) econometric studies that examine the effects of tobacco marketing bans; (3) cross-sectional and longitudinal consumer studies correlating advertising awareness and appreciation with smoking knowledge, attitudes, and behavior; and (4) studies that assess the effect of indirect forms of marketing communications (e.g., sponsorship, loyalty programs, point-of-sale displays, and product placement in entertainment media). This chapter builds upon the comprehensive reviews contained in *The Role of the Media in Promoting and Reducing Tobacco Use*,³ Monograph 19 in the Tobacco Control Monograph series produced by the National Cancer Institute (NCI) of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services; and the U.S. Surgeon General’s report *Preventing Tobacco Use Among Youth and Young Adults*.⁷ The chapter also highlights more recent research on these topics, especially research conducted in LMICs.

Global Implementation of Tobacco Marketing Restrictions

As shown in Figure 7.1, the majority of countries across income groups have adopted restrictions on TAPS. Although comprehensive bans on TAPS have been proven to reduce tobacco consumption in countries regardless of income level, only 29 countries, with 832 million people (12% of the world's population), had passed a comprehensive ban as of 2014.¹² Of these 29 highest achieving countries, 5 are high-income countries (HICs) and 24 are LMICs.

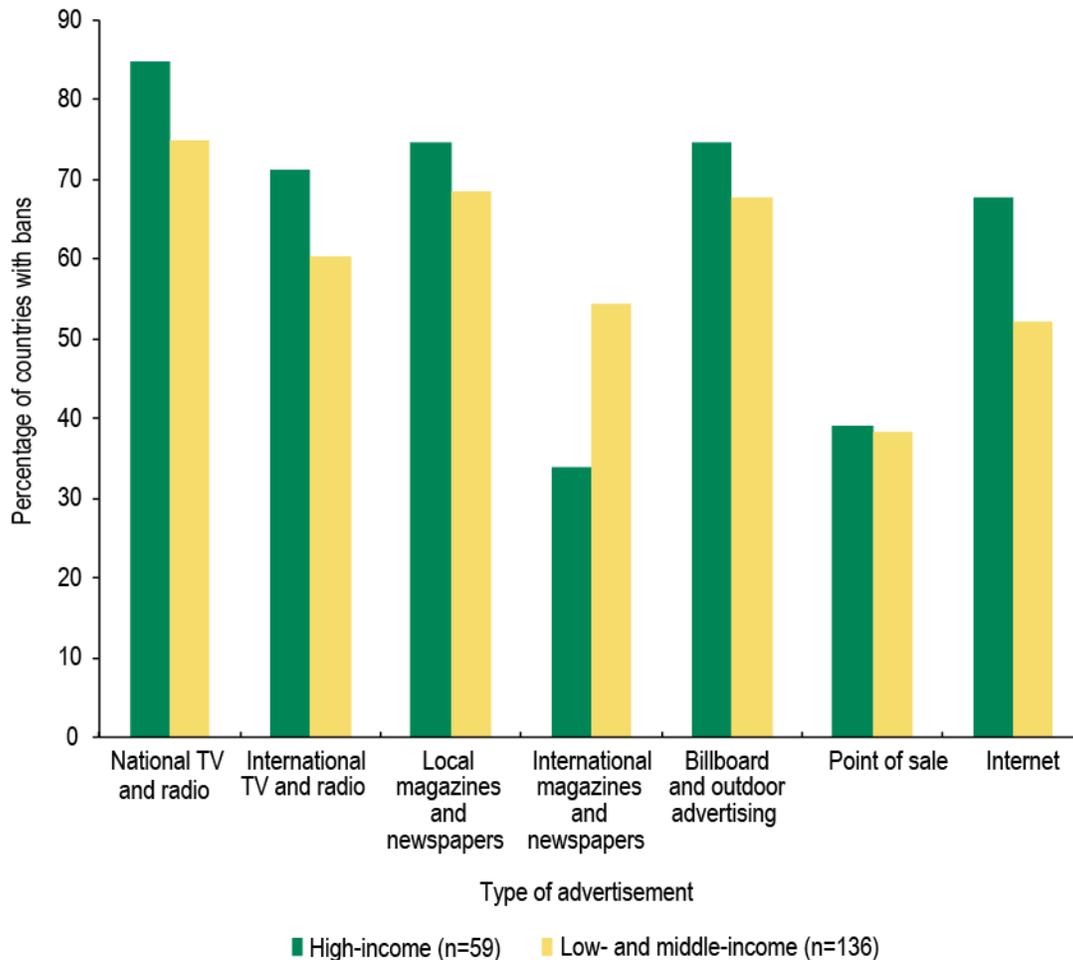
Figure 7.1 Bans on Advertising, Promotion, and Sponsorship, 2014



Source: World Health Organization 2015.¹²

Figures 7.2 and 7.3 show the extent of bans on various forms of TAPS in both HICs and LMICs (195 reporting countries) in 2014. The Internet is a global forum in which tobacco products can be promoted in a mostly unregulated manner, and as Figure 7.2 shows, Internet advertising and promotion of tobacco are banned in 57% of countries, including almost 70% of HICs.¹³ As of 2014, almost 80% of reporting countries banned national radio and television advertising, and 63% banned international radio and television advertising. Most countries also banned tobacco advertising in magazines and newspapers (local, 70%; international, 48%), and on billboards and outdoor advertising (almost 70%). Only about 11% of countries banned the display of tobacco products at the point of sale, despite the fact that 38% banned tobacco advertising at the point of sale.^{13,14}

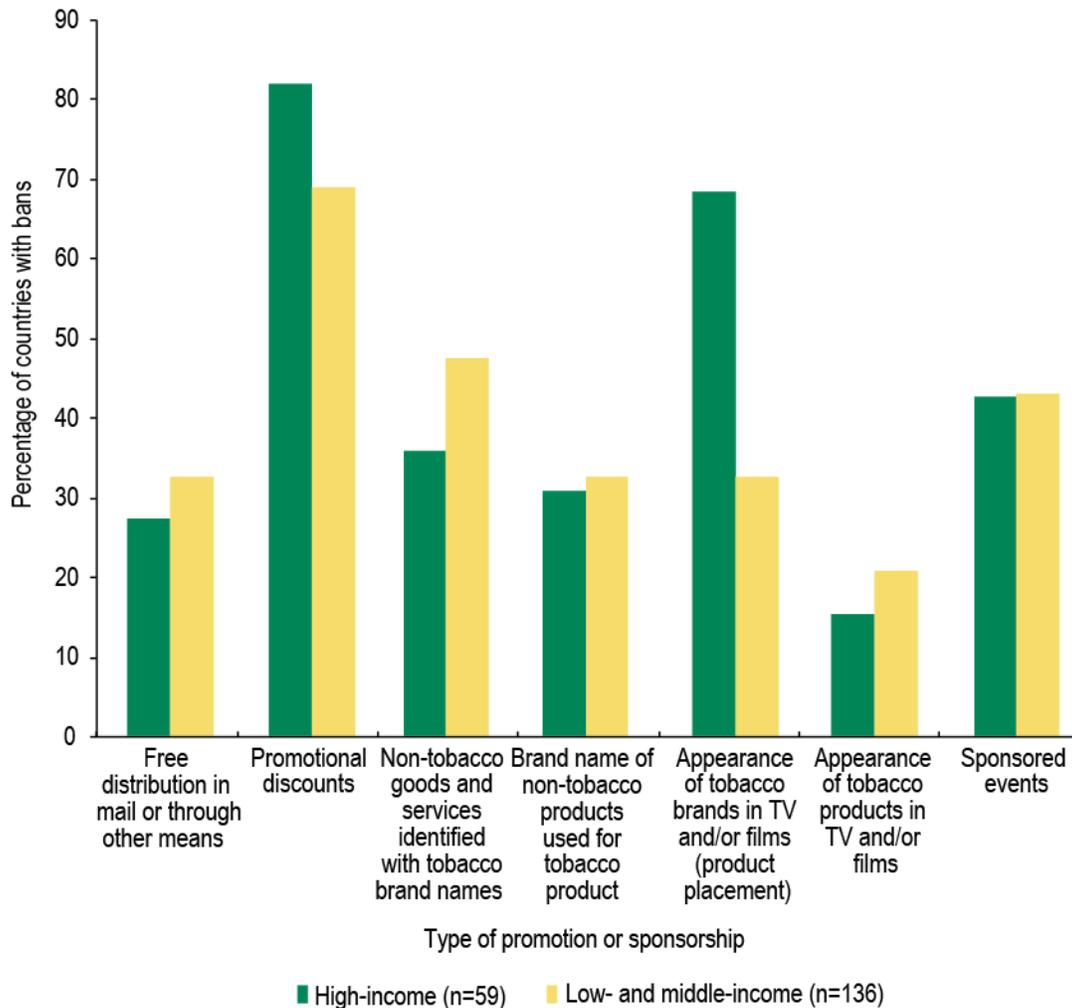
Figure 7.2 Global Prevalence of Bans on Tobacco Product Advertising, 2014



Source: World Health Organization 2015.¹³

As of 2014, 43% of reporting countries had adopted bans on tobacco-sponsored events.¹⁵ As shown in Figure 7.3, less than one-third of LMICs and HICs banned the free distribution of tobacco products. Similarly, only 31% of HICs and 32% of LMICs banned non-tobacco products identified with tobacco brand names. About 55% banned tobacco product placement on television and in movies. Less than one-sixth of HICs and one-fifth of LMICs had a ban on the appearance of tobacco products in television and/or movies.¹²

In the United States, federal law prohibits advertising of cigarettes, little cigars, smokeless tobacco, and chewing tobacco on radio and television. This prohibition does not include electronic nicotine delivery systems (ENDS),¹⁶ which are battery-powered devices designed to heat a liquid, typically containing nicotine, into an aerosol for inhalation by the user. ENDS have been advertised on television in the United States since at least 2012,¹⁷ and there is evidence that this advertising is reaching both youth and young adults.^{18,19}

Figure 7.3 Global Prevalence of Bans on the Promotion and Sponsorship of Tobacco Products, 2014


Source: World Health Organization 2015.¹⁵

Econometric Studies of the Impact of Tobacco Marketing

Econometric studies employing aggregate data to examine the effects of tobacco marketing on overall sales of tobacco products have produced mixed findings, in part because of methodological differences between studies. Although econometric studies face inherent challenges in disaggregating specific outcomes in response to tobacco marketing, several have found a significant positive relationship between tobacco marketing and tobacco sales.

Most econometric studies have assessed the effect of cigarette marketing expenditures on aggregate demand, typically represented by cigarette sales, and controlling for other variables including price and income. Econometric studies are complex, and these models try to account for a large number of other social, political, and economic factors which may have a confounding effect on consumption, as well as addressing the short- or long-term effects of marketing on sales.

The first econometric studies of the impact of advertising on tobacco use were conducted in the United States. Hamilton²⁰ concluded that the 1971 U.S. ban on broadcast cigarette advertising probably raised cigarette consumption because it also eliminated the anti-smoking advertising that had been required by the Fairness Doctrine. Schmalensee²¹ examined annual data on cigarette sales and advertising expenditures from 1955 through 1967 to assess the influence of advertising on demand, but findings from this study were mixed and inconclusive.

McGuinness and Cowling²² conducted one of the first and most influential studies of the impact of cigarette advertising in the United Kingdom of Great Britain and Northern Ireland. They used data from 1957 to 1968 to model the aggregate demand for cigarettes in terms of price, income, and advertising (measured in terms of “messages” instead of expenditure). Their findings suggested that advertising led to a statistically significant increase in cigarette sales and that health publicity reduced the effect of cigarette advertising.

The numerous studies conducted since these important early works have been divided almost equally between those that found no statistically significant effect of advertising and those that found advertising to have a positive and significant effect on tobacco consumption.^{3,23,24}

Econometric analysis of cigarette advertising’s effects has serious limitations. Chapman²⁵ noted the inability of this type of study to examine all the forms of promotion used by the tobacco industry, such as loyalty programs or point-of-sale promotions, because disaggregated expenditure data are not always available. Chapman also questioned the assumptions of advertising effects inherent in this type of approach. Econometric analysis examines only the effects of advertising on overall sales (aggregate data), and does not address advertising’s important influence on smoking-related cognition and beliefs. In addition, these studies cannot examine effects on vulnerable population subgroups (e.g., young people, women, ethnic minorities, or the poor). Therefore, Chapman argued that a more relevant analysis would deploy qualitative and quantitative methodologies to examine consumers’ *use* of marketing communications. Saffer²⁶ supported this view, arguing that because (where allowed) cigarettes are heavily advertised products, the marginal effect of advertising is very small, as diminishing marginal returns have already set in. Along with the high level of aggregation of advertising expenditure data, very little variation remains to correlate with consumption data in time series studies; therefore, finding any relationship between advertising expenditure and consumption is unlikely.

Econometric Studies of Bans on Tobacco Advertising

Most econometric studies of the impact of tobacco marketing bans on tobacco use find a statistically significant negative relationship between relatively comprehensive bans and consumption in HICs. The few studies that have examined the impact of tobacco marketing bans in LMICs, as well as the original analysis conducted for this monograph, confirm the importance of comprehensive versus partial restrictions on tobacco marketing.

Early econometric studies of marketing bans largely focused on the experience of individual countries. For example, Smee and colleagues²⁷ conducted an analysis of Norway’s Tobacco Act of 1975 on per capita consumption, and their findings suggest that the Act decreased demand by between 9% and 16%. Pekurinen²⁸ studied the effects of Finland’s 1977 Act on Measures to Reduce Tobacco Smoking, which included a ban on tobacco advertising and promotion. Analyzing data from 1960 to 1987, this study

concluded that the Act and the anti-tobacco publicity preceding its implementation reduced cigarette demand by 7%.

Cox and Smith²⁹ were among the first to examine the effects of advertising bans in multiple countries, conducting time series regressions for 15 Organisation for Economic Co-operation and Development (OECD) countries between 1962 and 1980. These authors examined the impact of legislated and voluntary marketing restrictions on tobacco consumption, controlling for price, income, and time trends, and concluded that legislated advertising restrictions were more effective than voluntary agreements. Laugesen and Meads²⁷ conducted a similar study of the factors affecting demand in 22 OECD countries between 1960 and 1986, using a pooled cross-sectional time series analysis. They found that tobacco advertising restrictions increased in OECD countries since 1973 and were associated with declining tobacco consumption, controlling for rising tobacco prices.

