

What can the regulation of cannabis learn from alcohol and tobacco regulation?

In 2022, DPMP conducted a comprehensive review for the Swiss Government on lessons from alcohol and tobacco for cannabis regulation. Here we provide a selective summary of our findings (The full report is available at: [Lessons for Cannabis Regulation](#)). This summary covers:

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Pricing and Taxation Measures

- Price effects generally
- Price effects for young people
- Different types of taxation/price systems
- Minimum Unit Pricing
- Industry evasion
- Price effects, product substitution and nudge strategies
- Price and the black market and unrecorded/illicit consumption
- Hypothecated taxes
- Medicinal cannabis

Consumer Information and Product Labelling

- Product labels
- Health warning labels
- Plain packaging
- Child-resistant and tamper-resistant packaging
- Safer use (low risk) guidelines

Product Types and Product Modifications

- Regulating the psychoactive ingredient

Advertising and Promotion

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- Outlet density
- Trading hours and days restrictions
- Online sales
- Sales to minors
- Responsible service training, alcohol server liability
- Rations or quantity purchase limits
- Enforcement of retail regulations

Drink-Driving Countermeasures

- Driving under the influence

Regulating Allowable Places of Consumption

- Smoke-free policies

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Pricing and Taxation Measures

Price effects generally: There is strong evidence from alcohol and tobacco that higher prices decrease population consumption and also decrease related harms (Sharma et al., 2017; Wagenaar et al., 2009; Gallet, 2007). Research shows that cannabis consumption is also price sensitive (Halcoussis et al., 2017; Riley et al., 2020). It is therefore extremely likely that higher cannabis prices will contribute towards lower total population consumption and lower rates of harm than might be expected with lower market prices.

Price effects for young people: While increased price/tax was found to reduce overall consumption, price elasticities of alcohol and tobacco varied among different cohorts, with young people found to be less responsive to alcohol price increases than the general population although more so for tobacco, and people with heavy use also found to be less responsive, although still responsive (Elder et al., 2010; Scott et al., 2017). Understanding how people with different patterns of cannabis use respond to different price increases will be critical to implementing appropriate cannabis policies.

Different types of taxation/price systems: Systematic reviews of alcohol and tobacco did not make a comparison of which tax/price systems are the most beneficial in terms of public health. Complicated tax regimes create the potential for industry loopholes. There are five main potential tax/price arrangements for cannabis:

- a sales tax based on THC content (that is products with higher THC content have a higher tax rate)
- a value added sales tax – as a fixed percentage of retail price, or of weight differential price by type of product (that is, additional taxes for more harmful forms or for certain forms to be discouraged)
- a minimum unit price (that is a floor price for any cannabis product)
- bans on price discounting and promotions

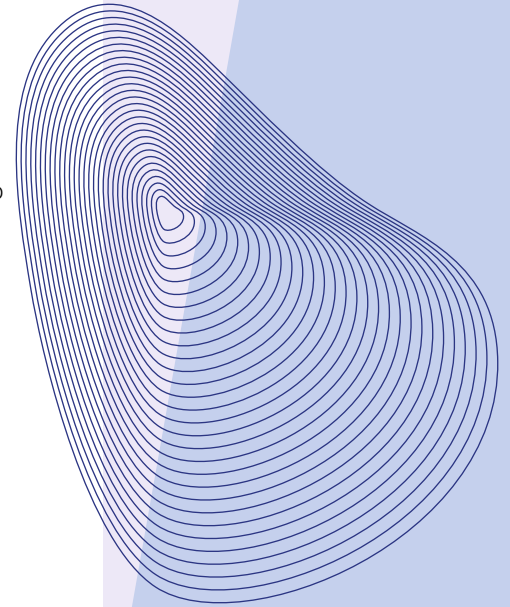
Determining the taxable amount based on THC content is complicated because of the presence of CBD – which mitigates some of the harmful effects of THC. One option is to consider tax rates based on the ratio of THC to CBD (rather than simply THC alone).

Minimum Unit Pricing also offers a potential model for setting base level prices of cannabis. The alcohol literature demonstrates that in conjunction with taxes, minimum unit pricing is effective at preventing industry cost cutting strategies and at raising the prices of the cheapest drinks, often consumed by those who drink most heavily, so offering an effective policy option for tackling heavy use (Boniface et al., 2017).

