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# Beyond excise taxes: a systematic review of literature on non-tax policy approaches to raising tobacco product prices

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## ABSTRACT

**Objective** Raising the price of tobacco products is considered one of the most effective ways to reduce tobacco use. In addition to excise taxes, governments are exploring other policies to raise tobacco prices and minimise price dispersion, both within and across price tiers. We conducted a systematic review to determine how these policies are described, recommended and evaluated in the literature.

**Data sources** We systematically searched six databases and the California Tobacco Control library for English language studies or reports, indexed on or before 18 December 2013, that included a tobacco keyword (eg, cigarette), policy keyword (eg, legislation) and a price keyword (eg, promotion). We identified 3067 abstracts.

**Study selection** Two coders independently reviewed all abstracts and identified 56 studies or reports that explicitly described a public policy likely to impact the retail price of tobacco products through non-tax means.

**Data extraction** Two coders independently identified tobacco products targeted by policies described, recommendations for implementing policies and empirical assessments of policy impacts.

**Data synthesis** The most prevalent non-tax price policies were price promotion restrictions and minimum price laws. Few studies measured the impact of non-tax policies on average prices, price dispersion or disparities in tobacco consumption, but the literature includes suggestions for crafting policies and preparing for legal challenges or tobacco industry opposition.

**Conclusions** Price-focused evaluations of well-implemented non-tax price policies are needed to determine whether they can deliver on their promise to raise prices, reduce price dispersion and serve as an important complement to excise taxes.

## INTRODUCTION

Raising the price of tobacco products is considered one of the most effective ways to reduce consumption<sup>1–3</sup> and is a highly recommended tobacco control strategy worldwide.<sup>1 4 5</sup> Although excise taxes have effectively raised average product prices in many jurisdictions, additional policies that rely on mechanisms other than taxation may be needed to maintain higher prices and prevent price discrimination resulting in lower prices for price-sensitive smokers.<sup>6–8</sup>

Countries all over the world have used tobacco taxes to increase prices and reduce consumption,<sup>9</sup> but not all tax initiatives are equally successful. The tobacco industry works to defeat or limit proposed increases through lobbying and other tactics,<sup>10</sup> and

in many places other political barriers exist, resulting in tax and price geographic variation.<sup>11 12</sup> In the USA in 2014, average prices for a pack of cigarettes ranged from US\$5.06 in Missouri, where the lowest excise tax is levied, to \$10.56 in New York, home of the highest.<sup>13</sup> The structure of a tax is also relevant. Tax structures that rely primarily on ad valorem approaches, which tax based on a per cent of product value, may have weaker health impacts by facilitating substitution to cheaper brands,<sup>14 15</sup> compared to specific taxes, which are levied on a specific quantity and therefore impact all brands equally. Specific taxes that are not indexed to inflation, however, devalue over time.<sup>10–16</sup>

Even when well-structured high taxes are successfully implemented, tobacco companies engage in price discrimination to offset their effects. Price discrimination is the process by which firms with monopoly power segment their market and set lower prices for those consumers who are most price-sensitive.<sup>17</sup> Tobacco companies accomplish this by offering select retailers and consumers *price promotions*, including volume-based discounts, multipack offers and coupons,<sup>18–23</sup> and by providing *products in different price tiers*, including higher priced ‘premium’ products and lower priced ‘discount’ products.<sup>24 25</sup> This produces a cigarette market characterised by price dispersion, both within and between price tiers.

As tobacco taxes rise, incentives for the industry to engage in price discrimination to avoid losing price sensitive customers increase. In the US alone, dollars spent on cigarette advertising and promotion rose from \$8.37 billion in 2011 to \$9.17 billion in 2012. Price discounts has been the largest marketing expenditure category since 2002, and in 2012 it accounted for more than 85% of marketing spending by the industry.<sup>26</sup> In some places, price gaps between premium and discount price tiers have gotten larger as well, possibly due to disproportionate shifting of tax increases to higher priced brand variants to maintain options for price sensitive customers.<sup>27 28</sup> Elsewhere, however, this pattern appears reversed, perhaps due to extensive price promotions for premium brands.<sup>29 30</sup>

Tobacco users respond to opportunities to purchase lower priced products.<sup>31</sup> In various surveys, between 25% and 40% of respondents report using discounts and/or cheaper brands. Several US studies found that purchasing cheaper brands, or buying with a discount or multipack offer, was associated with price reductions of up to \$1 per pack.<sup>32–35</sup>

People who engage in price-minimising strategies make fewer cessation attempts and are less likely to reduce their smoking.<sup>36–38</sup>

Some of the highest risk groups for tobacco initiation and use, including youth and people with lower incomes,<sup>39–42</sup> are also the most price sensitive, so price dispersion may be a particularly important policy target. Furthermore, groups engage in different price minimisation strategies, so understanding whether a policy is likely to change average prices, prices within a specific price tier, or the availability of low price tiers, is important for understanding potential impacts on vulnerable populations. For example, more than one-third of youth smokers report exposure to price coupons<sup>43</sup> and young adults are both more likely to use coupons or promotions, and less likely to smoke discount brands, compared to older smokers.<sup>44 45</sup> Policies that shrink tier-specific price dispersion may therefore have a particularly strong impact on youth. Lower income smokers, however, are more likely to buy discount brands,<sup>29 37 45</sup> so policies that target low price tiers might ameliorate socioeconomic disparities in smoking.

