Retail endgame strategies: reduce tobacco availability and visibility and promote health equity

Amanda Y Kong [1,2] Lisa Henriksen [3]

[1]Family and Preventive Medicine, The University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, USA
[2]TSET Health Promotion Center, Stephenson Cancer Center, The University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, USA
[3]Stanford Prevention Research Center, Stanford University School of Medicine, Palo Alto, California, USA

Correspondence to
Dr Amanda Y Kong, Family and Preventive Medicine, The University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, USA; Amanda-Kong@OUHSC.edu

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ABSTRACT

An increasing number of countries have set tobacco endgame goals that target dramatic reductions in smoking prevalence. To achieve those targets and promote health equity, policies are needed to reduce the retail supply and visibility of tobacco products. Focusing on retailer reduction strategies and tobacco display bans, this special communication reviews solution-oriented research about the retail environment. It highlights examples of policy implementation and identifies data needs and research gaps for designing and evaluating retail policies to promote population health equitably.

BACKGROUND

To continue progress in decreasing cigarette smoking and tobacco use, the tobacco control community has made a global call for tobacco endgame strategies, described as 'initiatives designed to change/eliminate permanently the structural, political and social dynamics that sustain the tobacco epidemic, in order to end it within a specific time'.[1] Several countries have established endgame goals to reduce smoking prevalence to 5% or lower, including Hong Kong (by 2022), Ireland (2025), New Zealand (2025), Scotland (2034) and Wales (2040).[2] The US Department of Health and Human Services specified the same target by 2030,[3] absent any mention of a tobacco endgame or ending the tobacco epidemic altogether.

Tobacco retailer availability and product displays

The past decade of tobacco control research has been marked by greater attention to aspects of place, including the tobacco retail environment, as a critical focus of policy interventions to help countries reach endgame targets.[2 4–6] Tobacco retailer availability captures the retail supply of tobacco products by measuring the concentration of tobacco retailers within a geographical area (density) as well as the distance (proximity) between a tobacco retailer and points of interest (eg, households, schools, other tobacco retailers).[7] A meta-analysis of 11 studies from six countries (Australia, Canada, India, New Zealand, Scotland, USA) about youth tobacco use found that greater retailer density near homes was associated with higher odds of past-month cigarette smoking (OR=1.08, 95% CI 1.04 to 1.13).[8] In addition, a meta-analysis of 27 studies from six Organisation for Economic Co-operation and Development countries (Australia, Canada, Finland, New Zealand, UK, USA) about adult tobacco use indicated that reductions in tobacco retailer density and proximity were associated with an estimated 2.5% reduction (95% CI 1.95 to 3.02) in the relative risk of tobacco use.[9] Importantly, many of the associations were evident even after controlling for various individual-level and area-level covariates.[8 9]

In many countries, the omnipresence of tobacco retailers implies widespread exposure to point-of-sale marketing (eg, advertisements, price promotions, product displays). Two systematic reviews of studies from eight countries (Australia, Canada, England, Ireland, New Zealand, Norway, UK, USA) concluded that greater exposure to such marketing was associated with greater susceptibility to smoking, initiation, cravings for cigarettes and impulse purchases.[10 11] Additionally, a meta-analysis of 13 studies (8 from USA, 3 from Europe, and 1 each from Japan and New Zealand) found that youth with greater exposure to retail tobacco marketing had 1.61 times the odds (95% CI 1.33 to 1.96) of smoking and 1.32 times (95% CI 1.09 to 1.61) the odds of smoking susceptibility.[12] As the authors note, a preponderance of cross-sectional studies (11 of 13) raises concern about reverse causation.[12] However, this is unlikely to explain evidence of positive associations between incidental exposure to retail tobacco marketing and greater susceptibility to smoke among never users.[12] Notably, pooled associations for smoking and susceptibility outcomes were larger for studies from countries where tobacco displays were the only form of retail marketing than from countries where stores also contain tobacco advertising, indicating that comprehensive bans on tobacco displays as well as advertising are likely most effective to prevent tobacco use.[12]