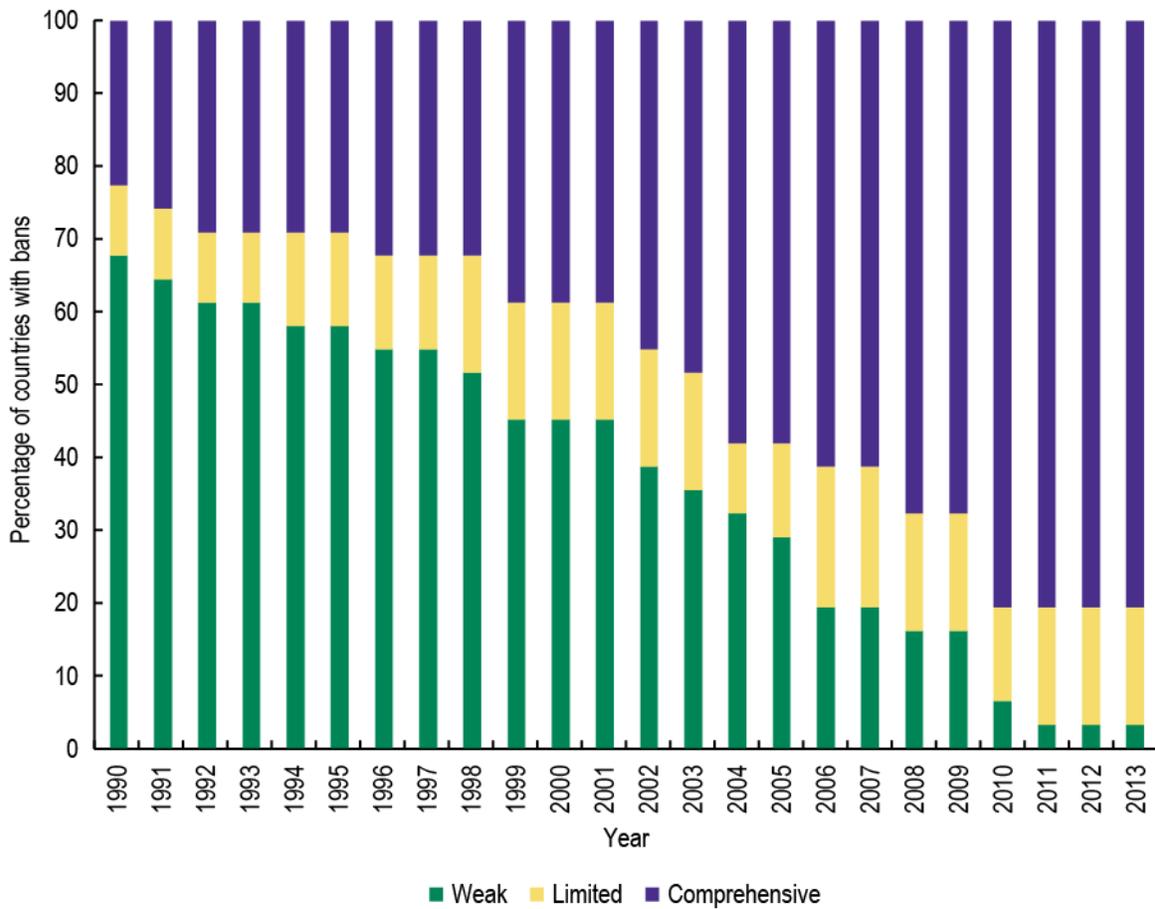
Saffer and Chaloupka²⁴ examined both comprehensive and partial bans, concluding that a weak or limited set of advertising regulations had little effect on reducing cigarette consumption, whereas a comprehensive ban on tobacco advertising had a significant effect on tobacco use. This study demonstrated the importance of comprehensive advertising bans, rather than restrictions or partial bans that allow tobacco products to be marketed using other methods. Blecher²³ built upon this work by examining advertising bans in LMICs, where they were less prevalent than in HICs. Both comprehensive and limited bans played a role in reducing tobacco consumption in LMICs, although comprehensive bans had a far greater impact than limited bans. Blecher also concluded that advertising bans were more effective in reducing tobacco consumption in LMICs than in HICs.²³

NCI reviewed the evidence on this topic and concluded that:

Studies of tobacco advertising bans in various countries show that comprehensive bans reduce tobacco consumption. Noncomprehensive restrictions generally induce an increase in expenditures for advertising in “nonbanned” media and for other marketing activities, which offset the effect of the partial ban so that any net change in consumption is minimal or undetectable.^{31,p.281}

This chapter extends and updates the Blecher analysis²³ using a larger sample of 66 countries (31 HICs and 35 LMICs) and data from more recent years, as well as the sources and methods described in Blecher’s 2008 study. Figures 7.4 and 7.5 show the proportion of HICs and LMICs that had weak, limited, and comprehensive advertising bans in place, as defined by Saffer and Chaloupka,²⁴ between 1990 and 2013. Per capita consumption is modeled as a function of price, income, and advertising bans. The updated analysis used consumption data from 1990 to 2013 from the ERC Group,³² an independent market research firm, along with cigarette prices from the Economist Intelligence Unit.³³ The price measure reflected the cheaper of two brands: Marlboro (or an equivalent international brand) and the most popular local brand.³⁴ Per capita gross domestic product, from the World Bank’s World Development Indicators, was used as a proxy for income. The convention of using an adult population to calculate per capita tobacco consumption was used, although using the total population provides nearly identical regression parameters.

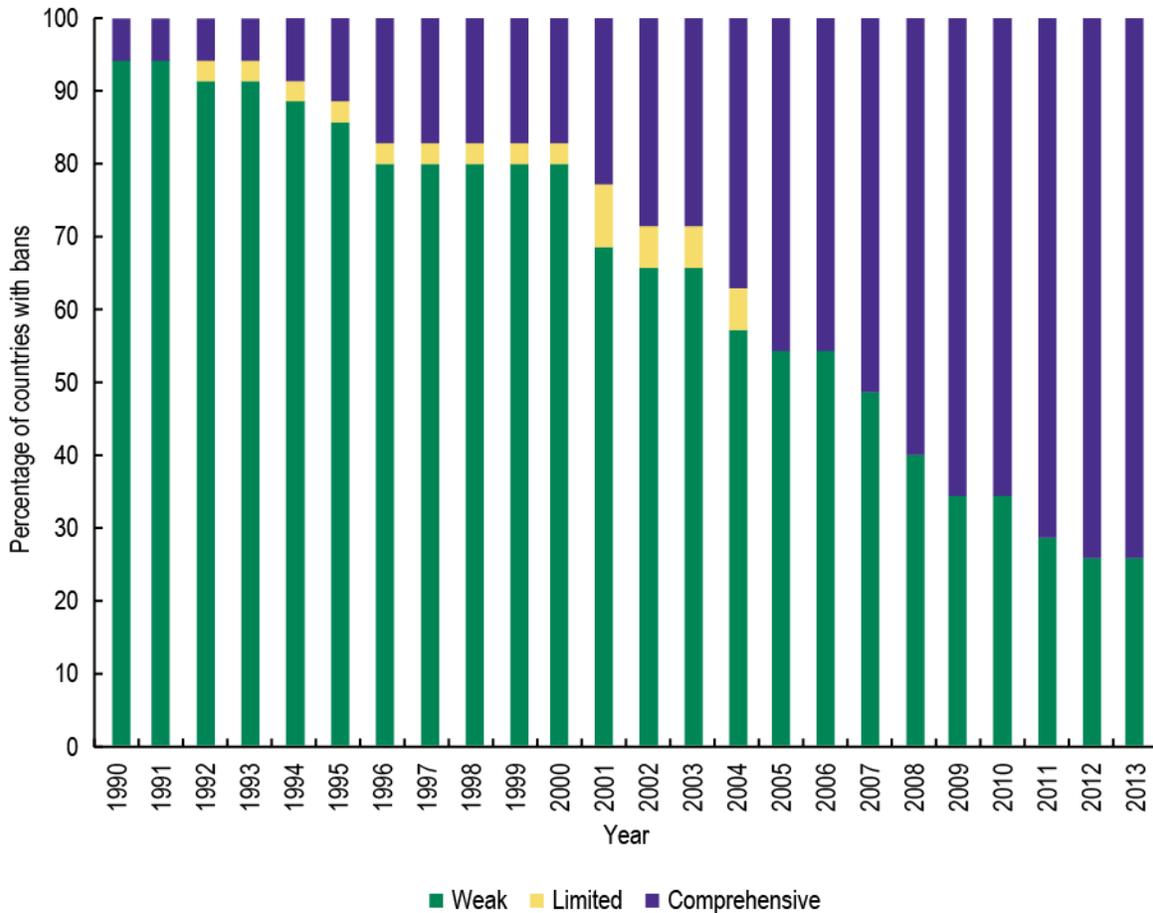
Figure 7.4 Weak, Limited, and Comprehensive Tobacco Advertising Bans in High-Income Countries, 1990–2013



Note: n=31.

Sources: Based on data from ERC Group 1990–2013³² and Economist Intelligence Unit 1990–2013.³³

Figure 7.5 Weak, Limited, and Comprehensive Tobacco Advertising Bans in Low- and Middle-Income Countries, 1990–2013



Note: n=35.

Sources: Based on data from ERC Group 1990–2013³² and Economist Intelligence Unit 1990–2013.³³

First, pooled estimates were obtained for all 66 countries, including both country- and time-fixed effects. Next, estimates for a subset of the 35 LMICs were obtained, controlling for country-fixed effects. (This method is preferred statistically to the two-way fixed effects obtained using an *F*-test.) Saffer and Chaloupka's²⁴ definition was used to classify advertising bans as weak, limited, or comprehensive by counting the bans in seven types of media. A ban in five or more media was considered comprehensive, a ban in three or four media was considered limited, and a ban in one or two media was considered weak. The regression results are shown in Table 7.1.

The assessment of data from all 66 countries showed that comprehensive bans on tobacco advertising had a significant negative effect on consumption, but limited bans had no statistically significant effect. The same result was found when only LMICs were considered. The magnitude of the comprehensive ban coefficients indicates that advertising bans reduced tobacco consumption by 28.3% in LMICs and by 11.7% in the full sample of 66 countries (HICs and LMICs).

Table 7.1 Summary of Regression Results of the Updated Analysis of Tobacco Advertising Bans, 1990–2013

Variables	Per capita adult tobacco consumption	
	All countries Model 1 β (SE)	Low- and middle-income countries Model 1a β (SE)
Income (ln)	0.538 (0.041)*	0.403 (0.048)*
Price		
Minimum (ln)	-0.151 (0.014)*	-0.148 (0.019)*
Advertising ban		
Limited (ln)	-0.013 (0.028)	-0.093 (0.067)
Comprehensive (ln)	-0.117 (0.020)*	-0.283 (0.030)*
n	1,511	785
R ²	0.923	0.927

*Statistically significant at the 0.01 level.

Notes: Country-fixed effects, year-fixed effects, and a constant are included in the model with all countries, while only country-fixed effects are included in the model with low- to middle-income countries. No variables were statistically significant at the 0.05 or 0.10 level.

Sources: Based on data from ERC Group 1990–2013³² and Economist Intelligence Unit 1990–2013.³³

These results confirm previous studies showing that comprehensive advertising bans reduce tobacco consumption, particularly in LMICs, where such policies appear to be more effective than in HICs. In contrast to the Blecher²³ study based on data for a smaller number of LMICs over a shorter time period, these results indicate that a less than comprehensive ban does not significantly reduce consumption.

Another group of studies examines how tobacco advertising bans exert their effects on tobacco consumption via their impact on producer behavior. Tremblay and Tremblay³⁵ theorized that, in addition to directly affecting demand, advertising bans reduce competition between individual tobacco companies. As a result, prices increase, thereby reducing consumption, and the increased market power that results from the ban leads to increased profits for tobacco companies. Farr and colleagues³⁶ provide empirical support for this theory by examining the impact of the 1971 U.S. Broadcast Advertising Ban. By estimating the demand equation and supply relationship simultaneously, they found that eliminating the Broadcast Advertising Ban would reduce the equilibrium price by 9.9%, increase cigarette production by 8.9%, and lower industry profits by 18.9%. Iwasaki and colleagues³⁷ supported this conclusion, adding that the advertising restrictions in the Master Settlement Agreement also reduced consumption in the United States by reducing price competition. Tan³⁸ drew a similar conclusion, using a dynamic oligopoly model in a game theoretic framework, finding that prices would rise by 11% in the long run as a result of the increased market concentration and reduced price competition created by strong advertising restrictions. Gallet³⁹ found that the effects of advertising restrictions on market power varied across U.S. states, with little effect in some states but sizable effects in others due to differences in estimated state-level price elasticities of demand.

The tobacco industry has frequently argued that tobacco marketing has little or no influence on nonsmokers, especially youth. Box 7.1 below presents key tobacco industry arguments, as derived from the testimony of industry witnesses during litigation. The industry has employed these and other

arguments to oppose bans on tobacco marketing in order to protect and promote its own interests.⁴⁰ As in other industry domains, this has sometimes included supporting the work of academicians without disclosing their relationship with industry. For example, Davis⁴² used previously internal tobacco industry documents to show that British American Tobacco ghost-wrote a report for the International Advertising Association on tobacco advertising bans and tobacco use, and that the Tobacco Institute (the trade and lobbying association for the U.S. tobacco industry until it was dissolved in 1998⁴¹) helped arrange for an academician to present these findings to the U.S. Congress and the media.

These and other findings underlie the WHO FCTC's recognition that the Parties "need to be alert to any efforts by the tobacco industry to undermine or subvert tobacco control efforts and [need] to be informed of activities of the tobacco industry that have a negative impact on tobacco control efforts."^{9,p.2} Article 5.3 of the Convention requires that "in setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law."^{9,p.7} The WHO FCTC Conference of Parties has also adopted guidelines for Article 5.3, with specific recommendations to be implemented without prejudice to the sovereign right of the Parties to determine and establish their tobacco control policies to the extent possible, in accordance with their national law.⁹

Box 7.1: Tobacco Marketing's Influence and Tobacco Marketing Bans: Arguments Posed by the Tobacco Industry

The Tobacco Deposition and Trial Testimony Archive (DATTA) study, funded in part by NCI, collected and analyzed deposition and trial transcripts to determine themes put forth by witnesses for the tobacco industry on a variety of topics.¹⁶⁴ Industry witnesses' statements on the role of tobacco advertising and promotion were among the topics analyzed. Goldberg, Davis, and O'Keefe¹⁶⁵ summarized the major themes put forward by witnesses who testified on behalf of the tobacco industry (including three academic experts, six senior tobacco company executives, and one advertising consultant) on tobacco advertising and promotion, together with counterarguments to these themes, based on the peer-reviewed literature and other sources. Highlights of their findings are as follows:

Industry theme 1: Tobacco advertising has a relatively weak "share of voice" in the marketing environment and is a weak force in affecting smoking behavior.