To boost prices in low tax areas and counteract tobacco industry price reduction strategies, many governments are exploring policies to increase tobacco prices through mechanisms other than taxation, including setting minimum prices or banning promotional discounts. Although the impact of tobacco tax policies has been previously summarised,<sup>10 14</sup> the practical and substantive advantages and disadvantages of other price policy options have not been similarly explored. To fill this gap, we conducted a systematic review of the literature to determine how non-tax tobacco price policies are described, recommended and evaluated.

## METHODS

### Data sources

We searched six databases of peer-reviewed literature (PubMed, CINAHL, EMBASE, Scopus, Academic Search Premier and Legal Trac), and ROVER, a grey literature library maintained by California's Tobacco Control Library. We identified studies and reports that contained one tobacco-related word (cigarette\* or tobacco\*), one policy-related term (eg, 'public policy' or 'law') and one price-related term (eg, 'promotion,' or 'discount'). After eliminating duplicates, this search produced 3067 abstracts.

### Study selection

Two coders independently reviewed all English language abstracts or full text publications that described, analysed or discussed a public policy likely to directly impact retail tobacco prices through means other than taxation. We initially excluded 2824 abstracts that failed to reference any price-relevant tobacco control policy, and an additional 187 articles that focused on policies outside the scope of this review, described potential price-related policies but made no explicit mention of price impacts, were not an appropriate format (eg, news reports), or were not in English. Following these exclusions, 56 articles (35 peer-reviewed studies and 21 reports) were included in the review (figure 1).

### Data extraction

One of two authors (SDG and MHS) read each article to extract: publication year, policies described, geographic location in which policies were considered, targeted tobacco product, any empirical policy evaluation results, and other key findings or conclusions. Each article was then read by the second reviewer to collect information around three key themes: (1)

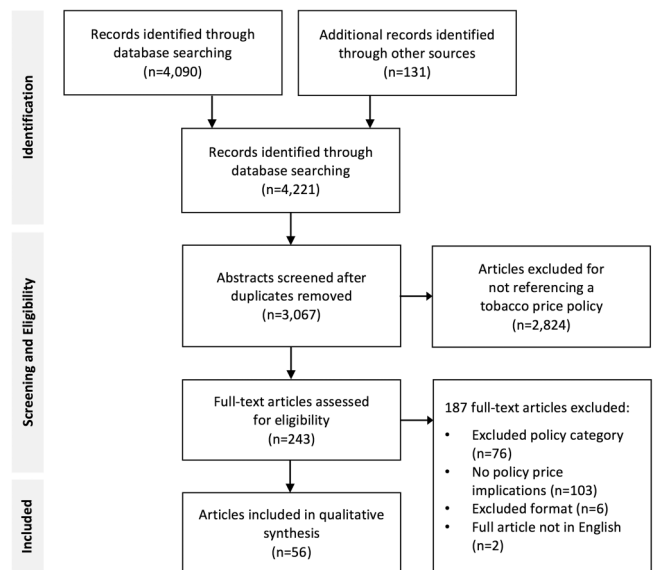


Figure 1 Process of study selection.

policy justification; (2) policy descriptions and recommendations; and (3) potential impacts of policies on price, consumption or disparities.

### Data synthesis

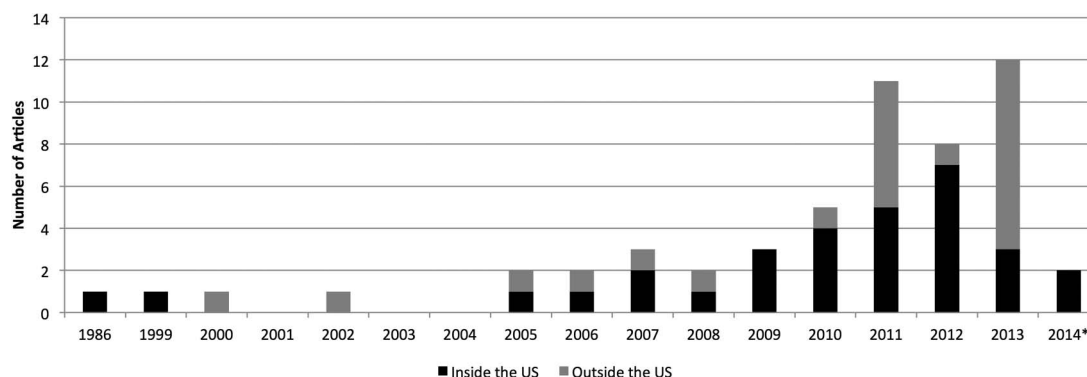
We calculated frequency measures for the policy types, locations and targeted products, and then summarised the key theme data using principles of qualitative analysis.<sup>46</sup> Given the paucity of empirical evaluations and heterogeneous policy types and outcomes, we were prevented from conducting a meta-analysis. Instead, we summarise the findings of each policy evaluation individually.