Industry evasion: The evidence from alcohol and tobacco shows that corporations will either try and find loopholes to avoid taxes (through the creation of new products or new tiers of products), or in some cases absorb taxes to retain market share. In addition to strategies such as minimum unit pricing, a ban on product discounting may also be effective in maintaining appropriate pricing levels. Bans on price discounting and promotions is especially important considering findings from tobacco literature that product discounting and coupons were used more readily by young people and those with lower socio-economic status (Golden et al., 2016; Guindon et al., 2020).

Price effects, product substitution and nudge strategies: Alcohol and tobacco research demonstrates that where tax or pricing policies (or other inputs) create differences in costs of products, substitution can occur (Ciapponi et al., 2021). Price signals for less harmful cannabis product types will be a potential 'nudge' strategy, as seen in individual studies of e-cigarettes (lower price) compared to cigarettes. The evidence from e-cigarettes suggests that flavoured products are likely to encourage consumption (and hence harms). Either banning flavours or placing an additional tax on flavoured cannabis product are regulatory options supported by evidence from tobacco control (Huang et al., 2017).

Price and the black market and unrecorded/illicit consumption: Minimising black-market activity is often cited as one of the main drivers and benefits of cannabis policy liberalisation. At least in the short run, this therefore requires that the price and availability of cannabis be set at a level which is equal to or more accessible than the black market (i.e., similar prices, similar availability). The suggestion to implement lower prices of cannabis is in direct contrast to the public health arguments that have often been made



for alcohol and tobacco – which aim to set the price as high as possible. While there is evidence from alcohol and tobacco showing that when prices increase, the extent of unrecorded consumption also increases (Krishnamoorthy et al., 2020; Miracolo et al., 2021), there are also studies showing that unrecorded alcohol consumption (a marker of the alcohol black market) did not automatically increase with increases in alcohol taxation (Rehm et al., 2022). Price is not the only influencing factor on consumption rates (Pacek et al., 2019), with sociocultural factors, availability, convenience and taste also influencing price elasticities of alcoholic beverages and likely to also impact the price elasticity of cannabis products.

Hypothecated taxes: There is the option to ensure that revenue to government from taxation is hypothecated, that is the tax revenue is designated to be spent on cannabis prevention, treatment and/or harm reduction. This is not an area that has been subject to empirical analysis but it has intuitive appeal.

Medicinal cannabis: Medicinal cannabis and its pricing and availability will bear on the effectiveness of recreational cannabis pricing strategies. Given that the boundary between medicinal use to improve one's state of mind and recreational use is very fuzzy, the level of tax on recreational cannabis needs to take into account the price and availability of medicinal cannabis (and consideration of a tax on medicinal cannabis).

Consumer Information and Product Labelling

Product labels: Consumer information about the product being purchased or consumed is important to increase awareness and enhance the likelihood of healthy choices. Alcohol includes standard drinks labelling and ethanol content; and cigarettes display the nicotine contents. There is strong evidence that consumer/health information labels lead to changes in awareness and knowledge, but only moderate evidence that such labels lead to changes in alcohol drinking or tobacco smoking behaviours (Wilkinson & Room, 2009). This is in the context of high levels of public knowledge of different alcohol strengths (e.g. beer vs wine vs spirits). For cannabis, the public may be significantly less well-informed about THC levels. Recent research has shown poor consumer comprehension of THC amounts (Leos-Toro et al., 2020).