Prioritising health equity

Racism and discriminatory systems (eg, residential segregation) have resulted in the stratification of people by sociodemographic characteristics as well as the inequitable distribution of health-promoting and health-harming resources across space.[13–18] In the USA, tobacco retailers concentrate disproportionately in neighbourhoods with a higher proportion of Black and Latino or Hispanic residents as well as neighbourhoods with lower socioeconomic status and those with a greater concentration of same-sex couples.[19–24] The past decade of research confirmed that a pattern of greater tobacco availability in areas of socioeconomic disadvantage is not unique to the USA, but also evident in Australia, Canada, Germany, Scotland and elsewhere.[25–28] Not surprisingly, differential exposures to point-of-sale tobacco marketing follow similar patterns. A systematic review of 43 studies (33 from USA and 10 from Argentina, Australia, Canada, Guatemala, India, New Zealand and UK) documented

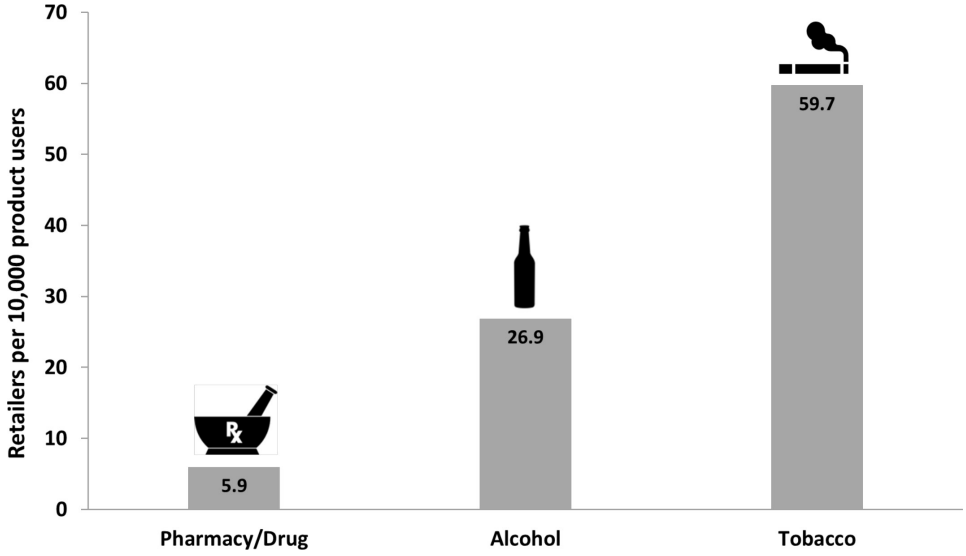

Figure 1 Retail supply for prescription drugs, alcohol and tobacco (number of retailers per 10 000 past-month consumers). Data sources: (1) pharmacy/drug: 2019 US National Pharmacy Market Summary, OneKey by IQVIA[116]; 2015–2018 National Health and Nutrition Examination Survey, National Center for Health Statistics[117]; (2) alcohol: 2019 Beverage Information Group Factbook, Beverage Information Group[118]; 2019 National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality[119]; (3) tobacco: Reference USA, 2018; Kong *et al*[23]; 2019 National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality[120]

widespread racial and socioeconomic inequities in exposure.[29] That availability of tobacco retailers and visibility of tobacco marketing are inequitably distributed across neighbourhoods may contribute to persistent inequities in tobacco use. Therefore, policies are needed to reduce tobacco retail availability and marketing everywhere, and particularly in communities that are disproportionately affected. In addition, research is needed to identify retail policies with the greatest potential for pro-equity impacts that would narrow or eliminate existing inequities in tobacco use and tobacco-related disease.