## RESULTS

With the exception of a 1986 article describing the potential for advertising bans to impact product prices,<sup>47</sup> all non-tax policy articles in this review were published in 1999 or later, and 71% (n=40) were published since 2010 (figure 2). Non-tax policies were discussed with similar and increasing frequency in the US and global contexts. Reviewed articles described a variety of non-tax price policies, including price promotion restrictions (n=41), minimum price policies (n=27), fee-based policies (n=6) and price capping laws (n=4; see online supplementary figure). These policies are defined in table 1. Price-relevant aspects of other policies, such as sunshine laws, which require reporting of industry price discounting and promotional payments,<sup>48</sup> were mentioned but not substantially discussed in five articles. The majority of articles described policies specifically targeting cigarettes (n=48) or all tobacco products (n=33). A small number of articles addressed policies related specifically to cigars (n=2), smokeless (n=2), other tobacco products (n=4) or electronic cigarettes (n=1).

### Policy justification

Almost half of the articles (n=29, 48%) elaborated on reasons that non-tax tobacco price policies are needed. In most of these (n=22), evidence of industry efforts to keep prices low through advertising and price promotions,<sup>11 36 47 49–53</sup> price setting<sup>54</sup> or antiprice policy lobbying<sup>55</sup> was used as a rationale, with some emphasis on disproportionate targeting and tobacco use among youth, African-Americans and residents of neighbourhoods with



**Figure 2** Article describing non-tax price policies identified in systematic review by publication year and location (n=56).

higher percentages of price-sensitive smokers.<sup>56–59</sup> A few articles analysed or cited evidence of public support for price-related policies,<sup>60–61</sup> identified other policy benefits, like offsetting tobacco-related public costs,<sup>62–64</sup> or referenced similar policies implemented for other products.<sup>54–65</sup> Finally, several authors identified gaps in existing legislation that needed to be filled.<sup>53–66</sup>

#### Policy descriptions, recommendations, political factors and legal issues

Regardless of policy type, more than one-quarter of the articles (n=15) recommended combining non-tax price policies with

taxes to prevent the use of price minimising strategies. Nearly half of all articles (n=26) described political or legal issues related to price-related policies, including: tobacco industry opposition to, or efforts to circumvent, price-related policies; the importance of considering rules related to commerce, free speech and policy pre-emption by a higher level of government; the value of consulting legal counsel in legislation design; and concerns about the implications of price policies for low income consumers. Recommendations, political factors and legal concerns specific to each of the most cited non-tax policy types are outlined in [table 1](#), and summarised below.