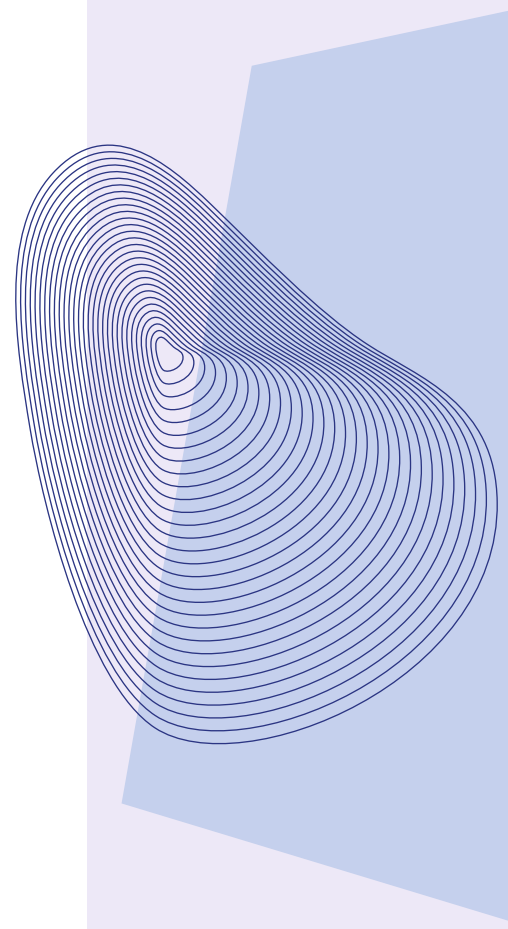
In addition, there is no standard way to communicate THC amount. As noted by Hammond et al., “What little research exists suggests that current regulatory practices of labelling THC levels on packages may be ineffective due to consumer difficulties understanding numbers (e.g., mg vs. percentage), and the different ways THC levels are communicated across product categories” (Hammond, 2021). Overall, the alcohol and tobacco evidence shows that consumer information labelling is only moderately effective in changing behaviour (Wilkinson & Room, 2009).

Health warning labels: Evidence for potential behaviour change comes mostly from the experience with tobacco warning labels; the key to their success appears to be the use of large, prominent, graphic warnings. Warning labels on cannabis products may reduce cannabis consumption (and hence harms) moderately, and will be more effective depending on their size, shape, colours and placement. In a US study comparing the current required cannabis warning labels (small font and a composite health risk statement) with an experimental enhanced warning label (varying textual and pictorial components), the authors found improved recall accuracy amongst young people (Kim et al., 2022). Mandating health warning labels for cannabis is more effective than voluntary cannabis warning labels (Goodman et al., 2022). For other experimental work on cannabis warning labels see: (Mutti-Packer et al., 2018; Winstock et al., 2021).

Plain packaging: The evidence for plain packaging comes from tobacco control, with consistent evidence that plain packaging of cigarettes reduced product appeal and deterred people from initiation to smoking (Moodie et al., 2021). Plain packaging also increased intentions to quit smoking. There is not, however strong evidence for behavioural impacts (i.e. reduced tobacco consumption).

Child-resistant and tamper-resistant packaging: in relation to tobacco, and notably e-liquids and e-cigarette cartridges, one review has shown that child resistant packaging reduced child exposure to nicotine (Jo et al., 2017). In Canada, all cannabis-containing edibles are required to have tamper-proof and child-resistant packaging.

Safer use (low risk) guidelines: Low-risk alcohol consumption guidelines do not have



strong evidence of effectiveness in preventing high risk consumption or reducing the harms amongst those consuming at high risk levels. At the same time, they do no harm and are not a costly intervention. Lower-risk cannabis use guidelines have been published (Fischer et al., 2022).

Product Types and Product Modifications

Regulating the psychoactive ingredient: In attempting to apply the lessons from alcohol and tobacco to cannabis, it is important to recognise the unique characteristics and different harm profiles for each substance. The psychoactive ingredient in alcohol is the main source of harm from the product, while much of the harm from cigarettes and other smoked tobacco products does not come directly from nicotine, the main psychoactive ingredient, but from the route of administration (smoking) and the carcinogens found in different tobacco products. For cannabis the psychoactive profile is more complex and there are differences in types and degrees of potential harm between different potencies, cannabinoid composition, and modes of use (as well as consumption patterns) (Room, 2018). Cannabis contains hundreds of phytocannabinoids; tetrahydrocannabinol (THC) and cannabidiol (CBD) are both psychoactive, but THC is the one most often linked to public health risks such as addiction, cognitive harm and psychomotor impairment (Bidwell et al., 2021; Solowij et al., 2019).

Setting appropriate limits in potency for cannabis products will also be a critical consideration, not just for THC but also the balance of THC and CBD. Research is somewhat in its infancy regarding CBD to THC ratios, but suggests that CBD ameliorates some of the more negative short-term side effects of THC use (Drennan et al., 2021; Manthey, 2019).