Counterarguments: The tobacco industry has been a major advertiser in the United States and around the world. Based on spending patterns, the tobacco industry regards advertising as highly persuasive and effective in influencing consumer behavior. Price promotions are highly influential, especially for adolescents. Tobacco advertising combines with product attributes to help shape the consumer's experience of the product.

Industry theme 2: Tobacco advertising and promotion do not create new smokers, expand markets, or increase total tobacco consumption.

Counterarguments: Abundant scientific studies as well as the conclusions of several authoritative bodies, including the Institute of Medicine (U.S. [IOM]), the U.S. Surgeon General, and the Food and Drug Administration (FDA), an agency of the U.S. Department of Health and Human Services, (in its 1996 rule-making on the sale and distribution of cigarettes and smokeless tobacco), have determined that advertising increases the number of smokers, in particular among young people.

Industry theme 3: The tobacco industry does not target, study, or track youth smoking.

Counterarguments: The tobacco industry's own internal documents directly contradict these assertions, and demonstrate that the major tobacco companies were concerned about the smoking behavior of youth, studied them, and targeted them; the sheer amount of advertising ensures that young people will be exposed.

Industry theme 4: Tobacco advertising and promotion do not cause smoking initiation by youth; or, advertising plays a minor role compared to the powerful influence of smoking by peers, siblings, and parents.

Counterarguments: "The U.S. Surgeon General, the IOM, and the FDA, respectively, have concluded that cigarette advertising and teenage smoking are [causally] linked."^{165,p.iv63} Evidence on which this conclusion was based was derived from: studies that documented youth exposure to tobacco advertising and promotion, studies that involved experimental manipulation of exposure to cigarette marketing, and studies that showed associations between cigarette advertising and brand preference among youth. Evidence was also based on cross-sectional and longitudinal studies that found that youth smoking status and initiation are correlated with awareness, recognition, and approval of tobacco advertisements and promotions; advertising and interpersonal influences (e.g. peers, siblings, parents) operate synergistically; and previously internal documents show that this is recognized by the tobacco industry.

Industry theme 5: Tobacco companies and the industry adhere closely to relevant laws, regulations, and industry voluntary codes.

Counterarguments: Several studies have documented poor compliance with the various versions of the Cigarette Advertising and Promotion Code. R.J. Reynolds and other cigarette companies violated provisions of the 1998 Master Settlement Agreement and have shifted their marketing activities to mitigate its effects.

As Goldberg and colleagues conclude:

Tobacco industry-affiliated witnesses have marshalled many arguments to deny the adverse effects of tobacco marketing activities . . . [but] effective rebuttals to these arguments exist. . . . Federal Judge Gladys Kessler, in an encyclopaedic decision issued on 17 August 2006 in a civil lawsuit waged against the industry by the U.S. Department of Justice, chronicled this evidence in a lengthy section under the heading, "From the 1950s to the present, different defendants, at different times and using different methods, have intentionally marketed to young people under the age of twenty-one in order to recruit 'replacement smokers' to ensure the economic future of the tobacco industry."^{165,p.iv64}

Population-Level Studies of Tobacco Advertising

Additional evidence on the effects of tobacco marketing on tobacco use comes from studies based on population surveys, particularly surveys of young people, who are most at risk for smoking initiation. This literature includes: (1) cross-sectional studies on the associations between advertising and smoking behavior at a point in time, and (2) longitudinal cohort studies that follow a specific population group across time. In theory, if advertising influences smoking, then smokers should be more aware and appreciative of such advertising than their nonsmoking counterparts. This logic can be expanded to cover knowledge and attitudes about tobacco as well as behavior.

Cross-sectional studies typically demonstrate a relationship between awareness of or receptivity to tobacco advertising and tobacco use; alone, these types of studies cannot establish causal relationships. In comparison, longitudinal cohort studies can track the relationship between advertising

exposure or awareness and smoking outcomes in individuals over time, and are better suited to identify causal relationships. Both cross-sectional and longitudinal cohort studies have found consistent and significant correlations between advertising awareness and appreciation and between current and future pro-smoking knowledge, attitudes, and behavior.

Cross-Sectional Studies

The NCI review³¹ of evidence on the effects of exposure to tobacco marketing on adolescents' smoking identified cross-sectional studies from both HICs and LMICs. This review concluded that “the vast majority of cross-sectional studies find an association between exposure to cigarette advertising, measured in numerous ways, and adolescent smoking behavior, measured in numerous ways, indicating a robust association.”^{31,p.280} Highlights of the findings are provided below; NCI Monograph 19 provides a more detailed discussion.³

Awareness, Recognition, and Attitudes Toward Advertising

The NCI review³¹ identified 23 cross-sectional studies that measured the relationship between adolescents' self-reported exposure to advertising, awareness of cigarette advertising, or recall of specific tobacco advertisements and smoking behaviors or intentions. Except for one, all studies were conducted in HICs and in People's Republic of China, Hong Kong Special Administrative Region. Eight of the 23 studies reported a significant positive relationship between exposure, awareness, or recall and susceptibility to smoking or positive intention to smoke. Additionally, the 23 studies reported 17 significant positive relationships between measures of exposure recall/awareness and smoking status. Five studies reported finding no significant relationship; none reported finding a negative relationship. One study included in the NCI's review was conducted in an LMIC; this study of Gambian adolescents reported no significant relationship between advertising exposure and smoking.⁴³

Research conducted mostly in the 1990s demonstrated that young people who smoke tend to smoke the most heavily advertised brands, and that these brands dominate sales to underage youth.^{44,45} For instance, Pollay and colleagues⁴⁶ found that teenagers are approximately three times more sensitive than adults to advertising (as measured by brand choice strongly related to brand advertising). Furthermore, the advertisements most popular with young people (i.e., most likely to be recalled and liked) were for those brands most likely to be smoked by young people.^{45,47} NCI³¹ identified 12 studies that assessed adolescents' recognition of tobacco brands or products. All but one study found a positive relationship between brand recognition and smoking status. Emri and colleagues⁴⁸ analyzed recognition of brand names and logos for cigarettes and other popular consumer products in a sample of Turkish school youth ages 7–13. This study found high recognition of tobacco brands, but it did not find a relationship between recognition of tobacco brands/logos and smoking status of the youth surveyed.

Additional cross-sectional studies conducted in LMICs have also found positive correlations between tobacco advertising and smoking behavior. For example, a cross-sectional, self-report study by Stigler and colleagues⁴⁹ found that exposure of youth from two Indian cities to tobacco advertising was significantly related to increased tobacco use among students in the 6th grade (mean age 11.2 years), but not among students in the 8th grade (mean age 12.9 years).

Some studies have focused on youth exposure to advertising in particular media. A study of adolescents from Blantyre City, Malawi, found that heavy exposure to tobacco advertising in magazines and exposure to tobacco brands on television were associated with current tobacco use.⁵⁰ A study by

Ramezankhani and colleagues⁵¹ reported that often or always viewing cigarette commercials on television or at sporting competitions was associated with greater odds of smoking among students in Tehran, Iran. A study of 13- to 15-year-old schoolchildren in southern Brazil found that tobacco advertising exposure and possessing an item with a cigarette logo on it were associated with greater odds of cigarette smoking.⁵²

Kostova and colleagues⁵³ assessed self-reported awareness of cigarette advertising, as measured by the fraction of youth in each school participating in the survey who reported seeing print cigarette advertising around the time of the survey. In their analysis of Global Youth Tobacco Survey (GYTS) data from 17 LMICs that had conducted the survey multiple times through 2006, these researchers found that greater exposure to print advertising was associated with higher youth smoking prevalence. In a subsequent study using GYTS data from 19 countries, Kostova and Blecher⁵⁴ used instrumental variables to account for the likelihood that young smokers would be more aware of cigarette advertising and, as a result, report greater exposure; these models also controlled for anti-smoking sentiment and cigarette prices. The authors concluded that the positive association between smoking and advertising exposure was largely due to the greater propensity of smokers to report seeing advertising rather than a direct causal effect of advertising on smoking.

Agaku and colleagues⁵⁵ analyzed survey data from the 2007-2008 GYTS conducted in 20 LMICs, representing the six WHO Regions. These authors found high levels of reported exposure to pro-tobacco advertising on television (ranging from 48.7% in Togo to 91.7% in the Philippines) and from other sources. In 7 of the 20 LMICs, exposure to two or more sources of pro-tobacco advertising was associated with significantly greater odds of smoking among the youth surveyed.

Receptivity

Researchers have developed the concept of young people's "susceptibility to smoking," meaning not having made a firm commitment *to avoid* starting to smoke.⁵⁶ Research has demonstrated that many youth are receptive to cigarette advertising, and that receptivity to advertising helps to predict their smoking attitudes and behavior, including their susceptibility to smoking. The NCI review³¹ identified 18 studies of receptivity to cigarette marketing, including owning or willingness to use cigarette promotional items; all of these studies found that receptivity to cigarette marketing was significantly related to smoking status or smoking susceptibility. A similar conclusion was reached by Kaufman and colleagues⁵⁷ in a nationally representative cross-sectional survey of U.S. adolescents in grades 9–12. Controlling for family and social influences, these authors found that alternative measures of receptivity to tobacco advertising were significantly associated with being susceptible to smoking, experimentation, and regular smoking. Similarly, in school-based surveys of adolescents in Germany, appreciation of tobacco advertisements (assessed with the question "do you think that cigarettes and tobacco advertisements are well-made") was strongly associated with smoking intensity.⁵⁸

In a 2014 study, Madkour and colleagues⁵⁹ analyzed GYTS data from five North African countries (Libya, Morocco, Tunisia, Egypt, and Sudan). Almost all (98%) adolescents had reported exposure to one or more types of advertising or promotion, and both advertising and promotion were significantly and positively associated with susceptibility to initiating cigarette smoking among both boys and girls. Similarly, a study conducted among vocational high school students in Wuhan, China, documented a significant association between tobacco media receptivity (assessed using the Adolescent Tobacco Media Receptivity Scale) and initiating and continuing cigarette smoking.⁶⁰ In addition, a cross-sectional

study among secondary school students in Argentina analyzed tobacco marketing exposure at the point of sale together with marketing receptivity; the study's four-stage index of marketing receptivity ranged from neither exposure nor ownership of branded tobacco merchandise to ownership of branded merchandise.⁶¹ The authors found that among never smokers, marketing receptivity was positively associated with susceptibility to smoking, positive expectancies of smoking, and willingness to try a specific brand.

Longitudinal Studies

The NCI review³¹ identified 16 longitudinal studies of the relationship between various measures of exposure to cigarette marketing and adolescents' smoking or susceptibility to smoking. Nine studies were conducted in the United States, three in the United Kingdom, and two each in Australia and Spain. The NCI review found that a significant link between exposure to tobacco advertising and later smoking behavior was found in all but two studies,^{62,63} after other variables, including social influences, were controlled for. In the latter two studies, "The link just missed statistical significance at the $p < .05$ level."^{31,p.258} The overall conclusion of the NCI review was that "strong and consistent evidence from longitudinal studies indicates that exposure to cigarette advertising influences nonsmoking adolescents to initiate smoking and to move toward regular smoking."^{31,p.280}

In the studies reviewed by NCI, exposure to tobacco advertising predicted smoking behavior as little as 4 months later and as long as 6 years later. For example, in analyses of a series of weighted surveys of thousands of adolescents in the U.S. states of Massachusetts and California, positive responses to tobacco advertisements predicted movement toward smoking between 3 and 6 years later.^{64–67} In a study of 1,390 youth ages 12 and 13 in Northern England, awareness of cigarette brands predicted smoking 4 months later among girls, after controlling for parents' and friends' smoking.⁶⁸ In a Spanish sample of 2,356 youth ages 13 and 14, the more tobacco brands participants could identify from billboards around their school, the more likely they were to be regular smokers 18 months later, controlling for demographics and social influences.⁶⁹

More recent studies confirm and extend these findings. For example, a study assessing the relationship between advertising exposure and smoking initiation in German youth ages 10–17 found that those who were in the highly exposed group were more likely than those in the low group to have initiated smoking at follow-up, controlling for covariates.⁷⁰ In addition, a longitudinal study by Pierce and colleagues⁷¹ demonstrated that the U.S. Master Settlement Agreement, which limited some advertising practices that target youth, reduced but did not eliminate the proportion of youth who reported they had a favorite cigarette advertisement. Youth who had a favorite cigarette advertisement at baseline in 2003 were 50% more likely to report having smoked by the final follow-up in 2008. Furthermore, after the start of a campaign for a particular cigarette brand aimed at young women, the proportion of girls who reported a favorite cigarette advertisement (regardless of brand) increased by 10 percentage points.⁷¹ Marketing to women is described in Box 7.2 below.

In 2011, the Cochrane Collaboration published the results of their systematic review to determine whether prior exposure to tobacco industry advertising and promotion is associated with future smoking initiation among adolescents.⁷² These researchers found that 18 out of the 19 identified longitudinal studies showed a positive, consistent, and specific relationship between exposure to tobacco advertising and adolescent smoking. The review concluded that tobacco advertising and promotion increase the likelihood that adolescents will initiate smoking, based on the strength and specificity of the association,

evidence of a dose–response relationship, consistency of findings from numerous observational studies, timing of the exposure and smoking behaviors observed, and theoretical plausibility of the impact of advertising.⁷²

In addition, Arora and colleagues⁷³ analyzed data from their 2-year longitudinal group-randomized trial in 32 schools in two cities in India (Delhi and Chennai). The study sample consisted of more than 2,700 nonsmoking Indian adolescents (ages 10–16) who were not susceptible to tobacco use. Arora and colleagues found that only 13% of students had never seen any tobacco advertisements. Exposure to tobacco advertisements at baseline was positively associated with progression towards tobacco use at 2-year follow-up in a dose-dependent manner; the association was significant among boys, but not among girls.