**Table 1** Non-tax price policies, recommendations and legal considerations described in the literature

Policy	General description	Recommendations	Political arguments and legal considerations
Restrictions on price promotions	Bans or restrictions on tobacco product coupons, value-added promotions (eg, 'buy one get one' offers), or retailer rebates (eg, buy-down programmes)	<ul style="list-style-type: none"> <li>▶ Create comprehensive, rather than partial marketing bans and explicitly include price promotion restrictions.</li> <li>▶ Sufficiently enforce implemented price promotion restrictions. Consider tying adherence to licensing, where appropriate.</li> <li>▶ Ensure promotional bans apply only within the jurisdiction in which the law is passed</li> </ul>	<ul style="list-style-type: none"> <li>▶ Anticipate industry resistance to any promotional restrictions</li> <li>▶ In the USA, any impact on interstate commerce must be offset by benefit to state or locality</li> <li>▶ In the USA, states and localities can only restrict the time, place and manner, but not the content, of promotion</li> <li>▶ In the USA, banning coupon redemption rather than distribution may be less likely to inhibit interstate commerce</li> </ul>
Minimum price laws	Laws that require a per cent mark-up on the wholesale/retail price of a tobacco product and/or a minimum floor price beneath which product cannot be sold	<ul style="list-style-type: none"> <li>▶ Consider a floor price structure</li> <li>▶ Remove provisions that allow discounts, coupons, buy-downs</li> <li>▶ Set rates above those established by free market</li> <li>▶ Impose strong penalties and dedicate more resources for enforcement.</li> <li>▶ Extend to non-cigarette tobacco products</li> </ul>	<ul style="list-style-type: none"> <li>▶ Might be politically feasible in places where higher excise taxes are not.</li> <li>▶ Draft laws to impact retailers in different jurisdictions equally and to avoid price fixing.</li> <li>▶ Could benefit the tobacco industry and do not raise money for tobacco control efforts</li> </ul>
Fee-based policies	Laws applying a fee to tobacco products to offset costs incurred by government related to tobacco-related issues, including improperly disposed cigarette butts/waste, and managing retailer licensing programmes	<ul style="list-style-type: none"> <li>▶ Base fee level on demonstrable costs</li> <li>▶ Raised monies must be allocated to programme costs (eg, litter clean-up efforts, licensing programme administration)</li> <li>▶ To impact prices, fees may need to be substantial</li> </ul>	<ul style="list-style-type: none"> <li>▶ In some places, local laws may be pre-empted by laws from a higher level jurisdiction (eg, state or federal)</li> <li>▶ In addition to impacting price, mitigation fees offset government costs for cleanup and result in less toxic environments. One study found that cigarette litter accounted for nearly ¼ of all waste-related costs</li> </ul>
Price capping	Laws that place a cap on the pretax manufacturers' price	<ul style="list-style-type: none"> <li>▶ Base cap level on costs faced by firms</li> <li>▶ Pair with high excise taxes to transfer industry profits to government revenue and promote tobacco control</li> <li>▶ Pair with marketing restrictions to inhibit targeted promotional discounts in new markets</li> </ul>	<ul style="list-style-type: none"> <li>▶ Can be justified to counter excess market power by few large tobacco companies</li> <li>▶ Not well implemented for tobacco products, but has been used in utilities</li> </ul>

### Price promotion restrictions and bans

The review highlighted two different strategies for restricting the ability of tobacco companies, wholesalers or retailers to use price promotions to reduce tobacco prices: comprehensive tobacco marketing legislation that includes price promotion restrictions or standalone legislation restricting price promotions only. Specific price promotion policy components include banning or restricting: tobacco product coupons; value-added promotions like multipack discounting or cross-product promotions; and/or buy-down or master-type programmes in which manufacturers offer price discounts to retailers or wholesalers.

Nearly all of the articles discussing price promotions as part of comprehensive marketing bans reference Article 13 of the WHO's Framework Convention on Tobacco Control, which recommends marketing bans on both direct and indirect advertising, including the distribution of promotional discounts.<sup>4 67</sup> Several authors argued that few countries implement truly comprehensive marketing bans, often because the bans fail to include point-of-sale or price promotion bans.<sup>68–70</sup> Throughout the marketing ban papers, authors noted the importance of implementing comprehensive bans to ensure advertising opportunities were not simply moved to different channels following partial bans.<sup>71–74</sup> For example, Moodie *et al*<sup>75</sup> documented an increase in pack-based marketing, including price-related offers on the pack, following the passage of the British Tobacco Advertising and Promotion Act which eliminated many other forms of marketing. In addition to moving into new marketing venues, authors cautioned that the tobacco industry would maximise marketing where restrictions are non-existent, work to weaken any marketing regulation that is introduced and use cross-border advertising to their advantage.<sup>72</sup>

Stand-alone price promotion policies were primarily discussed in the USA, where the 2009 Family Smoking Prevention and Tobacco Control Act (TCA) bans redemption of coupons by mail, but does not address the use of promotions in the retail setting.<sup>36</sup> The TCA permits state and local governments to regulate the sale and distribution of tobacco products, and also amended earlier legislation to allow states and localities to regulate the time, place and manner,<sup>76</sup> but not the content, of cigarette advertisements or promotions. Although two reports highlighted successful implementations of city policies,<sup>57 77</sup> most of the US price promotion literature investigated potential legal barriers and offered recommendations for legally defensible legislation. State and local governments were cautioned to limit burden on interstate commerce, and ensure their legislation does not go beyond legislation at higher levels of government.<sup>57 78</sup> To maximise legal viability, authors recommended restricting advertising only within a specific jurisdiction, banning the redemption of coupons rather than their distribution and targeting actual price reductions rather than specific advertising messages.<sup>49 51 53 57 78 79</sup> In places where tobacco licenses are issued, adherence to price promotion rules could be tied to licensing maintenance<sup>50 80</sup> or restrictions on price promotions could be added to existing minimum price legislation.<sup>53 81 82</sup>