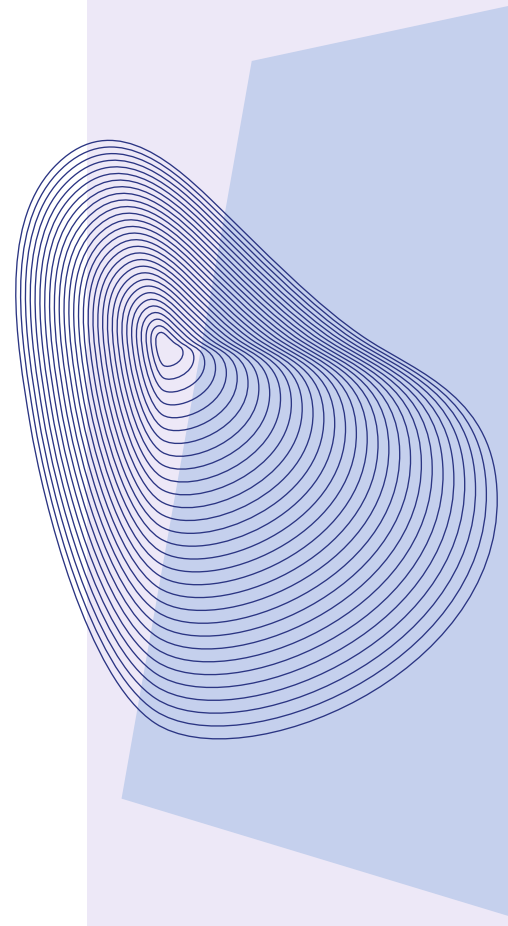
In US states where cannabis is legal, the regulations for THC content are specified as maximum THC levels per serving (varying by state, but between 5mg and 10mg for combustibles, higher for edibles) (Gourdet et al., 2017). Noting the complexity of specifying a standard dose, a recommendation for a 5mg THC content has been proposed (Freeman & Lorenzetti, 2020).

The evidence in relation to capping the level of nicotine may also have lessons for cannabis. The evidence from Very Low Nicotine Cigarettes (VLNCs) suggests that consumers who are dependent on nicotine seek out nicotine from alternative products (from the legal or black market). If the caps on the THC levels in cannabis are so extreme as to nullify the effects of the product, the same behaviours are likely to occur. However, at least some people will be encouraged to take up products with lower psychoactive properties where there are significant differences in price. A sliding scale of taxation/price could therefore potentially nudge people towards less harmful products (both in terms of appropriate levels of psychoactive properties and in terms of type of administration).

Advertising and Promotion

The evidence on the association between exposure to advertising/ promotion of alcohol and tobacco and increased consumption and/or intentions to consume alcohol or tobacco products is strong (Capella et al., 2011; Paynter & Edwards, 2009; Robertson et al., 2016). These impacts are felt across all locations of promotion including traditional media, point-of-sale, sporting events and social media. It is a reasonable assumption that cannabis advertising will be associated with the same or similar positive intentions to consume cannabis and greater uptake of cannabis consumption. Young people have been found to be particularly vulnerable to the impact of tobacco and e-cigarette advertising (Amin et al., 2020; Lovato et al., 2003; Lovato et al., 2011; Wellman et al., 2006).

Evidence from tobacco studies and from a study on Norwegian alcohol advertising bans suggest that total advertising bans would be more effective than partial bans (although evidence is still largely indicative). Restrictions on point-of-sale advertisements are needed to prevent impulse purchases (Robertson et al., 2016). Ensuring that total bans include appropriate regulation to moderate online and social media promotions will be critical.



A meta-analysis by Capella et al., (2008) suggests that advertising bans initiated at the introductory stages of the product life cycle are likely to yield a significant impact. This suggests that cannabis advertising bans should be implemented at the outset, before the product lifecycle matures. This is in line with the argument that it is better to introduce stricter regulation at the start, leaving the opportunity for future loosening of regulations, rather than attempting to retroactively apply restrictions once industry, and industry influence has been established (McCambridge et al., 2019; Savell et al., 2016).