Box 7.2: Marketing to Women

Marketing targeted to various population groups, including men, women, youth and young adults, and others, has long been strategically important to the tobacco industry.⁸⁷ As explained in *Women and Smoking: A Report of the Surgeon General*, “women have been extensively targeted in tobacco marketing, and tobacco companies have produced brands specifically for women, both in the United States and overseas.”^{166,p.527} In North America and Northern Europe, tobacco marketing was first targeted to women in the 1920s and 1930s and contributed to normalizing tobacco use among women.^{167,168} Marketing to women is now widespread around the world, including in countries where women’s tobacco use is rare.¹⁶⁹ Commonly used marketing themes include independence and autonomy, rebelliousness, glamour and fashion, romance and sex appeal, and health and weight control.^{169,170}

Numerous reports and individual studies have raised concern about a potential rise in women’s tobacco use in LMICs, where women’s tobacco use rates are generally far lower than men’s, making them an obvious target for multinational tobacco companies.^{166,169,171–174} As Gilmore and colleagues have noted, “the tobacco industry’s future depends on increasing tobacco use in low-income and middle-income countries, especially among women and young people, and, contrary to industry claims, tobacco marketing deliberately targets these groups.”^{175,p.1029} A key challenge going forward will be to avert a rise in smoking among women as current cultural and economic barriers to women’s tobacco use fall, in the face of globalization, modernization, and improvements in the status of women.¹⁷⁶

Studies of Indirect Tobacco Marketing

Indirect marketing of tobacco products consists of a wide variety of activities, including sponsorship, loyalty programs, product sampling, promotional items or brand sharing, brand stretching, packaging, point-of-sale promotions, and product placement in entertainment media. These sections discuss evidence from the NCI review³ and other studies.

The WHO FCTC defines tobacco advertising and promotion as “any form of commercial communication, recommendation or action with the aim, effect or likely effect of promoting a tobacco product or tobacco use either directly or indirectly.”^{9,p.4} The WHO guidelines for creating and implementing comprehensive bans on tobacco advertising, promotion, and sponsorship under Article 13 of the WHO FCTC address these indirect marketing channels and others, including vending machines, price-reducing promotions (discussed in chapter 4), retailer incentive programs, packaging design

features (discussed in chapter 8), product design features (discussed in chapter 10), and cross-border advertising.¹⁰

The various forms of direct and indirect marketing communications are not intended to operate in isolation. As noted in NCI Monograph 19, “a fundamental theme of the work reviewed here is the great agility of tobacco companies in using a variety of communication channels, strategies, and rhetorical devices to continue to sell tobacco products, frame the public debate on the effects of tobacco use, and influence key stakeholders.”^{74,p.598} Individual marketing components are part of an integrated plan, so that the whole is greater than the sum of its parts. Research conducted in the United Kingdom demonstrates this cumulative effect; it has found that the more forms of marketing communication young people are aware of, the more likely they are to smoke or intend to smoke.^{75,76}

Sponsorship

Sponsorship by tobacco companies includes providing “‘any form of contribution’, financial or otherwise, regardless of how or whether that contribution is acknowledged or publicized.”^{10,p.3} Tobacco company sponsorship of sporting events, entertainment events, festivals, cultural venues, and social causes enhances brand awareness, reinforces brand image, and improves sales and/or market share.⁷⁷

NCI’s 2008 review⁷⁸ of tobacco companies’ public relations efforts identified three key research questions: (1) whether tobacco corporate image efforts are able to improve public perceptions of the companies’ credibility, trustworthiness, social responsibility, or public attitudes toward the companies; (2) whether enhanced public perception increases tobacco product sales or reduces quitting among current smokers; and (3) whether corporate sponsorship and corporate advertising affect the perceptions of jurors and public or legislative support for tobacco control policies. The NCI review also noted the relative newness of corporate public relations efforts and indicated that academic research on this topic was quite limited.⁷⁸ Nevertheless, the review concluded that “corporate sponsorship of events and social causes represents a key public relations strategy for major tobacco companies,” and that corporate image campaigns by tobacco companies “have reduced perceptions among adolescents and adults that tobacco companies are dishonest and culpable for adolescent smoking, and among adults, have increased perceptions of responsible marketing practices and favorable ratings for the individual companies.”^{78,p.204}

A number of studies have been conducted to assess the impact of tobacco industry sponsorship of sporting events, which are often of interest to youth, and have demonstrated a link between sporting event sponsorship and increased smoking among young people.^{79–82} For example, a longitudinal study of schoolchildren’s appreciation of televised sport in the United Kingdom found that preference for motor racing was a significant independent variable in progression to regular smoking.⁷⁹ In cross-sectional studies in India, Vaidya and colleagues^{81,82} examined the effects of tobacco sponsorship of a televised cricket series where the cigarette brand logo was displayed prominently at the cricket ground, on players’ outfits, and on billboards. All the adolescents were aware of tobacco sponsorship of cricket matches, but experimentation with tobacco was significantly higher among those who watched the matches. The perception that smoking improves performance at cricket was the most significant factor influencing experimentation with the sponsoring brand.

Price Promotions to the Consumer and Retailer

Price promotions, including discounting and couponing, can counteract the ability of significant tax and price increases to reduce smoking and encourage cessation. Promotions, including payments to wholesalers and retailers, help build a pro-tobacco environment by ensuring prominent selling space and creating strong relationships with retailers. In 2013, the amount paid to retailers or wholesalers to reduce the price of cigarettes to consumers accounted for 85.4% (US\$ 7.642 billion) of the total advertising and promotion budget of the major U.S. cigarette manufacturers.⁸³ Despite the importance of price promotions in determining consumer behavior, to date relatively few studies have examined the influence of these, including price discounting and couponing, on smoking attitudes and behavior.

Using regression analyses, MacFadyen and colleagues⁷⁵ studied young people's awareness of and involvement in all forms of tobacco marketing communications in the United Kingdom, and found that coupon loyalty offers were associated with being a smoker. In a study of 12- to 15-year-old Chinese students, Lam and colleagues⁸⁴ found that answering "yes" to a combined measure of participation in cigarette promotions or sponsored activities (including exchanging empty cigarette packs for tickets, free gifts, or discounted commodities) was significantly associated with ever smoking in the crude analysis. Slater and colleagues⁴ analyzed data from a nationally representative sample of 8th, 10th, and 12th graders in the United States between 1999 and 2003 and found that cigarette promotions were associated with youth experimentation with cigarettes, leading to later uptake of regular smoking. Another U.S. study found that in 2011, about 1 in 4 adult smokers ages 18–34 had received direct mail from a tobacco company, and of those, nearly 70% reported having used a coupon to purchase cigarettes within the past 6 months; signing up on a brand website was the most commonly reported way to receive direct mail.⁸⁵ Additionally, tobacco companies often tailor or personalize the coupons included in direct mailings.^{86–88} An analysis of data collected by the 2012 U.S. National Youth Tobacco Survey found that exposure to discount coupons among U.S. middle and high school students was associated with positive smoking-related beliefs, susceptibility to smoking, intention to purchase tobacco, and lack of confidence in ability to quit smoking.⁸⁹

The Internet and social media are efficient means of disseminating price promotions. For example, Richardson and colleagues⁹⁰ found that 30% of all online tobacco and electronic cigarette (e-cigarette) advertising in the United States and Canada in 2011-2012 contained a price promotion such as a coupon or discount code. A study of U.S. middle and high school students found that 13% had obtained tobacco coupons in the past 30 days; 7.4% received coupons by digital communications (e-mail, Internet, social network, or text message)—a greater percentage than those who received coupons by mail (6.0%) or via the tobacco package (3.7%).⁹¹ Researchers examining the prevalence of price promotions in the content of tobacco- or e-cigarette-related tweets found that one-third of all e-cigarette tweets contained a price promotion, typically a discount.⁹²

Sampling

The distribution of free samples of tobacco products, known as "sampling," is another form of sales promotion. Sampling teams often target venues that appeal to young people, such as bars, nightclubs, music concerts, shopping malls, and festivals, or use their own sponsored events for distribution.⁹³ Tobacco companies may segment their market to direct trial cigarette sampling at particular demographic groups—for example, young urban African Americans⁸⁷ and lesbian, gay, and bisexual communities.⁹⁴ There is also evidence that free e-cigarette samples are distributed at music festivals and other venues.⁹⁵ In the United States, free samples of cigarettes, hookah tobacco, cigars, and

nicotine-containing e-liquids are banned, and free samples of smokeless tobacco are restricted to qualified adults-only venues.^{96,97}

Several studies use GYTS data to examine tobacco product sampling. One such study among Indian adolescents ages 13–15 showed that offers of free cigarette samples and branded promotional items were strongly associated with smoking.⁹⁸ Studies from Africa have yielded mixed evidence regarding the relationship between free sampling and smoking behavior in youth. Offers of free cigarettes in Malawi⁵⁰ were not found to be associated with current smoking behavior, and a study in Zambia⁹⁹ found that offers of free cigarettes were negatively associated with smoking. However, Maassen and colleagues' study⁴³ in Gambia found that the offer of a free cigarette by a company representative was the best predictor of smoking behavior among Gambian adolescents.

Distribution of Promotional Items

Using a cigarette brand name, logo, trademark, or other distinctive feature (including color combinations) on a promotional item (including brand sharing and brand stretching) or to sell other non-tobacco products can create brand awareness and build brand imagery. Promotional items such as branded lighters, T-shirts, baseball caps, key chains, and badges may be distributed at the point of sale, at special events, or through competitions. Exposure to tobacco promotional items has been positively and significantly related to susceptibility to tobacco use across the globe, including in Cyprus,¹⁰⁰ the Czech Republic,¹⁰¹ Saudi Arabia,¹⁰² and the United States.^{103,104} Pierce and colleagues¹⁰⁵ estimated that over a 10-year period (1988–1998), 7.9 million U.S. youth were induced to experiment with tobacco because of tobacco advertising and promotions. Other studies in the United States found that many minors received promotional items despite regulations in place at the time controlling their distribution.^{106,107}

A number of cross-sectional studies have examined the influence of tobacco promotions in LMICs. Young boys in Zambia were more likely to have tried cigarette smoking if they owned an item branded with a cigarette logo.¹⁰⁸ Sinha¹⁰⁹ analyzed GYTS data from India and found that current 13- to 15-year-old users of gutka (a form of smokeless tobacco) were significantly more likely to own an item with a gutka brand name or symbol on it than youth who never used smokeless tobacco. Other studies conducted in LMICs and reporting on exposure found that 27% of Kenyan adolescents' (ages 12–17) reported ownership of objects with a cigarette brand logo¹¹⁰; and Muula and Mpabulungi¹¹¹ found that, among 13- to 15-year-olds, 24.0% in a Ugandan city and 18.2% in a Malawian city had an item with a cigarette brand logo.

Gilpin and colleagues⁶⁵ used a longitudinal study design to examine young people's receptivity to tobacco promotions as a predictor of established smoking in young adulthood. They found that possessing or being willing to use a tobacco promotional item increased the adjusted odds of being an established smoker 6 years later by a factor of 1.84. Further analysis found that young adult daily smokers showed stronger results at follow-up, with an adjusted odds ratio higher than 2.0 for possessing or willingness to use a tobacco promotional item. In a longitudinal study, Sargent and colleagues¹¹² examined receptivity to tobacco promotional items by measuring the number of promotional items owned by young smokers and their willingness to use the items. They found a dose–response relationship between the number of promotional items owned and the likelihood of experimental and regular smoking. In the United States, FDA regulation bans the distribution of non-tobacco promotional items with cigarette or smokeless brand names.^{96,113}

Point-of-Sale Displays

Display of tobacco products at the point of sale provides an opportunity to highlight the brand and the imagery on the packaging and to remind consumers of the availability of these products. In addition, point-of-sale displays of tobacco products reinforce perceptions that tobacco use is normative. As other channels for marketing and promotion decrease, the retail environment point of sale has increased in importance.¹¹⁴

Many studies have demonstrated the role of point-of-sale displays in influencing tobacco use. Wakefield and colleagues,¹¹⁵ for example, used an experimental approach to assess the effect of displays on Australian youth by randomly assigning youth to three groups: One group was shown photographs of convenience stores with point-of-sale displays and advertising, a second group saw photographs with displays only, and a third group viewed photographs of stores with displays and advertising digitally removed. Youth who viewed the photographs with advertising and displays or viewed displays only thought it would be easier to purchase tobacco in these stores than did the group viewing the photographs with displays removed. The researchers also found that young people who viewed photographs with displays only showed greater brand recall than those who viewed photographs with advertising and displays removed.

Others have looked at associations between exposure or sensitivity to point-of-sale displays and tobacco use and related outcomes. In a study of New Zealand youths ages 14–15, Paynter and colleagues¹¹⁶ measured exposure to displays based on self-reports of the frequency and types of stores visited and controlled for a variety of other factors. They found significant positive associations between frequency of store visits/frequency of noticing cigarettes with susceptibility to smoking, experimentation with smoking, and current smoking. Their study also found that the likelihood of being a current smoker increased with a greater frequency of store visits among youth of high socioeconomic status but not among those of low socioeconomic status. Wakefield and colleagues¹¹⁵ found that the amount of point-of-sale advertising was predictive of youths' brand choice. Another study found that the more youth-oriented advertisements that were displayed outside shops, the more often youth tried to buy cigarettes.¹¹⁷ An Australian study designed to test the effects of point-of-sale advertising showed that such advertising enhanced brand imagery.¹¹⁸

Wakefield and colleagues¹¹⁹ and Carter and colleagues¹²⁰ both found that seeing point-of-sale displays increased the likelihood that smokers would make unplanned cigarette purchases. Wakefield and colleagues¹¹⁹ also found that about one in three smokers thought that removing displays would make it easier for them to quit, and this belief was more prevalent among smokers who noticed displays at least sometimes compared to rarely or never. Germain and colleagues¹²¹ in their analysis of longitudinal data on adult smokers in Victoria, Australia, concluded that smokers who were more “sensitive” to point-of-sale displays (based on frequency of noticing displays, impulse purchases, and brand choice decisions based on displays) were significantly less likely to have quit smoking over time than those who were less sensitive to displays.

Two longitudinal studies of tobacco point-of-sale advertising in the United States confirm the increasing importance of this form of advertising to the tobacco industry. One study in California showed an increase over 4 years in the mean number of total advertisements per store (22.7 to 24.9) and in the proportion of interior signs and displays with a sales promotion (28% to 32%).¹²² A study in Massachusetts found a statistically significant relationship between a greater amount of cigarette advertising visible from outside retail outlets and illegal cigarette sales to minors.¹²³

In addition, two longitudinal studies examined the effects of point-of-sale advertising on smoking. In a study of California youth ages 11–14 years, Henriksen and colleagues¹²⁴ used two measures of exposure to retail cigarette advertising—the frequency of visits to stores that contain the most advertising, and a combination of where and how often subjects shopped near school—and observed the quantity of advertisements in those stores. After adjusting for other risk factors, both measures of exposure predicted significant increases in the odds of smoking initiation among adolescents who had never smoked at baseline. The more store visits adolescents reported at baseline, the greater their chances of initiating smoking at follow-up. In the second longitudinal study, Weiss and colleagues¹²⁵ measured self-reported exposure to point-of-sale advertising and smoking on television among young adolescents and determined that exposure to either or both of these conditions was significantly related to ever smoking at follow-up.