### Minimum price policies

Minimum price laws (MPLs), originally implemented to protect tobacco retailers from predatory business practices,<sup>11 82</sup> establish a minimum mark-up on the retail and/or wholesale price of a tobacco product. Most literature on this topic came from the US, where MPLs operate in about half of all states by levying a

per cent mark-up on a basic cost price.<sup>82</sup> To eliminate discount brands from the market, and for ease of administration, several authors recommended a floor price structure, which sets a level below which a product cannot be sold or a combination of a floor price with either mark-ups<sup>50 58</sup> or price capping policies.<sup>56</sup> In addition, three strategies to enhance the impact of MPLs were suggested: (1) eliminate the use of coupons, buy-downs or other promotional strategies to lower prices below minimum levels;<sup>11 36 51 52 58 63 82 83</sup> (2) ensure that mark-ups are high enough to result in prices above those determined naturally by the market by setting high initial rates and indexing them to inflation;<sup>52 58 83 84</sup> and (3) impose strong penalties for violation and provide resources for enforcement.<sup>83 85</sup>

MPLs were recognised as strategies that could complement high excise taxes, or be more politically palatable in places where raising excise taxes has been difficult.<sup>63</sup> Authors cautioned, however, that MPLs may be challenged as infringing too much on free market competition<sup>52 86</sup> or interstate commerce.<sup>52</sup> To prevent such attacks, legislation should be drafted in a way to stave off accusations of price fixing and to ensure that retailers within and outside of the jurisdictional area are treated the same way.<sup>51 52 63</sup> Several authors also noted additional potential consequences of MPLs, including increasing profits for the tobacco industry and retailers in the place of increased revenue from excise taxes,<sup>50 56 83 85 87 88</sup> providing a basis for marketing products as sold at the 'minimum legal price,'<sup>83</sup> or encouraging cross-border purchasing if implemented irregularly.<sup>11</sup>

### Fee-based policies

Although fees are similar to taxes because the amount added to the price returns to government, we include them in our review as distinct from taxes for two reasons. First, the funds raised by fees cannot exceed the costs of implementing the services to which they are attached; their allowable size must be determined through careful analysis. Second, fees are a policy option available in some local communities that do not inherently have taxing authority. Articles in this review described two types of fees: mitigation and licensing fees. Cigarette butts are a common type of litter<sup>89</sup> that creates chemical hazards in public spaces and incurs governmental costs for removal. Mitigation fee policies levy per-pack fees to offset these costs and eliminate some waste by-products. Two articles specifically described the process and results of calculating the San Francisco litter abatement policy; the author estimated that cleaning up cigarette litter costs about 22 cents per pack,<sup>64 90</sup> but also noted that cities could use national or comparable place figures to calculate appropriate fees. Licensing fees are charged to retailers to fund the administration of retailer licensing programmes. Although the initial search generated many articles describing licensing fees, only two explicitly described the the potential impact on product prices. Authors noted that substantial fee increases (perhaps beyond what is justifiable in terms of costs) might be needed to raise prices,<sup>63</sup> and that indexing fees to inflation or product prices could ensure they are sustained at relatively high levels.<sup>62</sup>

### Price caps

Four articles describe or propose price capping policies, which set limits on the maximum price level that the industry can charge for a product. By setting price caps close to the level of production costs, authors argue that the large companies that currently dominate the market will no longer be able to target specific audiences with low prices, because they cannot make up the profit loss through higher prices on other products or in



other venues. Implemented by itself a price cap would then compress prices, but might actually lower average product prices. Supporters of price caps therefore recommend pairing them with high excise taxes.<sup>54 56 91</sup> In this way, product sales generate 'profits' that are realised by the government, rather than by the manufacturers or retailers.

### Policy impacts

Although most of the articles discussed the potential of non-tax price policies to reduce tobacco prices, consumption and/or related health problems (n=46, 77%), only 16 articles (27%) empirically examined policy impacts. Nine of these measured the effect of a policy package without specifying outcomes for price-related components. For example, seven articles used the SimSmoke model to evaluate or predict the impact of different recommended tobacco control strategies, including comprehensive marketing bans, but did not isolate the effect of price promotion restrictions within those bans. The remaining six empirical impact articles explicitly assessed the impact of either MPLs or price promotion restrictions a relevant outcome.<sup>11 12 68 73 74 83 92</sup> Of them, three cross-national comparisons documented positive associations between stronger price promotion restrictions policies and decreased awareness of promotional offers, two found no evidence that average cigarette prices were higher in places that had implemented MPLs, and one found no average price impacts of a voluntary, industry-led policy. Findings of each article are further described in [table 2](#).

### DISCUSSION

Policies targeting tobacco prices through mechanisms other than taxes are gaining attention in the literature. The articles reviewed here provide detailed definitions of price promotion bans, minimum price legislation and other policies, as well as suggestions for making them as strong and legally robust as possible. Policymakers or practitioners interested in exploring these options, therefore, have resources that could guide policy development. Given the economic and legal complexities outlined in

many of the reviewed works, as well as industry and political challenges faced by most tobacco control legislation,<sup>49 51 52 58 78</sup> this guidance may be necessary before adoption and sustained implementation of any price-focused policies is commonplace.