This special communication focuses on policies that aim to reduce retail tobacco supply (retailer availability) and visibility (product displays) because brick-and-mortar stores remain the primary source for tobacco product purchasing among adults[30 31] and a primary source for youth.[32] In addition, the retail environment remains the dominant channel for tobacco industry marketing.[33–35] We present a brief overview of retailer reduction and tobacco display policies, discuss considerations for design and implementation, and provide recommendations for future research and practice. Other important retail strategies (eg, non-tax mechanisms to increase price, increasing the minimum legal sales age, restricting flavoured tobacco) are discussed in the 'Tobacco and social justice' issue of *Tobacco Control*.[4 36]

REDUCING SUPPLY: TOBACCO RETAILER AVAILABILITY

An oversupply of tobacco exists wherever there are more tobacco retailers than necessary to meet consumer demand. For example, figure 1 compares the number of retailers per 10 000 US past-month consumers of prescription drugs, alcohol and tobacco in the USA. Retail supply was 10 times greater for tobacco than prescription drugs and more than 2 times greater for tobacco than alcohol. Presumably an oversupply of tobacco retailers is not unique to the USA, and comparative data for other countries would be informative.

Limiting sales of commercial tobacco products

One retail strategy to reduce tobacco retailer availability is to end the sale of commercial tobacco products altogether.[37–39] The state of California (USA) set an endgame goal to accomplish this by 2035,[40] and local jurisdictions (Beverly Hills[41] and Manhattan Beach[42]) are leading the way. These early adopters are high-income and predominately non-Hispanic white communities, which raises concerns about equity impacts. Therefore, tracking policy diffusion is important to determine what proportions of priority populations, defined by high rates of tobacco use and tobacco-related disease, are covered by retail policies.[43]

Bhutan was the first country to end tobacco sales but suspended its policy during the COVID-19 pandemic.[44] In response to the pandemic, several countries introduced temporary bans on sales of tobacco products, including South Africa, Botswana and India.[44] According to a survey in South Africa, 93% of individuals who currently smoked reported being able to purchase cigarettes during the ban, indicating the need for stronger enforcement and perhaps certain preconditions (eg, less than 10% smoking prevalence)[39] before implementing such a ban.[44]

Other strategies to reduce tobacco retail availability

Retail reduction policies limit the quantity, location and/or type of stores that can sell tobacco. Strategies include capping the number of retailers, prohibiting tobacco sales near schools or parks/playgrounds, maximising the distance between tobacco retailers and restricting which types of stores are eligible to sell tobacco.[45 46] For example, the Netherlands plans to reduce tobacco retailers from 16 000 to 6000 by first phasing out tobacco vending machines by 2022 and ending tobacco sales in supermarkets by 2024.[47] In Hungary, sales were restricted to government-licensed national tobacco shops in 2013, which was projected to reduce the number of tobacco retailers from 42 000 to just 7000.[48] Many countries require tobacco-free

pharmacies,[49] and Iceland considered limiting tobacco sales to pharmacies by prescription after failed cessation attempts.[50 51]

Simulation studies model the hypothetical impact of retailer reduction policies on availability overall and on inequities in retailer availability by race, ethnicity, socioeconomic status and rurality.[52] For example, restricting tobacco sales to 50% of all liquor stores in New Zealand would result in the highest estimated reduction in smoking and net health cost savings, with greater gains for Māori people compared with non-Māori people.[53 54] Additionally, a simulation study in Queensland (Australia) indicated that adult daily smoking prevalence would decrease by 0.65 percentage points from 2018 to 2037 if alcohol retailers are required to have a licence to sell tobacco products.[55] In Scotland, simulations that removed tobacco product sales in some store types (liquor, pharmacy) reduced retail density by 75%–86%; however, these policies exacerbated socioeconomic inequities in density.[56] Notably, only an explicitly equity-oriented policy (ie, strategically prohibiting specific types of retailers that are more common in neighbourhoods with higher socioeconomic deprivation from selling tobacco) eliminated socioeconomic inequities in retailer density.[56] Other policies may also exacerbate inequities in some settings. For example, the existence of 'pharmacy deserts' in the USA[57] suggests that implementing tobacco-free pharmacies (alone) would reduce tobacco retailer density more in neighbourhoods with greater economic advantage and lower proportions of racially/ethnically minoritised groups.[23 58 59] However, simulations for the state of Ohio (USA) illustrated that implementing tobacco-free pharmacies in tandem with other policies (eg, prohibiting tobacco retailers near schools) can result in a more equitable reduction in tobacco retailers across neighbourhoods.[59]