Exposure to point-of-sale displays is associated with higher susceptibility to smoking among nonsmoking youth^{126,127} and college students.¹²⁸ Iceland was the first country to adopt a point-of-sale display ban, effective in August 2001.¹²⁹ Since that time, a growing number of governments have adopted display bans and others are considering doing so.^{129,130}

The relatively few studies that have examined the impact of display bans on tobacco use and related outcomes have yielded findings suggesting that display bans have at least some impact on tobacco-related outcomes. For example, two longitudinal studies, one based on International Tobacco Control Policy Evaluation (ITC) Project data for Thailand and Malaysia and another based on ITC data from Australia, Canada, the United Kingdom, and the United States, concluded that the display bans in Thailand, Australia, and Canada were effective in reducing exposure to tobacco marketing at the point of sale.^{129,131} A pre–post implementation study by McNeill and colleagues¹³² reported that removal of point-of-sale displays in Ireland resulted in a reduction in the proportion of youth who thought young people their age smoked. A study from Western Australia found that implementation of the state’s display ban reduced spontaneous cigarette purchases among smokers by 30%.¹³³ Another found that partial implementation of England’s policy banning displays in large shops beginning in April 2012 did not have an immediate impact on smoking prevalence or cigarette consumption, but did accelerate the decline in smoking prevalence over time.¹³⁴ Similarly, Quinn and colleagues¹³⁵ reported that a display ban in Ireland did not have a significant impact on cigarette sales in the first 12 months following its implementation. The limited evidence of an impact on tobacco use found in these studies is likely due to the short time period considered and the difficulty in distinguishing the effect of the display bans from other factors that influence tobacco use.

Entertainment Media and Product Placement

Portrayal of tobacco use and tobacco brands in movies, television, video games, and other entertainment media is an important means by which the tobacco industry conveys images of tobacco to the public. Tobacco companies may pay promotional fees for tobacco use to be portrayed (known as product placement), which allows companies to achieve broadcast coverage of their brands, increase brand awareness, and at times, circumvent regulations on tobacco advertising.¹³⁶ Tobacco use in entertainment media may also be dictated by the producers’ artistic, noncommercial, decision-making. Whatever the reason, the appearance of tobacco brands and tobacco product use in entertainment media may influence viewers, especially youth.

NCI¹³⁶ reviewed 19 published content analyses of portrayals of tobacco in movies (all conducted in HICs) and concluded that three-quarters or more of contemporary box office hits (most commonly, movies rated for adults) depicted tobacco use, typically use of cigarettes and cigars. In addition, one-third of the movies released in the 1990s showed identifiable tobacco brands. By 2007, however, less than 10% of movies showed identifiable brands, followed by a slight increase to about 12% in 2008.⁷

The NCI review found that depictions of cigarette smoking were pervasive in U.S. movies and concluded that “the total weight of evidence from cross-sectional, longitudinal, and experimental studies, combined with the high theoretical plausibility from the perspective of social influences, indicates a causal relationship between exposure to movie smoking depictions and youth smoking initiation.”^{136,p.412-413} This conclusion was confirmed by the 2012 U.S. Surgeon General’s report: “There is a causal relationship between depictions of smoking in the movies and the initiation of smoking among young people.”^{7,p.602} The 2012 Surgeon General’s report also characterized images of smoking in television and films as possibly “some of the more potent media-delivered smoking images seen by U.S. children and adolescents.”^{7,p.574} The power of these images is augmented by the release of many U.S. films on television, online, or on DVD, where they reach a far wider, even global audience. Thus, images of tobacco use in entertainment media “have the potential to expose adolescents around the world to role models who smoke.”^{7,p.574} In addition, a systematic literature review conducted in 2015 identified exposure to smoking in films as one of a number of factors associated with increased risk of youth smoking.¹³⁷

Guidelines for implementation of Article 13 of the WHO FCTC recognize that the depiction of tobacco use in movies is a form of promotion of tobacco use. The WHO publication *Smoke-Free Movies: From Evidence to Action* summarizes the research base on the influence of film smoking as well as the measures that have been taken by some countries to control and reduce the depiction of smoking in movies. It also assists countries in understanding the basis for taking actions in this area, in line with the Article 13 guidelines.¹³⁸

Although most of the research on the potential influence of depictions of tobacco use in entertainment media has been conducted in the United States, studies have also been produced in other countries, both HICs and LMICs, as discussed in the following paragraphs.

In a study conducted in Germany, researchers found that about three-quarters of the 398 popular movies released between 1994 and 2004 in German cinemas included portrayals of smoking.¹³⁹ This study also found that German adolescents (ages 10–17) with higher exposure to smoking in movies were significantly more likely to experiment with cigarettes and to be current smokers, after a variety of other factors were controlled for. The authors concluded that “the strength and consistency of the association between movies and youth smoking across countries, despite very substantive differences in culture and tobacco regulations, argues strongly for smoking in movies as a causal socializing agent for youth smoking in [the United States and Germany].”^{139,p.7} In a follow-up longitudinal study of 2,711 never smokers from the original sample, greater exposure to depictions of smoking in movies was associated with trying smoking; after controlling for other factors, the effect was stronger among adolescents whose parents were not smokers themselves.¹⁴⁰ Conversely, a study conducted in Scotland did not find an association between seeing smoking in films and current smoking among young adults age 19 years.¹⁴¹ However, a follow-up study documented an association between exposure to images of smoking in movies and smoking among Scottish youth ages 15–16 years, which was dose dependent.¹⁴²

India is an important source of movies for the Indian subcontinent and other world regions. Researchers found that tobacco portrayals were prevalent in 76% of the 395 Indian films released between 1991 and 2002, and most of the incidents involved cigarette smoking.¹⁴³ Focus group research with Indian youth ages 16–18 years found that the values associated with smoking were “modern, fashionable, cool, arrogant, rebellious, [and] powerful,”^{143,p.15} but Indian movies rarely portrayed the health harms of smoking.

A cross-sectional survey of 7th-, 9th-, and 12th-grade students in Alexandria, Egypt, found that higher levels of exposure/receptivity to Western entertainment media (movies, television shows, magazines, newspapers, and music) were positively associated with having smoked in the last 30 days among boys, and with ever having tried smoking among boys and girls.¹⁴⁴ This association was partially mediated by positive beliefs about smoking. Maassen and colleagues¹⁴³ study of Gambian adolescents found no significant differences between smokers and nonsmokers—either in how often they saw actors smoking in the media or how often they saw cigarette brand names on television.

Thrasher and colleagues¹⁴⁵ conducted a longitudinal study of Mexican schoolchildren ages 11–14 and found that, at one-year follow-up, students in the two highest categories of exposure to incidents of smoking in movies were more than twice as likely to have smoked in the previous 30 days. The authors noted, however, that the risk factor of smoking onset a year later appeared weaker in Mexico than in countries with stronger tobacco marketing regulations.¹⁴⁵ The group’s prior cross-sectional study of Mexican adolescents also documented an association between exposure to smoking in films and susceptibility to smoking, favorable attitudes toward smoking, and perceived prevalence of smoking among peers.¹⁴⁶ A later study of secondary school students from Argentina and Mexico found that movies rated for younger children had the highest number of scenes containing smoking watched by students (67% in Argentina; 54% in Mexico).¹⁴⁷

Marketing via the Internet, Social Media, and Other Emerging Communication Platforms

The Internet is a global forum in which tobacco products can be advertised and promoted, a venue for the sale of tobacco products, and a means by which consumers can share and contribute information on tobacco products (via text, music, videos, and photographs). As Freeman notes, “In recent years, the internet has changed dramatically from primarily an expert driven information source to an interactive participatory and consumer driven medium.”^{148,p.139} New media—the combination and convergence of computing and information technology, communications networks, and digitized media and information content—provide tobacco companies with “a continually evolving range of technologically innovative means” to promote tobacco use.^{148,p.140} Access to the Internet and smartphone ownership vary widely around the world, but both are becoming increasingly available to the general public. In 2016, nearly half of the world’s population (47%) had access to the Internet,¹⁴⁹ and about 75% of the world’s population had access to a cell phone in 2012.¹⁵⁰ Internet advertising and promotion of tobacco were banned in 57% of reporting countries in 2014.¹³ In the United States, online tobacco marketing is not prohibited but is subject to the provisions of the Family Smoking Prevention and Tobacco Control Act.¹⁵¹

Research in this topic area has often focused on youth and young adults, given the heightened vulnerability of this age group to tobacco marketing. Despite the relative newness of this research subject and the difficulty of examining a continually changing communication landscape, a literature base is developing. A review of the literature published in 2013 by Forsyth and colleagues¹⁵² identified

only 20 research studies examining the effect of the Internet on teen and young adult tobacco use. An early content analysis of 318 randomly sampled websites featuring pro-tobacco content (for cigarettes, cigars, pipes, chew, or snuff) found that the presence of tobacco marketing was pervasive on the Web, and that the style and content of the sites—which featured celebrities, films and television shows, sex, e-commerce, hobbies, and recreation—would appeal to young people.¹⁵³ Another content analysis of pro-smoking websites determined whether the sites prevented access by minors, contained health warnings, mentioned brand names, made references to smoking fetishism, sold tobacco products, or also analyzed the demographics of people pictured in photographs on the site.¹⁵⁴ The authors located 30 smoking culture and lifestyle sites containing 1,689 photographs. These sites contained extensive and diverse pro-smoking content, which included brand imagery, cigarette packages, photographs of nude women smoking, and pairing of smoking with sexuality and alcohol use.

Elkin and colleagues¹⁵⁵ searched for and analyzed YouTube videos for non-Chinese cigarette brands and found 163 tobacco brand-related videos. Most (71.2%) of the videos had pro-tobacco content, and very few (3.7%) had anti-tobacco content. Three of the four most common themes of the videos were potentially of interest to youth: celebrities/movies, sports, and music.

A case study of a cigarette company's use of the Internet as an interactive platform (“open source marketing”) to promote a particular cigarette brand demonstrated the fine line between the use of the Internet for consumer marketing research and for the actual marketing of its product. This case study demonstrated how the cigarette company interacted with thousands of consumers via the Web to design new cigarette flavors and packages, noting that advertising bans do not typically consider the role of the consumer in generating and sharing marketing materials.¹⁵⁶

As Chu and colleagues have noted, “the growth of e-cigarettes occurred as social media and other Web 2.0 sites became an important platform for commercial advertising.”^{157,p.2} Many e-cigarette companies began their business online, and several maintain a strong Web presence for both product promotion and sales.^{158–160} A content analysis of e-cigarette retail websites found that many contain themes that may appeal to young people, including images or claims of modernity, enhanced social status or social activity, romance, and use of e-cigarettes by celebrities.¹⁵⁸ Many ENDS manufacturers and their affiliate retailers also have social media accounts that promote their products and offer users the opportunity to interact with the company online.¹⁶¹

Smartphones, mobile phones that can perform some functions performed by computers, are growing in popularity.^{150,162} These devices can be customized with the addition of applications (called “apps”), which are software programs designed to run on smartphones or other mobile devices. BinDhim and colleagues¹⁶³ analyzed the availability of pro-smoking apps from the world's two largest app stores, identifying 107 pro-smoking apps for sale from these venues. Most of these apps either simulated actual smoking behavior or contained information about where to purchase tobacco, information about brands, or related content. The authors note that the apps often included explicit brand images and have the potential to reach millions of users, including children and adolescents.

Summary

Scholars in many countries and from many disciplines have investigated the relationship between tobacco marketing and tobacco use, particularly youth use of tobacco products. The extensive body of evidence on this topic includes econometric studies, population-level cross-sectional and longitudinal analyses, and others. Several authoritative reviews, including those conducted by NCI, the U.S. Surgeon General, and the Cochrane Collaboration, have concluded that advertising and promotion are causally linked to youth smoking initiation.^{3,7,72} Studies conducted since these reviews confirm and extend these findings.

Research has also demonstrated the effectiveness of tobacco product marketing bans, and WHO has concluded that comprehensive bans on TAPS are a “best-buy” measure to reduce tobacco use. A new analysis conducted for this chapter also confirms that comprehensive bans on tobacco advertising have a significant negative effect on consumption, reducing tobacco consumption by 28.3% in LMICs and by 11.7% in the full sample of 66 countries (HICs and LMICs) analyzed.

The WHO FCTC obligates its Parties to implement and enforce a comprehensive ban on tobacco advertising, promotion, and sponsorship, or for those Parties that are not in a position to undertake a comprehensive ban owing to their constitutions or constitutional principles, to apply restrictions on tobacco advertising, promotion, and sponsorship that are as comprehensive as possible. As of 2014, a majority of countries, including HICs and LMICs, now ban at least some forms of tobacco marketing; bans on television and radio advertising are most common. More comprehensive bans benefit the public’s health by limiting industry’s demonstrated ability to adapt to and circumvent regulatory strategies and various types of marketing bans.

Recent studies have also looked at the impact of indirect tobacco marketing, which includes sponsorship, product sampling, promotional items and brand sharing, tobacco packaging, retail point-of-sale displays, and entertainment media and product placement. These forms of marketing also promote tobacco use, as recognized by the WHO FCTC, which defines tobacco advertising and promotion as “any form of commercial communication, recommendation or action with the aim, effect or likely effect of promoting a tobacco product or tobacco use either directly or indirectly.”^{9,p.4} Research conducted in many countries has shown that the portrayal of tobacco use, including particular tobacco brands, in movies and other entertainment media normalizes tobacco use among youth. WHO has issued guidance to assist countries in countering this industry tactic.

The Internet is now a global venue for marketing and sale of tobacco products, accessible to more potential consumers every day. The Web’s transition from a static forum to one that is interactive, participatory, and often consumer driven has dramatically changed the nature of Internet marketing. Researchers have documented that tobacco products are marketed on the Internet in ways that may attract youth; given the rapidity of change and the scope for reaching young people, this is an important area for future research.

Lastly, it is now recognized that the many forms of direct and indirect marketing communications do not operate in isolation; rather, it is the combination of marketing communications that influences the consumer. In short, as regards marketing communications, the whole is much greater than the sum of its parts.

Research Needs

A large evidence base documents the causal association between tobacco industry advertising and smoking among young people. However, there are areas that warrant further research. Documentation and assessment of the impact of financial or “in-kind” contributions from the industry in exchange for sponsorship of events, media, and product placement have been limited compared to other areas of tobacco marketing, with the exception of sports sponsorship and product placement in movies. As certain segments of entertainment media become more popular and technologically advanced, such as video/virtual reality gaming, more extensive and creative documentation and study of the effects of sponsorship or product placement in these media are needed. Similarly, as new media technology emerges and gives rise to different marketing and advertising strategies, such as through the Internet and social media, research is needed to study the impact of these new types of marketing tools on tobacco use. These media tools have been heavily used for marketing products, such as ENDS, which are available to youth in many countries. Novel digital marketing and conventional marketing strategies may have synergistic effects on tobacco product consumption, particularly by youth—a subject about which further investigation is needed.