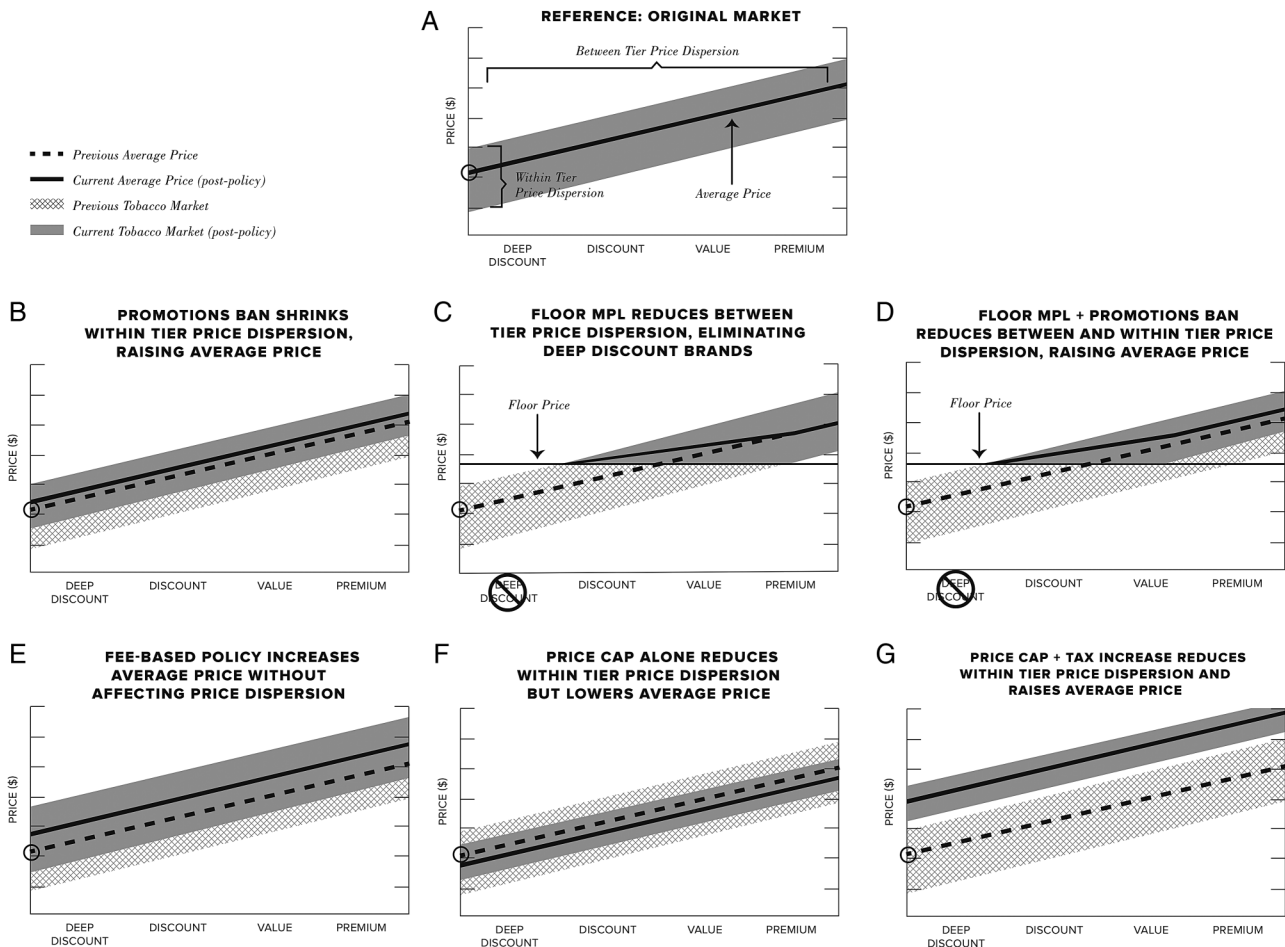
Infrequent in the literature, however, are assessments of the effectiveness of non-tax price policies as tobacco control strategies. Associations between higher tobacco prices and lower levels of tobacco consumption are already well established;<sup>1-3</sup> what is not yet known is whether other policies can bring about average price increases through means other than tax hikes. Our search generated a small number of empirical assessments which failed to isolate price effects; measured only proximal outcomes like promotion awareness, or found no evidence that policies successfully raised average cigarette prices.