Evaluations of policy implementation are much needed to complement simulations of hypothetical solutions. For example, San Francisco (California, USA) capped the number of tobacco licences with an equity-oriented goal to achieve parity in the number of tobacco retailers across supervisorial districts (minimum=37, maximum=180, goal=45).[60] Between 2014 and 2019, there was a 24% reduction in tobacco licences and the greatest reduction was in the lowest-income neighbourhood (32% reduction).[61] After implementing similar strategies and increasing the tobacco retail licensing fee (from $50 to $300 in 2017), Philadelphia (Pennsylvania, USA) observed a 20.3% reduction in tobacco retailers within 3 years and a significantly greater decline in density in lower-income districts.[62] In South Australia, a 2007 licence fee increase from $A12.90 to $A200 led to a 23.7% decrease in tobacco licences over 2 years.[63] Similarly, Finland's 2017 licence fee increase (maximum €500 per cash register) was associated with a decrease from over 10 000 to 7250 tobacco licences.[64]

Future directions

Continued surveillance and further evaluations are needed to assess the impact of real-world tobacco retailer reduction policies on youth and adult tobacco use. For example, while a meta-analysis found that higher odds of past-month smoking among youth were associated with greater tobacco retailer density near home (not school),[8] future research should evaluate other tobacco use outcomes, such as smoking susceptibility.[12] Additionally, restricting tobacco retail proximity to schools is predicted to ameliorate or eliminate neighbourhood inequities in retailer availability,[56 59 65] which could benefit adults living near schools as well.

Evidence of positive associations between tobacco retailer availability and tobacco-related disease is emerging, but the topic is understudied. In Australia, the odds of heart disease diagnosis and hospital admission for adults who smoke were greater for those who had more tobacco retailers within a mile of their home.[66] Two California studies found that a higher number of tobacco retailers was associated with more hospitalisations for chronic obstructive pulmonary disease (COPD).[67 68] Similarly, greater tobacco retailer density in US counties was associated with a higher rate of COPD-related discharges, days spent in the hospital and financial costs.[69] In Baltimore City (Maryland, USA), census tracts with higher tobacco retailer density had significantly lower life expectancy, greater age-adjusted mortality and greater rates of death from chronic respiratory disease.[70] Across these studies, observed relationships persisted even after adjusting for individual-level (eg, age, sex) and/or area-level (eg, socioeconomic status, air pollution) factors.

Longitudinal studies are needed to disentangle the mechanisms of observed relationships between the retail environment, tobacco use and tobacco-related disease. Further research is needed to provide evidence about how much and how quickly tobacco retailer reduction strategies can change the environment, affect tobacco use/cessation and reduce tobacco-related disease, particularly among priority populations defined by higher tobacco use and a disproportionate burden of disease. In addition, studies that link potential policy impacts to healthcare costs/savings could promote public/political support and encourage policy adoption.[54]

While home and school neighbourhoods have been the primary environments for studying retailer availability, they likely underestimate individuals' exposure to tobacco retailers and marketing across time and space. A growing body of research using global positioning system (GPS) methodologies can better capture real-time environmental exposure to tobacco retailers in individuals' activity spaces. For example, in Montreal (Canada), measuring the number of tobacco retailers and their proximity in young adults' activity space were both associated with current smoking (vs not).[71] Only the count (not proximity) of tobacco retailers near home was associated with smoking status, perhaps because young adults rely on multiple retailers, not necessarily the closest one.[71] Studies comparing how measures of retailer availability differ are much needed, including which measures best identify neighbourhood inequities and explain tobacco acquisition and consumption.[23] To inform tobacco control practice, measures of tobacco retailer availability that can be easily calculated, communicated and tracked over time should also be prioritised.