Conclusions

1. Tobacco companies engage in a wide variety of marketing activities, ranging from traditional advertising, promotion, and sponsorship to emerging marketing techniques in the digital arena. These marketing activities have the potential to affect key populations, such as young people and women, particularly in low- and middle-income countries, who may be particularly susceptible to these efforts.
2. The weight of the evidence from multiple types of studies done by researchers from a variety of disciplines and using data from many countries indicates that a causal relationship exists between tobacco company marketing activities and tobacco use, including the uptake and continuation of tobacco use among young people.
3. In high-income countries, comprehensive policies to ban the marketing activities of tobacco companies are effective in reducing tobacco use, but partial marketing bans have little or no effect.
4. Comprehensive policies to ban the marketing activities of tobacco companies leads to larger reductions in tobacco use in low- and middle-income countries than in high-income countries.

References

1. Bayer R, Gostin LO, Javitt GH, Brandt A. Tobacco advertising in the United States: a proposal for a constitutionally acceptable form of regulation. *JAMA*. 2002;287(22):2990-5. doi: 10.1001/jama.287.22.2990.
2. DiFranza JR, Wellman RJ, Sargent JD, Weitzman M, Hipple BJ, Winickoff JP; et al. Tobacco promotion and the initiation of tobacco use: assessing the evidence for causality. *Pediatrics*. 2006;117(6):e1237-48. doi: 10.1542/peds.2005-1817.
3. National Cancer Institute. The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19. NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.
4. Slater SJ, Chaloupka FJ, Wakefield M, Johnston LD, O'Malley PM. The impact of retail cigarette marketing practices on youth smoking uptake. *Arch Pediatr Adolesc Med*. 2007;161(5):440-5. doi: 10.1001/archpedi.161.5.440.
5. Wellman RJ, Sugarman DB, DiFranza JR, Winickoff JP. The extent to which tobacco marketing and tobacco use in films contribute to children's use of tobacco: a meta-analysis. *Arch Pediatr Adolesc Med*. 2006;160(12):1285-96. doi: 10.1001/archpedi.160.12.1285.
6. World Health Organization. Gender, women, and the tobacco epidemic. Geneva: World Health Organization; 2010. Available from: http://apps.who.int/iris/bitstream/10665/44342/1/9789241599511_eng.pdf.
7. U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: a report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease and Health Promotion, Office on Smoking and Health; 2012. Available from: http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/prevent_youth_by_section.html.
8. U.S. Department of Health and Human Services. The health consequences of smoking—50 years of progress: a report of the Surgeon General. Atlanta: 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. Available from: <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>.
9. World Health Organization. WHO Framework Convention on Tobacco Control. Geneva: World Health Organization; 2003. Available from: http://www.who.int/fctc/text_download/en/.
10. World Health Organization. Guidelines for implementation of Article 13 of the WHO Framework Convention on Tobacco Control (Tobacco advertising, promotion and sponsorship); 2008. Available from: http://www.who.int/fctc/guidelines/article_13.pdf?ua=1.
11. World Health Organization. Scaling up action against noncommunicable diseases: how much will it cost? Geneva: World Health Organization; 2011. Available from: http://apps.who.int/iris/bitstream/10665/44706/1/9789241502313_eng.pdf.
12. World Health Organization. WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva: World Health Organization; 2015. Available from: http://www.who.int/tobacco/global_report/2015/en.
13. World Health Organization. Appendix VI: global tobacco control policy data. Table 6.10: bans on tobacco advertising, globally. In: WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva: World Health Organization; 2015. Available from: http://www.who.int/tobacco/global_report/2015/table_6_10_bans_on_tobacco_advertising.xls?ua=1.
14. World Health Organization. Appendix VI: global tobacco control policy data. Table 6.12: additional bans on tobacco advertising, promotion and sponsorship, globally. In: WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva: World Health Organization; 2015. Available from: http://www.who.int/tobacco/global_report/2015/table_6_12_additional_bans_on_tobacco_advertising_promotion_and_sponsorship.xls?ua=1.
15. World Health Organization. Appendix VI: global tobacco control policy data. Table 6.11: ban on promotion and sponsorship, globally. In: WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva: World Health Organization; 2015. Available from: http://www.who.int/tobacco/global_report/2015/table_6_11_bans_on_promotion_and_sponsorship-corrected.xls?ua=1.
16. Federal Communications Commission (U.S.). The public and broadcasting: how to get the most service from your local station. 2008. Available from: <https://www.fcc.gov/media/radio/public-and-broadcasting#TOBACCO>.
17. Elliott S. Campaigns for e-cigarettes borrow from tobacco's heyday. *New York Times*, 2012 Dec 12 [cited 2013 Mar 1]. Available from: <http://www.nytimes.com/2012/12/06/business/media/campaigns-for-electronic-cigarettes-borrow-from-their-tobacco-counterparts.html>.
18. Duke JC, Lee YO, Kim AE, Watson KA, Arnold KY, Nonnemaker JM, et al. Exposure to electronic cigarette television advertisements among youth and young adults. *Pediatrics*. 2014;134(1):e29-36. doi: 10.1542/peds.2014-0269.
19. Kim AE, Lee YO, Shafer P, Nonnemaker J, Makarenko O. Adult smokers' receptivity to a television advert for electronic nicotine delivery systems. *Tob Control*. 2015;24(2):132-5. doi: 10.1136/tobaccocontrol-2013-051130.
20. Hamilton JL. The demand for cigarettes: advertising, the health scare, and the cigarette advertising ban. *Rev Econ Stat*. 1972;54:401-11. doi: 10.2307/1924567.

21. Schmalensee RL. On the economics of advertising. Amsterdam: North Holland Publishing; 1972.
22. McGuinness T, Cowling K. Advertising and the aggregate demand for cigarettes: a reply. *Eur Econ Rev.* 1975;6(3):311-28. doi: 10.1016/0014-2921(75)90015-X.
23. Blecher E. The impact of tobacco advertising bans on consumption in developing countries. *J Health Econ.* 2008;27(4):930-42. doi: 10.1016/j.jhealeco.2008.02.010.
24. Saffer H, Chaloupka F. The effect of tobacco advertising bans on tobacco consumption. *J Health Econ.* 2000;19(6):1117-37. doi: 10.1016/S0167-6296(00)00054-0.
25. Chapman S. The limitations of econometric analysis in cigarette advertising studies. *Br J Addict.* 1989;84(11):1267-74. doi: 10.1111/j.1360-0443.1989.tb00723.x.
26. Saffer H. Tobacco advertising and promotion. In: Jha P, Chaloupka FJ, editors. *Tobacco control in developing countries.* Oxford, England: Oxford University Press; 2000. p. 215-36. Available from: <http://siteresources.worldbank.org/INTETC/Resources/375990-1089904539172/215TO236.PDF>.
27. Smee C, Parsonage M, Anderson R, Duckworth S. Effect of tobacco advertising on tobacco consumption: a discussion document reviewing the evidence. London: Economics and Operational Research Division, Department of Health; 1992. Available from: https://archive.org/stream/op1279296-1001/op1279296-1001_djvu.txt.
28. Pekurinen M. The demand for tobacco products in Finland. *Br J Addict.* 1989;84(10):1183-92. doi: 10.1111/j.1360-0443.1989.tb00714.x.
29. Cox H, Smith R. Political approaches to smoking control: a comparative analysis. *Appl Econ.* 1984;16:569-82. doi: 10.1080/00036848400000070.
30. Laugesen M, Meads C. Tobacco advertising restrictions, price, income and tobacco consumption in OECD countries, 1960-1986. *Br J Addict.* 1991;86(10):1343-54. doi: 10.1111/j.1360-0443.1991.tb01710.x.
31. National Cancer Institute. Influence of tobacco marketing on smoking behavior. In: *The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19.* NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. p. 211-91. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.
32. ERC Group. World cigarettes. 1990-2013 [accessed Oct 2016]. Available by subscription.
33. Economist Intelligence Unit. Worldwide cost of living survey. 1990-2013 [accessed Oct 2016]. Available by subscription.
34. Blecher EH, van Walbeek CP. Cigarette affordability trends: an update and some methodological comments. *Tob Control.* 2009;18(3):167-75. doi: 10.1136/tc.2008.026682.
35. Tremblay CH, Tremblay VJ. Re-interpreting the effect of an advertising ban on cigarette smoking. *Int J Advert.* 1999;18(1):41-9. Available from: http://liberalarts.oregonstate.edu/sites/liberalarts.oregonstate.edu/files/economics/1999_-_ija_-_adv_ban_in_cig_theory.pdf.
36. Farr SJ, Tremblay CH, Tremblay VJ. The welfare effect of advertising restriction in the U.S. cigarette industry. *Rev Ind Organ.* 2001;18(2):147-60. doi: 10.1023/A:1007801608741.
37. Iwasaki N, Tremblay CH, Tremblay VJ. Advertising restrictions and cigarette smoking: evidence from myopic and rational addiction models. *Contemp Econ Policy.* 2006;24(3):370-81. doi: 10.1093/cep/byj024.
38. Tan W. The effects of taxes and advertising restrictions on the market structure of the U.S. cigarette market. *Rev Ind Organ.* 2006;28(3):231-51. doi: 10.1007/s11151-006-0015-7.
39. Gallet CA. Advertising and restrictions in the cigarette industry: evidence of state-by-state variation. *Contemp Econ Policy.* 2003;21(3):338-48. doi: 10.1093/cep/byg015.
40. Wakefield M, Liberman J. Back to the future: tobacco industry interference, evidence and the Framework Convention on Tobacco Control. *Tob Control.* 2008;17(3):145-6. doi: 10.1136/tc.2008.025791.
41. Master Settlement Agreement, Section III(o), Dissolution of the Tobacco Institute, Inc., the Council for Tobacco Research-U.S.A., Inc. and the Center for Indoor Air Research, Inc. Available from: <http://oag.ca.gov/sites/all/files/agweb/pdfs/tobacco/1msa.pdf>.
42. Davis RM. British American Tobacco ghost-wrote reports on tobacco advertising bans by the International Advertising Association and J J Boddewyn. *Tob Control.* 2008;17(3):211-4. doi: 10.1136/tc.2008.025148.
43. Maassen IT, Kremers SP, Mudde AN, Joof BM. Smoking initiation among Gambian adolescents: social cognitive influences and the effect of cigarette sampling. *Health Educ Res.* 2004;19(5):551-60. doi: 10.1093/her/cyg077.
44. Centers for Disease Control and Prevention. Changes in the cigarette brand preferences of adolescent smokers—United States, 1989-1993. *MMWR Morb Mortal Wkly Rep.* 1994;43(32):577-81. Available from: <https://www.cdc.gov/mmwr/preview/mmwrhtml/00032326.htm>.
45. Pierce JP, Gilpin E, Burns DM, Whalen E, Rosbrook B, Shopland D, et al. Does tobacco advertising target young people to start smoking? Evidence from California. *JAMA.* 1991;266(22):3154-8. doi: 10.1001/jama.1991.03470220070029.

46. Pollay RW, Siddarth S, Siegel M, Haddix A, Merritt RK, Giovino GA, et al. The last straw? Cigarette advertising and realized market shares among youths and adults, 1979-1993. *J Mark.* 1996;60(2):1-16. doi: 10.2307/1251927.
47. Arnett JJ, Terhanian G. Adolescents' responses to cigarette advertisements: links between exposure, liking, and the appeal of smoking. *Tob Control.* 1998;7(2):129-33. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1759675/pdf/v007p00129.pdf>.
48. Emri S, Bagci T, Karakoca Y, Baris E. Recognition of cigarette brand names and logos by primary schoolchildren in Ankara, Turkey. *Tob Control.* 1998;7:386-92. doi: 10.1136/tc.7.4.386.
49. Stigler MH, Perry CL, Arora M, Reddy KS. Why are urban Indian 6th graders using more tobacco than 8th graders? Findings from Project MYTRI. *Tob Control.* 2006;15(Suppl 1):i54-60. doi: 10.1136/tc.2005.014480.
50. Muula AS. Prevalence and determinants of cigarette smoking among adolescents in Blantyre City, Malawi. *Tanzan Health Res Bull.* 2007;9(1):48-51. doi: 10.4314/thrb.v9i1.14292.
51. Ramezankhani A, Zaboli FS, Zarghi A, Masjedi MR, Heidari GR. Smoking habits of adolescent students in Tehran. *Tanaffos.* 2010;9(2):33-42. Available from: http://www.tanaffosjournal.ir/files_site/paperlist/r_215_120919102020.pdf.
52. Hallal AL, Gotlieb SL, Almeida LM, Cadado L. Prevalence and risk factors associated with smoking among school children, Southern Brazil. *Rev Saude Publica.* 2009;43(5):779-88. English, Portuguese. Available from: http://www.scielo.br/pdf/rsp/v43n5/en_724.pdf.
53. Kostova D, Ross H, Blecher E, Markowitz S. Is youth smoking responsive to cigarette prices? Evidence from low- and middle-income countries. *Tob Control.* 2011;20(6):419-24. doi: 10.1136/tc.2010.038786.
54. Kostova D, Blecher E. Does advertising matter? Estimating the impact of cigarette advertising on smoking among youth in developing countries. *Contemp Econ Policy.* 2013;31(3):537-48. doi: 10.1111/j.1465-7287.2012.00323.x.
55. Agaku IT, Adisa AO, Akinyamoju AO, Agboola SO. A cross-country comparison of the prevalence of exposure to tobacco advertisements among adolescents aged 13-15 years in 20 low and middle income countries. *Tob Induc Dis.* 2013;11(1):11. doi: 10.1186/1617-9625-11-11.
56. Unger JB, Johnson CA, Rohrbach LA. Recognition and liking of tobacco and alcohol advertisements among adolescents: relationships with susceptibility to substance use. *Prev Med.* 1995;24(5):461-6. doi: 10.1006/pmed.1995.1074.
57. Kaufman NJ, Castrucci BC, Mowery PD, Gerlach KK, Emont S, Orleans CT. Predictors of change on the smoking uptake continuum among adolescents. *Arch Pediatr Adolesc Med.* 2002;156(6):581-7. doi: 10.1001/archpedi.156.6.581.
58. Maziak W, Rzehak P, Keil U, Weiland SK. Smoking among adolescents in Muenster, Germany: increase in prevalence (1995-2000) and relation to tobacco advertising. *Prev Med.* 2003;36(2):172-6. doi: 10.1016/S0091-7435(02)00020-8.
59. Madkour AS, Ledford EC, Andersen L, Johnson CC. Tobacco advertising/promotions and adolescents' smoking risk in Northern Africa. *Tob Control.* 2014;23(3):244-52. doi: 10.1136/tobaccocontrol-2012-050593.
60. Chen XG, Gong J, Li HZ, Zhou D, Yan Y. Receptivity to pro-tobacco media and cigarette smoking among vocational high school students in China. *Int J Psychol Stud.* 2014;6(1):7-18. doi: 10.5539/ijps.v6n1p7.
61. Braun S, Kollath-Cattano C, Barrientos I, Mejia R, Morello P, Sargent JD, et al. Assessing tobacco marketing receptivity among youth: integrating point of sale marketing, cigarette package branding and branded merchandise. *Tob Control.* 2015 [published online ahead of print 2015 Oct 1]. doi: 10.1136/tobaccocontrol-2015-052498.
62. Diaz E, Villalbi JR, Nebot M, Auba J, Sanz F. [Smoking initiation in students: cross-sectional and longitudinal study of predictive factors]. *Med Clfn (Barc).* 1998;110(9):334-9. Spanish.
63. Pierce JP, Distefan JM, Kaplan RM, Gilpin EA. The role of curiosity in smoking initiation. *Addict Behav.* 2005;30(4):685-96. doi: 10.1016/j.addbeh.2004.08.014.
64. Biener L, Siegel M. Tobacco marketing and adolescent smoking: more support for a causal inference. *Am J Public Health.* 2000;90(3):407-11. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446173>.
65. Gilpin EA, White MM, Messer K, Pierce JP. Receptivity to tobacco advertising and promotions among young adolescents as a predictor of established smoking in young adulthood. *Am J Public Health.* 2007;97(8):1489-95. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1931446>.
66. Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Berry CC. Tobacco industry promotion of cigarettes and adolescent smoking. *JAMA.* 1998;279(7):511-5. doi: 10.1001/jama.279.7.511. Erratum in *JAMA.* 1998;280(5):422.
67. Pucci LG, Siegel M. Exposure to brand-specific cigarette advertising in magazines and its impact on youth smoking. *Prev Med.* 1999;29(5):313-20. doi: 10.1006/pmed.1999.0554.
68. Charlton A, Blair V. Predicting the onset of smoking in boys and girls. *Soc Sci Med.* 1989;29(7):813-8. doi: 10.1016/0277-9536(89)90080-4.
69. Lopez ML, Herrero P, Comas A, Leijis I, Cueto A, Charlton A, et al. Impact of cigarette advertising on smoking behaviour in Spanish adolescents as measured using recognition of billboard advertising. *Eur J Public Health.* 2004;14(4):428-32. Available from: <http://eurpub.oxfordjournals.org/content/14/4/428.long>.