Retail Sales and Distribution

Outlet density: Research shows that when there are more alcohol and tobacco outlets in a given area, overall consumption and harms increase (Finan et al., 2019; Popova et al., 2009; Sherk et al., 2018; Valiente et al., 2021). The research on young people smoking and tobacco outlet density reinforces that regulating outlet density may prevent underage consumption (especially outlet density in residential areas). Regulating cannabis store outlet density is supported by this research from alcohol and tobacco. Furthermore, research has shown that a greater density of medical cannabis stores has been associated with increased cannabis use and presentations in hospitals due to cannabis-related problems (Berg et al., 2018). Medical cannabis stores are also more likely to be placed in areas with relatively low socio-economic status (Berg et al., 2018).

Trading hours and days restrictions: The evidence from alcohol points to a strong correlation between longer sales times and greater days of week and higher consumption and alcohol-related harms (for example Hahn et al., 2010; Middleton et al., 2010; Popova et al., 2009; SanchezRamirez & Voaklander, 2018; Sherk et al., 2018; Wilkinson et al., 2016). Limiting the days of the week for cannabis sales, and the trading hours for cannabis sales is likely to be an effective regulatory measure based on the alcohol literature (Haden & Emerson, 2014).

Online sales: There are no systematic reviews of the effectiveness of online sales regulation for alcohol and tobacco, and as such, no empirical evidence to transfer across to cannabis.

Sales to minors: Rates of alcohol and tobacco consumption amongst people under the age of 18 are lower than those over the age of 18. Whether this is driven by the ban on sales to minors, or is a simple age-effect is not able to be precisely determined but there is little disagreement that a ban on sales to minors is a sensible policy. For alcohol, there is limited empirical evidence for a difference between 18 years of age and 21 years of age as the legal age for purchase and/or consumption, but when the legal age is lowered, alcohol-related harms appear to be higher (Baldwin et al., 2022; Stockings et al., 2016).

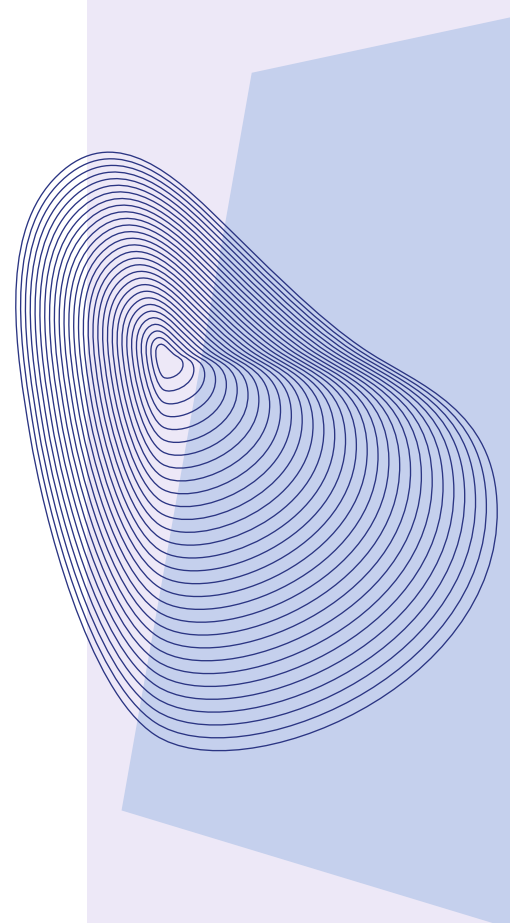
Responsible service training, alcohol server liability: Responsible server training for alcohol does not have a strong evidence-base (Jones et al., 2011; Ker & Chinnock, 2006; Stockings et al., 2016). This does not suggest that training service staff is harmful. It seems sensible to ensure that staff working in cannabis retail outlets are trained in the potential harms of cannabis, and in detecting problematic cannabis use. However, there is no evidence from the alcohol literature to suggest that this will have a positive impact on public health outcomes.

Rations or quantity purchase limits: While there are no systematic reviews of the public health effects of alcohol quantity purchase limits, historical experience of rationing systems (e.g., Bratt system, Sweden) suggests that when such limits are removed, total alcohol consumption increases (Room, 2012). Given that the rationing schemes arose following alcohol prohibition (the parallel with cannabis) this suggests that rations or purchase quantity limits may reduce levels of total population consumption.