REDUCING VISIBILITY: TOBACCO POINT-OF-SALE DISPLAY BANS

In 2018, 72% of parties to the WHO Framework Convention on Tobacco Control (FCTC) reported having a comprehensive ban on tobacco advertising, promotion and sponsorship, although the WHO noted that countries' definition of comprehensive may not meet the FCTC guidelines.[72] Of these 131 countries, 60% reported tobacco point-of-sale display bans.[72] According to the Tobacco Control Laws database maintained by the Campaign for Tobacco-Free Kids (see figure 2), 38 countries have comprehensive display bans and partial bans exist in 43 countries (eg, Brazil allows pack displays but prohibits branding and advertising on the display itself).[49] Notably, support for display bans remains high in countries with such policies, even among individuals who smoke.[73 74]

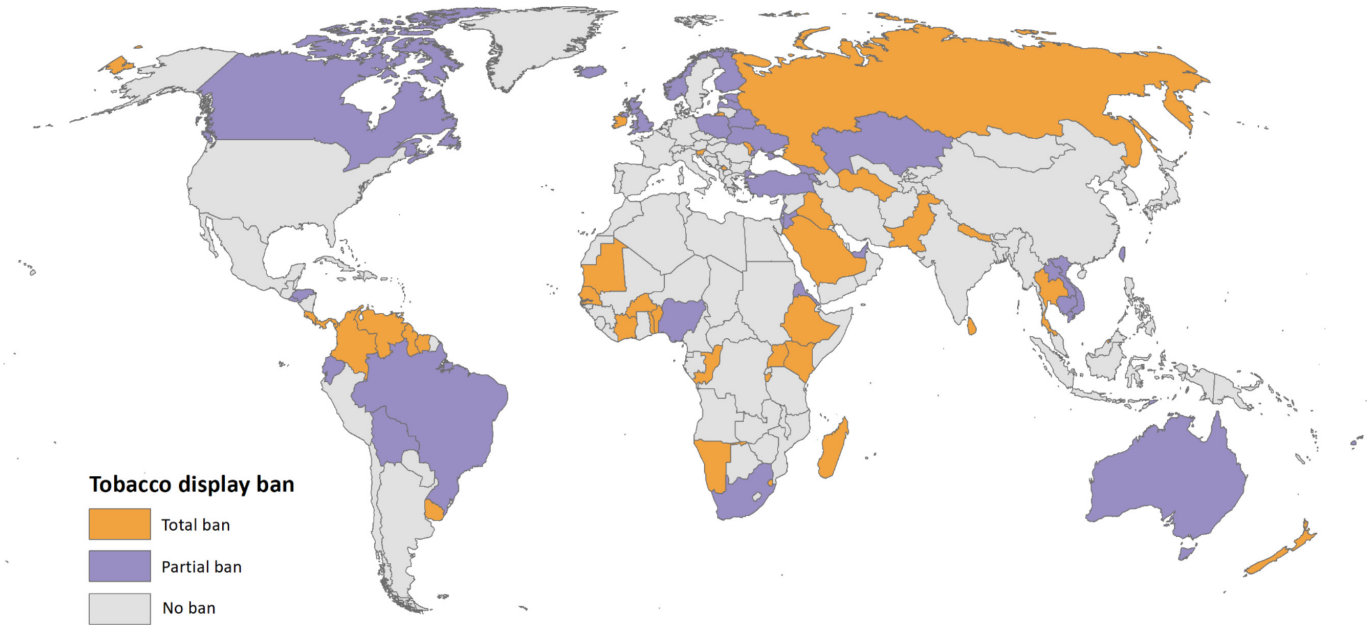

Figure 2 Countries with total, partial and no tobacco display bans. Data were downloaded December 2021 from the Tobacco Control Laws database maintained by the Campaign for Tobacco-Free Kids.[49]