70. Hanewinkel R, Isensee B, Sargent JD, Morgenstern M. Cigarette advertising and teen smoking initiation. *Pediatrics*. 2011;127(2):e271-8. doi: 10.1542/peds.2010-2934.
71. Pierce JP, Messer K, James LE, White MM, Kealey S, Vallone DM, et al. Camel No. 9 cigarette-marketing campaign targeted young teenage girls. *Pediatrics*. 2010;125(4):619-26. doi: 10.1542/peds.2009-0607.
72. Lovato C, Watts A, Stead LF. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database Syst Rev*. 2011;(10):CD003439. doi: 10.1002/14651858.CD003439.pub2.
73. Arora M, Gupta VK, Nazar GP, Stigler MH, Perry CL, Reddy KS. Impact of tobacco advertisements on tobacco use among urban adolescents in India: results from a longitudinal study. *Tob Control*. 2012;21(3):318-24. doi: 10.1136/tc.2010.040733.
74. National Cancer Institute. Future directions. In: National Cancer Institute. The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19. NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. p. 597-617. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.
75. MacFadyen L, Hastings G, MacKintosh AM. Cross sectional study of young people's awareness of and involvement with tobacco marketing. *BMJ*. 2001;322(7285):513-7. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC26553>.
76. Moodie C, MacKintosh AM, Brown A, Hastings GB. Tobacco marketing awareness on youth smoking susceptibility and perceived prevalence before and after an advertising ban. *Eur J Public Health*. 2008;18(5):484-90. doi: 10.1093/eurpub/ckn016.
77. Dewhirst T, Hunter A. Tobacco sponsorship of Formula One and CART auto racing: tobacco brand exposure and enhanced symbolic imagery through co-sponsors' third party advertising. *Tob Control*. 2002;11(2):146-50. doi: 10.1136/tc.11.2.146.
78. National Cancer Institute. Tobacco companies' public relations efforts: corporate sponsorship and advertising. In: The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19. NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. p. 179-209. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.
79. Charlton A, While D, Kelly S. Boys' smoking and cigarette-brand-sponsored motor racing. *Lancet*. 1997;350(9089):1474. doi: 10.1016/S0140-6736(97)26046-0.
80. Hoek J, Gendall P, Stockdale M. Some effects of tobacco sponsorship advertisements on young males. *Int J Advert*. 1993;12(1):25-35.
81. Vaidya SG, Naik UD, Vaidya JS. Effect of sports sponsorship by tobacco companies on children's experimentation with tobacco. *BMJ*. 1996;313(7054):400. doi: 10.1136/bmj.313.7054.400.
82. Vaidya SG, Vaidya JS, Naik UD. Sports sponsorship by cigarette companies influences the adolescent children's mind and helps initiate smoking: results of a national study in India. *J Indian Med Assoc*. 1999;97(9):354-6, 7.
83. U.S. Federal Trade Commission. Federal Trade Commission cigarette report for 2013. Issued 2016 [cited 2016 Aug 30]. Available from: <https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-cigarette-report-2013/2013cigaretterpt.pdf>.
84. Lam TH, Chung SF, Betson CL, Wong CM, Hedley AJ. Tobacco advertisements: one of the strongest risk factors for smoking in Hong Kong students. *Am J Prev Med*. 1998;14(3):217-23. doi: 10.1016/S0749-3797(97)00071-8.
85. Lewis J, Manderski B, Delnevo CD. Tobacco industry direct mail receipt and coupon use among young adult smokers. *Prev Med*. 2015;71:37-9. doi: 10.1016/j.ypmed.2014.11.030.
86. Sumner W, Dillman DG. A fist full of coupons: cigarette continuity programmes. *Tob Control*. 1995;4(3):245-52. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1759447/pdf/v004p00245.pdf>.
87. National Cancer Institute. Themes and targets of tobacco advertising and promotion. In: The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19. NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. p. 141-78. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.
88. Campaign for Tobacco-Free Kids. Tobacco marketing that reaches kids: point-of-sale advertising and promotions. 2016. Available from: <https://www.tobaccofreekids.org/research/factsheets/pdf/0075.pdf>.
89. Choi K. The associations between exposure to tobacco coupons and predictors of smoking behaviours among US youth. *Tob Control*. 2016;25(2):232-5. doi: 10.1136/tobaccocontrol-2014-052147.
90. Richardson A, Ganz O, Vallone D. Tobacco on the web: surveillance and characterisation of online tobacco and e-cigarette advertising. *Tob Control*. 2015;24(4):341-7. doi: 10.1136/tobaccocontrol-2013-051246.
91. Tessman GK, Caraballo RS, Corey CG, Xu X, Chang CM. Exposure to tobacco coupons among U.S. middle and high school students. *Am J Prev Med*. 2014; 47(2 Suppl 1):S61-8. doi: 10.1016/j.amepre.2014.05.001.
92. Jo CL, Kornfield R, Kim Y, Emery S, Ribisl KM. Price-related promotions for tobacco products on Twitter. *Tob Control*. 2016;25(4):476-9. doi: 10.1136/tobaccocontrol-2015-052260.
93. Sepe E, Ling PM, Glantz SA. Smooth moves: bar and nightclub tobacco promotions that target young adults. *Am J Public Health*. 2002;92(3):414-9. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447091>.

94. Dilley JA, Spigner C, Boysun MJ, Dent CW, Pizacani BA. Does tobacco industry marketing excessively impact lesbian, gay and bisexual communities? *Tob Control*. 2008;17(6):385-90. doi: 10.1136/tc.2007.024216.
95. Durbin RA, Waxman HA, Harkin T, Rockefeller JD IV, Blumenthal R, Markey EJ, et al. Gateway to addiction? A survey of popular electronic cigarette manufacturers and targeted marketing to youth. Washington, DC: U.S. Congress; 2014. Available from: <http://www.durbin.senate.gov/imo/media/doc/Report%20-%20E-Cigarettes%20with%20Cover.pdf>.
96. U. S. Department of Health and Human Services, Food and Drug Administration. Regulations restricting the sale and distribution of cigarettes and smokeless tobacco to protect children and adolescents. 21 CFR Part 1140. *Fed Regist*. 2010;75(53):13225-32. Available from: <http://www.gpo.gov/fdsys/pkg/FR-2010-03-19/pdf/2010-6087.pdf>.
97. U.S. Food and Drug Administration. Deeming tobacco products to be subject to the Federal Food, Drug, and Cosmetic Act as amended by the Family Smoking Prevention and Tobacco Control Act; restrictions on the sale and distribution of tobacco products and required warning statements for tobacco products. (81 FR 28973). 2016-10685; 28973-29106. *Fed Regist*. 2016;81(90):28973-9106. Available from: <https://federalregister.gov/a/2016-10685>.
98. Shah PB, Pednekar MS, Gupta PC, Sinha DN. The relationship between tobacco advertisements and smoking status of youth in India. *Asian Pac J Cancer Prev*. 2008;9(4):637-42. Available from: http://journal.waocp.org/article_24831_598bc3cbb59da295103194f9fe2540d1.pdf.
99. Zulu R, Siziya S, Muula AS, Rudatsikira E. Associations of advertisement-promotion-sponsorship-related factors with current cigarette smoking among in-school adolescents in Zambia. *Ann Afr Med*. 2009;8(4):229-35. doi: 10.4103/1596-3519.59577.
100. Christophi CA, Savvides ECG, Warren CW, Demokritou P, Connolly GN. Main determinants of cigarette smoking in youth based on the 2006 Cyprus GYTS. *Prev Med*. 2009;48(3):232-6. doi: 10.1016/j.ypmed.2009.01.003.
101. Sovinova H, Csemy L. Smoking behaviour of Czech adolescents: results of the Global Youth Tobacco Survey in the Czech Republic, 2002. *Cent Eur J Public Health*. 2004;12(1):26-31.
102. Abdalla AM, Saeed AA, Abdulrahman BM, Al-Kaabba AF, Raat H. Correlates of ever-smoking habit among adolescents in Tabuk, Saudi Arabia. *East Mediterr Health J*. 2009;15(4):983-92.
103. Henriksen L, Feighery EC, Wang Y, Fortmann SP. Association of retail tobacco marketing with adolescent smoking. *Am J Public Health*. 2004;94(12):2081-3. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448595>.
104. Mowery PD, Farrelly MC, Haviland ML, Gable JM, Wells HE. Progression to established smoking among U.S. youths. *Am J Public Health*. 2004;94(2):331-7. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448252>.
105. Pierce JP, Gilpin EA, Choi WS. Sharing the blame: smoking experimentation and future smoking-attributable mortality due to Joe Camel and Marlboro advertising and promotions. *Tob Control*. 1999;8(1):37-44. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448252>.
106. Coeytaux RR, Altman DG, Slade J. Tobacco promotions in the hands of youth. *Tob Control*. 1995;4(3):253-7. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1759441>.
107. Gilpin EA, Pierce JP, Rosbrook B. Are adolescents receptive to current sales promotion practices of the tobacco industry? *Prev Med*. 1997;26(1):14-21. doi: 10.1006/pmed.1996.9980.
108. Siziya S, Rudatsikira E, Muula AS. Cigarette smoking among school-going adolescents in Kafue, Zambia. *Malawi Med J*. 2007;19(2):75-8. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3345643>.
109. Sinha DN. Gutka advertisement and smokeless tobacco use by adolescents in Sikkim, India. *Indian J Community Med*. 2005;30(1):18-20. Available from: https://www.researchgate.net/publication/228701422_Gutka_advertisement_and_smokeless_tobacco_use_by_adolescents_in_Sikkim_India.
110. Åström AN, Ogwell EA. Use of tobacco in Kenya: sources of information, beliefs and attitudes toward tobacco control measures among primary school students. *J Adolesc Health*. 2004;35(3):234-37. doi: 10.1016/j.jadohealth.2004.02.017.
111. Muula AS, Mpabulungi L. Cigarette smoking prevalence among school-going adolescents in two African capital cities: Kampala Uganda and Lilongwe Malawi. *Afr Health Sci*. 2007;7(1):45-9. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2366124>.
112. Sargent JD, Dalton M, Beach M. Exposure to cigarette promotions and smoking uptake in adolescents: evidence of a dose-response relation. *Tob Control*. 2000;9(2):163-8. doi: 10.1136/tc.9.2.163.
113. U.S. Food and Drug Administration. Regulations restricting the sale and distribution of cigarettes and smokeless tobacco to protect children and adolescents. (61 FR 44396). X96-10828; 44396-44618. *Fed Regist*. 1996;61(168):44396-44618. Available from: <https://www.federalregister.gov/documents/1996/08/28/X96-10828/regulations-restricting-the-sale-and-distribution-of-cigarettes-and-smokeless-tobacco-to-protect>.
114. Center for Public Health Systems Science. Point-of-sale report to the nation: realizing the power of states and communities to change the tobacco retail and policy landscape. St. Louis, MO: Center for Public Health Systems Science at the Brown School at Washington University in St. Louis; and Rockville, MD: National Cancer Institute, State and Community Tobacco Control Research Initiative; 2016. Available from: https://cphss.wustl.edu/Products/ProductsDocuments/ASPIRE_2016_ReportToTheNation.pdf.