Enforcement of retail regulations: There is limited evidence to inform enforcement regimes: either in terms of methods for detecting non-compliance with retail regulations, or assessment of the effectiveness of different penalties. There is evidence from both alcohol and tobacco literature that enforcement effects decay over time, suggesting significant investment in routine compliance checks, across all stores, is necessary.

Drink-Driving Countermeasures

Driving under the influence: Drink-drive countermeasures have been regarded as a highly successful public health measure that has reduced alcohol-related harm – both



for people consuming alcohol and for third parties. Drink-driving countermeasures that have demonstrated effectiveness are those which legally specify a blood alcohol limit for drivers and enforce that limit through checkpoints and/or random breath tests (Esser et al., 2016; Morrison et al., 2003). Legal consequences for exceeding BAC levels (i.e. license suspension) have mixed evidence for effects on road traffic crash reductions (McArthur & Kraus, 1999). Remedial programs, which aim to provide treatment and education to people who have been convicted for drink-driving, appear to be effective at reducing recidivism rates (Miller et al., 2015).

In terms of communicating the risks of driving under the influence, mass media campaigns have not been shown to be highly effective for alcohol but may play a role in reducing the likelihood of driving under the influence. For cannabis, as a stand-alone tool, it is unlikely to be effective (and given the absence of strong evidence of cannabis-impaired driving, the factual basis for any such campaign could be questioned). Research on cannabis and driving is still emerging, with some evidence that cannabis impairs driving, although modestly (Alvarez et al., 2021; Sevigny, 2021).


The key to the success of the drink-drive countermeasures has been the ability to specify a legal limit of alcohol in a driver's blood that is associated with impairment and increases the risk of a road accident (the BAC standard at between 0.05 and 0.08). Establishing the appropriate level of cannabis in a person's blood that is likely to impair driving performance is the key to moving forward. There is no strong evidence yet that a specific range THC concentration is strongly correlated with impairment (Arkell et al., 2021) and detection methods remain a pressing research priority. In Canada, however, sobriety/impairment tests have been implemented alongside a per se THC threshold for driving of ≤ 2 ng/mL and ≤ 5 ng/mL, despite considerable uncertainty (Peng et al., 2020; Windle et al., 2021).

Regulating Allowable Places of Consumption

Smoke-free policies: Smoke free policies for tobacco (given the health harms of both smoking and exposure to second-hand smoke) has been a highly effective public health measure for both decreasing tobacco consumption and protecting the health of third parties (Callinan et al., 2010; Faber et al., 2017). Comprehensive smoking bans have also been associated with reduced respiratory infections, asthma, and second-hand smoke exposure for children, as well as reduced smoking initiation in young people (Been et al., 2014; Freedman et al., 2012).

While evidence supports smoke-free policies at specific venues such as workplaces and universities, most reviews noted that the more comprehensive the bans, the better the outcomes (Bafunno et al., 2019; Faber et al., 2017; Gao et al., 2019; Hauri et al., 2011; Mackay et al., 2011; Rado et al., 2021; Tan & Glantz, 2012).

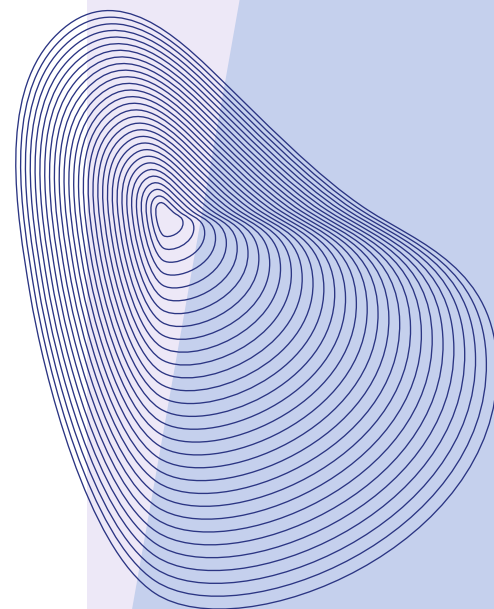
The implementation of the Framework Convention on Tobacco Control with its ban on public consumption of tobacco could be simply extended to cover cannabis (Steinberg et al., 2019). In Canada, most provinces ban cannabis consumption where tobacco consumption is prohibited (Shanahan & Cyrenne, 2021). The face-validity of regulations banning cannabis smoking in public places relies on evidence of harms from second-hand cannabis smoke. Some people mix their cannabis with tobacco when smoking, and in those cases, the second-hand tobacco smoke is well-known to be toxic to third parties (Carreras et al., 2019). There is also evidence of second-hand cannabis smoke toxicity (independent of tobacco) (Chatkin et al., 2019; Holitzki et al., 2017). The research on whether there are second-hand harms from vaping cannabis is nascent (Cone et al., 2015; Wilson, 2016).