Evaluations of tobacco display bans

Evaluations demonstrate the efficacy of tobacco display bans for tobacco control. A longitudinal analysis of data from 77 countries estimated that implementing a display ban decreased overall adult daily smoking prevalence by 7%.[75] After Ireland's 2009 tobacco display ban, retail compliance was high and recall of displays decreased among both adults and teenagers.[74] Additionally, following Ireland's 2009 display ban, there was no direct short-term economic impact on small retailers that resulted in revenue losses and closures.[76] Within 6–12 months of implementing display bans in New South Wales and Queensland (Australia), youth and young adults were less likely to recall seeing displays and brand awareness, to overestimate peer smoking, and to report current smoking.[77] Following the 2010 display ban in Western Australia, there was a 30% reduction in spontaneous tobacco purchases reported by adults who smoked daily.[78] Evidence from studies that manipulate exposure to tobacco displays in brick-and-mortar or online stores provides complementary evidence of the rationale for display bans. For example, youth exposed to tobacco 'power walls' were more likely to report smoking susceptibility and higher normative perceptions of smoking.[79 80]

Even when tobacco displays are removed, adults who currently smoke or formerly smoked reported that mere exposure to a tobacco retailer, including its shelving units or price boards, can prompt impulse purchases and urges to smoke cigarettes.[81] In Australia and Scotland, the tobacco industry used retailer incentives (eg, price discounts, gifts) in exchange for retailers listing and recommending specific tobacco products on pricing lists as well as maintaining stock levels.[82 83] Such industry tactics promote inequities: for example, Australian stores in areas with lower socioeconomic status listed more discount brands at the top of price boards.[84] Additionally, a systematic review of 20 studies from four countries (Australia, Scotland, UK, USA) found consistent evidence of lower cigarette prices in neighbourhoods characterised by socioeconomic disadvantage and higher populations of youth and Black residents.[85]

Future directions

Continued surveillance and evaluation where display bans are implemented is important. Such research should track compliance, study industry tactics to circumvent bans, and evaluate policy impact on initiation, use and cessation. Although accurate knowledge of where tobacco retailers are located is essential for these tasks, adequate data do not exist globally. Indeed, many countries do not require tobacco retail licensing. For example, only 38 of 50 US states,[86] 6 of 8 Australian states and territories[87] and 5 countries in the European Union (Finland, France, Hungary, Italy, Spain)[88] have established tobacco retail licensing schemes. Accurate and updated national and subnational licensing systems are greatly needed.[89] Such data would allow governments and researchers to better monitor the impact of retail policies on eliminating, ameliorating or exacerbating neighbourhood inequities in tobacco supply, visibility and tobacco use.

Studies that employ multiple methods may better explain the associations between tobacco retailer availability, exposure to displays and marketing, and tobacco use. For example, geographical ecological momentary assessment (GEMA) tracks where and how often youth and adult tobacco users are exposed to tobacco retailers (with GPS) in combination with real-time, self-reported tobacco use and/or cravings experienced in the retail environment (with ecological momentary assessment (EMA)).[90–93] Using GEMA, one study mapped where and when bisexual young adults smoked and then showed participants the geotagged locations in qualitative interviews about their tobacco use behaviours and experiences at these locations to better understand how surrounding contexts may have contributed to use.[94] EMA and GEMA have also been used to document real-time exposure to retail tobacco marketing as well as inequities in exposure.[95 96] Eye tracking and functional magnetic resonance imaging (fMRI) would also improve researchers' understanding of how tobacco displays and other retail marketing stimulate craving and deter cessation.[97] For example, research that combined GPS tracking (to identify which tobacco retailers participants encountered)

and fMRI (showing participants tobacco storefronts they visited and did *not* visit) observed differential neurobiological responses to more frequently visited tobacco storefronts.[98] Integrating novel methods may provide better insight on causal and modifiable mechanisms that perpetuate tobacco use, including tobacco displays, price discounts, as well as branded and unbranded tobacco cues in the retail environment.