Furthermore, we found little discussion and no evaluation of the potential impact of the reviewed policies on price dispersion, either within or between price tiers. Yet several of these policies may prove particularly useful in shrinking price dispersion, eliminating opportunities for the industry to leverage differential profit margins to target marketing or offer discount brands to price-sensitive smokers. More specifically, policies that reduce price dispersion within price tiers may particularly impact those smokers who are brand loyal, but frequently exposed to coupons, like youth, whereas policies that reduce price dispersion between price tiers could reduce consumption among groups currently using deep discount brands, like low income smokers. Understanding whether a policy impacts price dispersion and how it does so, is therefore critical to predicting the impact of that policy on vulnerable populations, another topic that received little attention in the reviewed literature. More rigorous evaluation is needed to identify the impact of reviewed policies on average prices, as well as price dispersion and tobacco use among price sensitive groups.

To support such endeavours, we hypothesise potential mechanisms through which non-tax policies might influence average prices and price dispersion, both within and between price tiers and illustrate these in [figure 3](#). In the first panel, which represents an initial cigarette market, the black line tracks

**Table 2** Articles that empirically assess non-tax price policies

Year	First author	Location	Outcome measure	Price-related article findings
Minimum price laws (MPLs)				
2005	Feighery <sup>11</sup>	USA	Cigarette prices	Prices in states with MPLs were not significantly lower than prices in states without, but were higher in NY, the one MPL state that prohibited special price promotions
2012	Tynan <sup>83</sup>	USA	Cigarette prices	Prices were lower in states with MPLs than in states without them. This finding was consistent in the grocery channel (46 cents difference), drug channel (29 cents difference) and convenience stores (13 cents difference)
Price promotion restrictions				
2006	Harris <sup>73</sup>	UK, USA, Canada, Australia	Awareness of promotions (2002 and 2003)	Awareness of special price promotions declined from 62% to 46% in the UK in the year following a ban on special price promotions. This change was greater than changes occurring during the same time period in three countries that did not implement a ban
2008	Yong <sup>74</sup>	Malaysia, Thailand	Awareness of promotions	In two countries that have implemented similar marketing bans, 21.6% of respondents in the country that does not enforce the ban (Malaysia) reported seeing special price offers, compared to only 2.5% of smokers in the country that does enforce the ban (Thailand)
2009	Feighery <sup>12</sup>	USA	Brand-specific price and promotions in stores	There were no differences in prices or promotions for Phillip Morris USA cigarette brands in stores where promotions were suspended by the company compared to stores that had not been sanctioned
2011	Kasza <sup>68</sup>	UK, USA, Canada, Australia	Awareness of promotions (2002 and 2008)	Awareness of price promotions declined from 62% to 25% in the UK following the implementation of a ban on special price promotions. This change was greater than changes occurring during the same time period in three countries that did not implement a ban
NY, New York.				



**Figure 3** Mechanism through which non-tax policies might increase average tobacco product prices and reduce price dispersion.

the initial average price of cigarettes across a range of price tiers and grey shading surrounding the line illustrates depicts price dispersion (figure 3A). Although the angle of the line, as well as the size and placement of the shading, are hypothesised in the figure, we used the empirical research described above about the proportion of smokers who engage in price minimisation to guide its development. In particular, since fewer than half of smokers report using price promotions, we presume that there are fewer purchases but a larger range of prices below the average than above. The next six panels illustrate potential impacts for each described policy. Price promotion bans reduce price dispersion within price tiers by eliminating the lowest prices, which has the effect of raising average prices (figure 3B). MPLs, when implemented using an inviolable floor structure, might eliminate deep discount brands from the market altogether and slightly raise average prices for middle price tiers whose initial dispersion included below-floor values (figure 3C). In combination with price promotion bans, MPLs also shrink price dispersion within all tiers (figure 3D). Fee policies shift the market upward by the amount of the fee, and therefore only impact average prices (figure 3E). Finally, price caps are designed to shrink industry profits, leaving fewer resources to offset discounts on specific brands or make deep discount brands feasible.<sup>54</sup> Since they set a cap on what the manufacturer can charge for the product, if implemented alone they may actually lower average prices (figure 3F); to raise average prices, they would need to be accompanied by a tax increase to shifts the market upward (figure 3G).