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References

- Adams, P. J., Rychert, M., & Wilkins, C. (2021). Policy influence and the legalized cannabis industry: learnings from other addictive consumption industries. *Addiction*, 116(11), 2939-2946. <https://doi.org/10.1111/add.15483>
- Amin, S., Dunn, A. G., & Laranjo, L. (2020). Social influence in the uptake and use of electronic cigarettes: A systematic review. *American Journal of Preventive Medicine*, 58(1), 129-141. <http://dx.doi.org/10.1016/j.amepre.2019.08.023>
- Anderson-Luxford, D., Norman, T., & Room, R. (2021). Regulating the Digital Marketing of Alcohol: Exploring Evidence-based Policy Options.
- Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., . . . Rossow, I. (2010). *Alcohol: No ordinary commodity: Research and public policy*, 2nd ed. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199551149.001.0001>
- Bafunno, D., Catino, A., Lamorgese, V., Pizzutilo, P., Di Lauro, A., Petrillo, P., . . . Galetta, D. (2019). Tobacco control in Europe: A review of campaign strategies for teenagers and adults. *Critical Reviews in Oncology/Hematology*, 138, 139-147. <http://dx.doi.org/10.1016/j.critrevonc.2019.01.022>
- Been, J. V., Nurmatov, U. B., Cox, B., Nawrot, T. S., van Schayck, C. P., & Sheikh, A. (2014). Effect of smoke-free legislation on perinatal and child health: a systematic review and meta-analysis. *The Lancet*, 383(9928), 1549-1560
- Bidwell, L. C., Martin-Willett, R., & Karoly, H. C. (2021). Advancing the science on cannabis concentrates and behavioural health. *Drug and Alcohol Review*, 40(6), 900-913. <https://doi.org/10.1111/dar.13281>
- Blake, A., & Nahtigal, I. (2019). The evolving landscape of cannabis edibles. *Current Opinion in Food Science*, 28, 25-31. <https://doi.org/10.1016/j.cofs.2019.03.009>
- Blanchette, J. G., Pacula, R. L., Smart, R., Lira, M. C., Boustead, A. E., Caulkins, J. P., . . . Naimi, T. S. (2022). Rating the comparative efficacy of state-level cannabis policies on recreational cannabis markets in the United States. *International Journal of Drug Policy*, 106, 103744. <https://doi.org/10.1016/j.drugpo.2022.103744>
- Boniface, S., Scannell, J. W., & Marlow, S. (2017). Evidence for the effectiveness of minimum pricing of alcohol: a systematic review and assessment using the Bradford Hill criteria for causality. *BMJ Open*, 7(5), e013497. <https://doi.org/10.1136/bmjopen-2016-013497>
- Budney, A. J., Sargent, J. D., & Lee, D. C. (2015). Vaping cannabis (marijuana): parallel concerns to e[1]cigs? *Addiction*, 110(11), 1699-1704. 10.1111
- Callinan, S., & MacLean, S. (2020). COVID-19 makes a stronger research focus on home drinking more important than ever. *Drug and Alcohol Review*, 39(6), 613-615. <https://doi.org/10.1111/dar.13125>
- Capella, M. L., Webster, C., & Kinard, B. R. (2011). A review of the effect of cigarette advertising. *International Journal of Research in Marketing*, 28(3), 269-279. <http://dx.doi.org/10.1016/j.ijresmar.2011.05.002>
- Ciapponi, A., Rodríguez Cairoli, F., Solioz, G., Rojas-Roque, C., Hernández-Vásquez, A., Palacios, A., & Bardach, A. (2021). Switching from cigarettes to electronic nicotine delivery system: rapid systematic review and meta-analysis and economic aspects. *Rev Peru Med Exp Salud Publica*, 38(4), 537-550. <https://doi.org/10.17843/rpmesp.2021.384.7776>