CONCLUSION

Given observed inequities in tobacco retailer availability and displays/marketing, strategies that limit tobacco supply and visibility show promise for reducing tobacco use and tobacco-related disease, and importantly for reducing inequities in these outcomes. Governments should address strategies to regulate the tobacco retail environment as part of a comprehensive approach to tobacco control and prioritise equity-oriented goals. For example, New Zealand's Smokefree Aotearoa 2025 Action Plan will 'only allow smoked tobacco products to be sold by authorized retailers, to: significantly reduce the current number of retailers and ensure retail supply is not concentrated in New Zealand's most deprived neighbourhoods'.[99] Additionally, the government set a goal for daily smoking prevalence of 5% or less among all population groups. To establish and reach equity-oriented goals, ongoing assessment and evaluation of policy solutions to reduce tobacco availability and visibility are much needed in places and among communities that bear the greatest burden of tobacco. This is especially important to ensure that policies do not unintentionally exacerbate inequities in the retail environment.

These recommendations are underscored by increased attention to corporate or commercial determinants of health[100] (defined as 'strategies and approaches used by the private sector to promote products and choices that are detrimental to health').[101] This includes the tobacco industry's strategies to sustain an oversupply of tobacco products at multiple stages of the supply chain (eg, agriculture, manufacturing).[102] More evidence is needed to refute tobacco industry opposition to retail regulation,[103 104] including studies that both debunk industry 'footfall' claims about tobacco driving customers to stores and highlight success of retailers who abandon tobacco sales.[105–107] Indeed, studies from Australia, New Zealand and the USA found that sales transactions with tobacco products represented a smaller fraction than industry estimates, and tobacco manufacturers and retailer associations overstate retail profits from tobacco.[108–112] Further evidence to refute industry claims may encourage retailers to abandon tobacco and transition to more profitable product lines,[113] reducing both the oversupply and visibility of tobacco products. Additionally, policies that prohibit tobacco industry contracts and incentives to promote and sell tobacco products in the retail setting are needed.[34 35]

Although this special communication focused on conventional tobacco products and retailers, endgame plans will need to address a proliferation of other nicotine products (eg, e-cigarettes, heated tobacco, nicotine pouches and products derived from synthetic nicotine) as well as vape shops and online sales.[51 99 114 115] Endgame strategies and equity-oriented retail solutions will benefit from collaborations between community members, policymakers and interdisciplinary research teams, including those from tobacco control, public health/policy, health economics, psychology, communications and geography. These teams are needed to design, implement and track effective retail policies that prioritise populations experiencing the greatest burden of tobacco use and tobacco-related disease.

What this paper adds

- Tobacco retailer availability and product displays are associated with youth and adult tobacco use behaviours.
- An oversupply of tobacco retailers and their disproportionate concentration in some communities may exacerbate tobacco use inequities.
- Accumulating evidence suggests that reducing retailer availability and exposure to product display bans may reduce tobacco use behaviours.
- Continued progress towards global tobacco endgame targets requires innovative research and continued evaluations of the real-world implementation of retail policies, particularly evaluations of the potential for pro-equity impacts that would narrow or eliminate existing inequities in tobacco use and tobacco-related disease.

Twitter Amanda Y Kong @AmandaYKong

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ORCID iDs
Amanda Y Kong http://orcid.org/0000-0002-8361-7342
Lisa Henriksen http://orcid.org/0000-0002-9288-3562

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