Despite the potential promise illustrated in figure 3, price promotion bans, MPLs, fee policies and price caps, when implemented in isolation, are not without shortcomings. Although isolated implementation may be necessary where tax hikes are politically challenging, most of these policies will be most effective as complements, rather than substitutes, to excise taxes. Furthermore, each policy design has limitations. MPLs may generate higher profits for retailers or tobacco companies that could be used on other marketing efforts, perhaps undercutting their effect. Promotional bans must be carefully constructed within the context of free speech rules. Fee policies, because they are tied to the real government costs, may only have a modest impact on per unit prices and thus limited influence on smoking behaviour. In addition, the extent to which a retailer licensing fee is passed on to the consumer price of a tobacco product is unclear, so price impacts could be even smaller. The ability of price caps to influence price dispersion presumes diminished profit shifting in the industry. Since most tobacco companies operate in many markets worldwide, they may be able to offset lost profits from price capping policies in single countries with profits generated elsewhere. Finally, some policies that could reduce disparities if they prompt lower income smokers to quit, like floor price policies that eliminate discount brands, could alternatively have a regressive impact if low income smokers switch to higher priced products instead of reducing consumption. Other policies like price promotion bans, however, may be less regressive if the coupon use they eliminate is currently more prevalent for premium brands.<sup>29</sup>

In addition, none of the described policies alleviate problems with tax evasion and avoidance. Estimates from the International Tobacco Control (ITC) Policy Evaluation project indicate that in several countries, more than 10% of consumers recently purchased from a low or untaxed source, whether through legal or illicit means.<sup>93</sup> These rates grow in places that border low tax areas.<sup>94</sup> Geographic variation in price policy that produces different prices in neighbouring places, as well as limited resources dedicated to policy enforcement, may facilitate tax avoidance. Unless the price policies described in this review are implemented in a way to reduce this variation (eg, at national levels or simultaneously in neighbouring jurisdictions), they are unlikely to reduce this problem and like tax increases, could increase it. Other tobacco control policies, like enhanced tax stamps, track and trace technologies and licensing laws are likely necessary for all price policies to fulfil their potential.<sup>95</sup>

Our review also unveiled little discussion of promotional bans, MPLs, price caps and fees in reference to non-cigarette tobacco products. Smokeless tobacco products are popular among youth, and prevalence of use exceeds that of cigarettes in many countries, especially in South-East Asia.<sup>96</sup> In the USA, cigars, little cigars and smokeless products remain an important source of tobacco for many people, with little decline in prevalence in recent years<sup>97–100</sup> and use of electronic cigarettes is rising, especially among youth.<sup>101</sup> Pricing policies that apply primarily to cigarettes may create a different type of price dispersion, based not on price tier but on product type, perhaps encouraging price-sensitive consumers to switch or use both cigarettes and other products, instead of quitting altogether.<sup>102</sup> Although extending tax policies to non-cigarette products can be challenging, due to variations in sizes, packaging and brands, extensions of some non-tax price policies, like price promotion regulations, might be straightforward. Additionally, in places like the US, state and local governments may have more flexibility to regulate pricing and promotions for other tobacco products than they do for cigarettes, due to less pre-emption by federal laws.<sup>66</sup>

Our search has several limitations. Since our search was completed, several major changes have occurred in the tobacco control landscape, including the issuing of the Surgeon General's report of 2014 and the Food and Drug Administration's proposal to extend regulation to more tobacco products in the USA. In each of these, federal agencies highlight non-cigarette products, which might have spurred further discussion of them elsewhere in the literature. Although our search terms and strategy resulted in a seemingly comprehensive set of relevant policies, some key literature could have been omitted. We searched for tobacco and cigarette-specific terms rather than product names, anticipating that articles that referred to a particular product, like snus, would also reference tobacco or cigarettes. Our search was also limited to English language articles, and the library used to search grey literature was based in the USA. We may therefore have missed some relevant literature, such as legal commentary, from abroad. Finally, the small number of empirical studies prevented us from conducting meta-analyses or comparing the quality of their approaches. We caution readers to review the methodology of each before extrapolating results more generally.

## CONCLUSIONS

Although increasing tobacco excise taxes is a central tenet of comprehensive tobacco control,<sup>103</sup> these policies alone may be insufficient for maintaining high prices, or reducing price

discrimination, due to industry tactics to keep at least some prices low.<sup>50 104 105</sup> Policies that set pricing floors, limit the ability of the industry to use price variation in marketing and recoup public costs of tobacco use are gaining attention in practice and in the scientific literature. More empirical evaluations are needed to ascertain the extent to which these policies can complement or substitute for excise taxes by generating higher prices, shrinking price dispersion, reducing consumption and ameliorating tobacco-related disparities. A number of articles and reports focused on design and implementation of most non-tax price policies, however, are currently available, and may be valuable to policymakers and tobacco control professionals interested in investigating these options further.

## What this paper adds

- ▶ Minimum price laws and restrictions on price promotions are gaining research attention as promising complements to excise taxes.
- ▶ Given the paucity of empirical studies, there is limited evidence to date that non-tax policies can successfully raise tobacco prices.
- ▶ Most non-tax approaches focus on cigarettes; thus policymakers have an opportunity to apply these policy approaches to non-cigarette tobacco products.
- ▶ Policymakers should consult legal assistance to navigate the specific constraints of their regulatory environment when drafting non-tax policies.

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