115. Wakefield M, Germain D, Durkin S, Henriksen L. An experimental study of effects on schoolchildren of exposure to point-of-sale cigarette advertising and pack displays. *Health Educ Res.* 2006;21(3):338-47. doi: 10.1093/her/cyl005.
116. Paynter J, Edwards R, Schluter PJ, McDuff I. Point of sale tobacco displays and smoking among 14-15 year olds in New Zealand: a cross-sectional study. *Tob Control.* 2009;18(4):268-74. doi: 10.1136/tc.2008.027482.
117. Voorhees CC, Yanek LR, Stillman FA, Becker DM. Reducing cigarette sales to minors in an urban setting: issues and opportunities for merchant intervention. *Am J Prev Med.* 1998;14(2):138-42. doi: 10.1016/S0749-3797(97)00024-X.
118. Donovan RJ, Jancey J, Jones S. Tobacco point of sale advertising increases positive brand user imagery. *Tob Control.* 2002;11(3):191-4. doi: 10.1136/tc.11.3.191.
119. Wakefield M, Germain D, Henriksen L. The effect of retail cigarette pack displays on impulse purchase. *Addiction.* 2008;103(2):322-8. doi: 10.1111/j.1360-0443.2007.02062.x.
120. Carter OB, Mills BW, Donovan RJ. The effect of retail cigarette pack displays on unplanned purchases: results from immediate postpurchase interviews. *Tob Control.* 2009;18(3):218-21. doi: 10.1136/tc.2008.027870.
121. Germain D, McCarthy M, Wakefield M. Smoker sensitivity to retail tobacco displays and quitting: a cohort study. *Addiction.* 2010;105(1):159-63. doi: 10.1111/j.1360-0443.2009.02714.x.
122. Feighery EC, Shleicher NC, Boley Cruz T, Unger JB. An examination of trends in amount and type of cigarette advertising and sales promotions in California stores, 2002-2005. *Tob Control.* 2008;17(2):93-8. doi: 10.1136/tc.2007.022046.
123. Celebucki CC, Diskin K. A longitudinal study of externally visible cigarette advertising on retail storefronts in Massachusetts before and after the Master Settlement Agreement. *Tob Control.* 2002;11(Suppl 2):ii47-53. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1766083>.
124. Henriksen L, Schleicher NC, Feighery EC, Fortmann SP. A longitudinal study of exposure to retail cigarette advertising and smoking initiation. *Pediatrics.* 2010;126(2):232-8. doi: 10.1542/peds.2009-3021.
125. Weiss JW, Cen S, Schuster DV, Unger JB, Johnson CA, Mouttapa M, et al. Longitudinal effects of pro-tobacco and anti-tobacco messages on adolescent smoking susceptibility. *Nicotine Tob Res.* 2006;8(3):455-65. doi: 10.1080/14622200600670454.
126. MacKintosh AM, Moodie C, Hastings G. The association between point-of-sale displays and youth smoking susceptibility. *Nicotine Tob Res.* 2012;14(5):616-20. doi: 10.1093/ntr/ntr185.
127. Spanopoulos D, Britton J, McNeill A, Ratschen E, Szatkowski L. Tobacco display and brand communication at the point of sale: implications for adolescent smoking behaviour. *Tob Control.* 2014;23:64-9. doi: 10.1136/tobaccocontrol-2012-050765.
128. Shadel WG, Martino SC, Setodji C, Scharf D. Exposure to pro-smoking media in college students: does type of media channel differentially contribute to smoking risk? *Ann Behav Med.* 2013;45(3):387-92. doi: 10.1007/s12160-012-9461-7.
129. Li L, Borland R, Fong GT, Thrasher JF, Hammond D, Cummings KM. Impact of point-of-sale tobacco display bans: findings from the International Tobacco Control Four Country Survey. *Health Educ Res.* 2013;28(5):898-910. doi: 10.1093/her/cyt058.
130. Campaign for Tobacco-Free Kids. Tobacco control laws: country details for England: summary. 2013 [page updated 2015 Oct 1]. Available from: <http://www.tobaccocontrol.org/legislation/country/england/summary>.
131. Li L, Borland R, Yong HH, Sirirassamee B, Hamann S, Omar M, et al. Impact of point-of-sale tobacco display bans in Thailand: findings from the International Tobacco Control (ITC) Southeast Asia Survey. *Int J Environ Res Public Health.* 2015;12(8):9508-22. doi: 10.3390/ijerph120809508.
132. McNeill A, Lewis S, Quinn C, Mulcahy M, Clancy L, Hastings G, et al. Evaluation of the removal of point-of-sale tobacco displays in Ireland. *Tob Control.* 2011;20(2):137-43. doi: 10.1136/tc.2010.038141.
133. Carter OBJ, Phan T, Mills BW. Impact of a point-of-sale tobacco display ban on smokers' spontaneous purchases: comparisons from postpurchase interviews before and after the ban in Western Australia. *Tob Control.* 2015;24(e1):e81-6. doi: 10.1136/tobaccocontrol-2013-050991.
134. Kuipers MAG, Beard E, Hitchman S, Brown J, Stronks K, Kunst AE, et al. Impact on smoking of England's 2012 partial tobacco point of sale display ban: a repeated cross-sectional national study. *Tob Control.* 2016 [published online ahead of print 2016 Feb 22]. doi: 10.1136/tobaccocontrol-2015-052724.
135. Quinn C, Lewis S, Edwards R, McNeill A. Economic evaluation of the removal of tobacco promotional displays in Ireland. *Tob Control.* 2011;20(2):151-5. doi: 10.1136/tc.2010.039602.
136. National Cancer Institute. Role of entertainment media in promoting or discouraging tobacco use. In: *The role of the media in promoting and reducing tobacco use. Tobacco control monograph no. 19.* NIH publication no. 07-6242. Bethesda, MD: National Cancer Institute; 2008. p. 357-428. Available from: http://cancercontrol.cancer.gov/Brp/tcrb/monographs/19/m19_complete.pdf.

137. Wellman RJ, Dugas EN, Dutczak H, O'Loughlin EK, Datta GD, Lauzon B, et al. Predictors of the onset of cigarette smoking: a systematic review of longitudinal population-based studies in youth. *Am J Prev Med.* 2016 [published online ahead of print 2016 May 11]. doi: 10.1016/j.amepre.2016.04.003.
138. World Health Organization. *Smoke-free movies: from evidence to action.* 3rd edition. Geneva: World Health Organization; 2015. Available from: http://apps.who.int/iris/bitstream/10665/190165/1/9789241509596_eng.pdf.
139. Hanewinkel R, Sargent JD. Exposure to smoking in popular contemporary movies and youth smoking in Germany. *Am J Prev Med.* 2007;32(6):466-73. doi: 10.1016/j.amepre.2007.02.025.
140. Hanewinkel R, Sargent JD. Exposure to smoking in internationally distributed American movies and youth smoking in Germany: a cross-cultural cohort study. *Pediatrics.* 2008;121(1):e108-17. doi: 10.1542/peds.2007-1201.
141. Hunt K, Sweeting H, Sargent J, Lewars H, Cin SD, Worth K. An examination of the association between seeing smoking in films and tobacco use in young adults in the west of Scotland: cross-sectional study. *Health Educ Res.* 2009;24(1):22-31. doi: 10.1093/her/cym082.
142. Hunt K, Henderson M, Wight D, Sargent JD. Exposure to smoking in films and own smoking among Scottish adolescents: a cross-sectional study. *Thorax.* 2011;66:866-74. doi: 10.1136/thoraxjnl-2011-200095.
143. Strategic Mediaworks. "Bollywood": victim or ally? A WHO study on the portrayal of tobacco in Indian cinema. Geneva: Strategic Mediaworks and World Health Organization, Tobacco Free Initiative; 2003. Available from: <http://apps.who.int/iris/bitstream/10665/42703/1/924159067X.pdf>.
144. Islam SM, Johnson CA. Western media's influence on Egyptian adolescents' smoking behavior: the mediating role of positive beliefs about smoking. *Nicotine Tob Res.* 2007;9(1):57-64. doi: 10.1080/14622200601078343.
145. Thrasher JF, Sargent JD, Huang L, Arillo-Santillán E, Dorantes-Alonso A, Perez-Hernandez R. Does film smoking promote youth smoking in middle-income countries? A longitudinal study among Mexican adolescents. *Cancer Epidemiol Biomarkers Prev.* 2009;18(12):3444-50. doi: 10.1158/1055-9965.EPI-09-0883.
146. Thrasher JF, Jackson C, Arillo-Santillán E, Sargent JD. Exposure to smoking imagery in popular films and adolescent smoking in Mexico. *Am J Prev Med.* 2008;35(2):95-102. doi: 10.1016/j.amepre.2008.03.036.
147. Salgado MV, Pérez A, Abad-Vivero EN, Thrasher JF, Sargent JD, Mejía R. Exposure of secondary school adolescents from Argentina and Mexico to smoking scenes in movies: a population-based estimation. *Rev Argent Cardiol.* 2016;84(2):152-8. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4921200/pdf/nihms-794455.pdf>. Spanish.
148. Freeman B. New media and tobacco control. *Tob Control.* 2012;21:139-44. doi: 10.1136/tobaccocontrol-2011-050193.
149. International Telecommunication Union. *ITC fast facts and figures.* Geneva: International Telecommunication Union; 2016. Available from: <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>.
150. World Bank. *Information and communications for development, 2012: maximizing mobile.* Washington, DC: World Bank; 2012. Available from: <http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/IC4D-2012-Report.pdf>.
151. Family Smoking Prevention and Tobacco Control Act of 2009, Pub. L. No. 111-31. (United States).
152. Forsyth SR, Kennedy C, Malone RE. The effect of internet on teen and young adult tobacco use: a literature review. *J Pediatr Health Care.* 2013;27(5):367-76. doi: 10.1016/j.pedhc.2012.02.008.
153. Hong T, Cody MJ. Presence of pro-tobacco messages on the Web. *J Health Commun.* 2002;7(4):273-307. doi: 10.1080/10810730290088148.
154. Ribisl KM, Lee RE, Henriksen L, Haladjian HH. A content analysis of Web sites promoting smoking culture and lifestyle. *Health Educ Behav.* 2003 Feb;30(1):64-78. doi: 10.1177/1090198102239259.
155. Elkin L, Thomson G, Wilson N. Connecting world youth with tobacco brands: YouTube and the internet policy vacuum on Web 2.0. *Tob Control.* 2010;19(5):361-6. doi: 10.1136/tc.2010.035949.
156. Freeman B, Chapman S. Open source marketing: Camel cigarette brand marketing in the "Web 2.0" world. *Tob Control.* 2009;18(3):212-7. doi: 10.1136/tc.2008.027375.
157. Chu KH, Sidhu AK, Valente TW. Electronic cigarette marketing online: a multi-site, multi-product comparison. Eysenbach G, editor. *JMIR Public Health Surveill.* 2015;1(2):e11. doi: 10.2196/publichealth.4777.
158. Grana RA, Ling PM. "Smoking revolution": a content analysis of electronic cigarette retail websites. *Am J Prev Med.* 2014;46(4):395-403. doi: 10.1016/j.amepre.2013.12.010.
159. de Andrade M, Hastings G, Angus K. Promotion of electronic cigarettes: tobacco marketing reinvented? *BMJ.* 2013;347:f7473. doi: 10.1136/bmj.f7473.
160. Zhu SH, Sun JY, Bonnevie E, Cummins SE, Gamst A, Yin L, et al. Four hundred and sixty brands of e-cigarettes and counting: implications for product regulation. *Tob Control.* 2014;23(Suppl 3):iii3-9. doi: 10.1136/tobaccocontrol-2014-051670.
161. Cobb NK, Brookover J, Cobb CO. Forensic analysis of online marketing for electronic nicotine delivery systems. *Tob Control.* 2015;24(2):128-31. doi: 10.1136/tobaccocontrol-2013-051185.

162. Pew Research Center. Emerging nations embrace internet, mobile technology: survey report. Washington, DC; 2014. Available from: <http://www.pewglobal.org/2014/02/13/emerging-nations-embrace-internet-mobile-technology>.
163. BinDhim NF, Freeman B, Trevena L. Pro-smoking apps for smartphones: the latest vehicle for the tobacco industry? *Tob Control*. 2014 Jan;23(1):e4. doi: 10.1136/tobaccocontrol-2012-050598.
164. Davis RM, Douglas CE, Beasley JK. The Tobacco Deposition and Trial Testimony Archive (DATTA) project: origins, aims, and methods. *Tob Control*. 2006;15(Suppl IV):iv4-8. doi: 10.1136/tc.2006.016667.
165. Goldberg ME, Davis RM, O'Keefe AM. The role of tobacco advertising and promotion: themes employed in litigation by tobacco industry witnesses. *Tob Control*. 2006;15(Suppl. 4):iv54-67. doi: 10.1136/tc.2006.017947.
166. U.S. Department of Health and Human Services. Women and smoking: a report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2001. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK44303>.
167. Amos A, Haglund M. From social taboo to "torch of freedom": the marketing of cigarettes to women. *Tob Control*. 2000;9:3-8. doi: 10.1136/tc.9.1.3.
168. Brandt AM. Recruiting women smokers: the engineering of consent. *J Am Med Womens Assoc*. 1996;51(1-2):63-6.
169. World Health Organization. The marketing of tobacco to women: global perspectives. In: World Health Organization: Gender, women, and the tobacco epidemic. Geneva: World Health Organization; 2010. p. 105-36. Available from: http://www.who.int/tobacco/publications/gender/en_tfi_gender_women_marketing_tobacco_women.pdf?ua=1.
170. Ernster VL. Mixed messages for women: a social history of cigarette smoking and advertising. *N Y State J Med*. 1985 Jul;85(7):335-40.
171. World Health Organization. Women and tobacco. Geneva: World Health Organization; 1992. Available from: http://apps.who.int/iris/bitstream/10665/37510/1/9241561475_eng.pdf.
172. Kaufman NJ, Nichter M. The marketing of tobacco to women: global perspectives. In: Samet JM, Yoon SY, editors. Women and the tobacco epidemic: challenges for the 21st century. Samet JM, Yoon SY, editors. Geneva: World Health Organization, Institute for Global Tobacco Control, Johns Hopkins School of Public Health; 2001. Available from: http://apps.who.int/iris/bitstream/10665/66799/1/WHO_NMH_TFI_01.1.pdf.
173. Amos A. Women and smoking. *Br Med Bull*. 1996;52(1):74-89. doi: 10.1093/oxfordjournals.bmb.a011534.
174. Caleyachetty R, Tait CA, Kengne AP, Corvalan C, Uauy R, Echouffo-Tcheugui. Tobacco use in pregnant women: analysis of data from Demographic and Health Surveys from 54 low-income and middle-income countries. *Lancet Glob Health*. 2014;2(9):e513-20. doi: 10.1016/S2214-109X(14)70283-9.
175. Gilmore AB, Fooks G, Drope J, Bialous SA, Jackson RR. Exposing and addressing tobacco industry conduct in low-income and middle-income countries. *Lancet*. 2015;385(9972):1029-43. doi: 10.1016/S0140-6736(15)60312-9.
176. Nichter M, Greaves L, Bloch M, Paglia M, Scarinci I, Toloso JE, et al. Tobacco use and secondhand smoke exposure during pregnancy in low- and middle-income countries: the need for social and cultural research. *Acta Obstet Gynecol Scand*. 2010;89(4):465-77. doi: 10.3109/00016341003592552.