- de Andrade, D., & Kinner, S. A. (2017). Systematic review of health and behavioural outcomes of smoking cessation interventions in prisons. *Tobacco Control: An International Journal*, 26(5), 495-501. <http://dx.doi.org/10.1136/tobaccocontrol-2016-053297>
- Decorte, T., & Pardal, M. (2017). Cannabis social clubs in Europe: prospects and limits. In R. Colson & H. Bergeron (Eds.), *European Drug Policies* (pp. 285-299). Routledge.
- Decorte, T., Pardal, M., Queirolo, R., Boidi, M. F., Avilés, C. S., & Franquero, Ò. P. (2017). Regulating Cannabis Social Clubs: A comparative analysis of legal and self-regulatory practices in Spain, Belgium and Uruguay. *International Journal of Drug Policy*, 43, 44-56.
- Drennan, M. L., Karoly, H. C., Bryan, A. D., Hutchison, K. E., & Bidwell, L. C. (2021). Acute objective and subjective intoxication effects of legal-market high potency THC-dominant versus CBD-dominant cannabis concentrates. *Scientific Reports*, 11(1), 21744. <https://doi.org/10.1038/s41598-021-01128-2>
- Elder, R. W., Lawrence, B., Ferguson, A., Naimi, T. S., Brewer, R. D., Chattopadhyay, S. K., . . . Fielding, J. E. (2010). The Effectiveness of Tax Policy Interventions for Reducing Excessive Alcohol Consumption and Related Harms. *American Journal of Preventive Medicine*, 38(2), 217-229. <http://dx.doi.org/10.1016/j.amepre.2009.11.005>
- Faber, T., Kumar, A., Mackenbach, J. P., Millett, C., Basu, S., Sheikh, A., & Been, J. V. (2017). Effect of tobacco control policies on perinatal and child health: a systematic review and meta[1]analysis. *The Lancet Public Health*, 2(9), e420-e437. [http://dx.10.1016/S2468-2667\(17\)30144-5](http://dx.10.1016/S2468-2667(17)30144-5)
- Freedman, K. S., Nelson, N. M., & Feldman, L. L. (2012). Smoking initiation among young adults in the United States and Canada, 1998-2010: a systematic review. *Prev Chronic Dis*, 9, E05.
- Fischer, B., Robinson, T., Bullen, C., Curran, V., Jutras-Aswad, D., Medina-Mora, M. E., . . . Hall, W. (2022). Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update. *International Journal of Drug Policy*, 99, 1. <http://dx.doi.org/10.1016/j.drugpo.2021.103381>
- Freeman, T. P., & Lorenzetti, V. (2020). 'Standard THC units': a proposal to standardize dose across all cannabis products and methods of administration. *Addiction*, 115(7), 1207-1216. <https://doi.org/10.1111/add.14842>
- Golden, S. D., Smith, M. H., Feighery, E. C., Roeseler, A., Rogers, T., & Ribisl, K. M. (2016). Beyond excise taxes: A systematic review of literature on non-tax policy approaches to raising tobacco product prices. *Tobacco Control: An International Journal*, 25(4), 377-385. <http://dx.doi.org/10.1136/tobaccocontrol-2015-052294>
- Goodman, S., Wadsworth, E., Leos-Toro, C., & Hammond, D. (2020). Prevalence and forms of cannabis use in legal vs. illegal recreational cannabis markets. *International Journal of Drug Policy*, 76, 102658. <https://doi.org/10.1016/j.drugpo.2019.102658>
- Goodman, S., Leos-Toro, C., & Hammond, D. (2022). Do Mandatory Health Warning Labels on Consumer Products Increase Recall of the Health Risks of Cannabis? *Substance Use & Misuse*, 57(4), 569-580. <https://doi.org/10.1080/10826084.2021.2023186>
- Gallet, C. A. (2007). The demand for alcohol: a meta-analysis of elasticities. *Australian Journal of Agricultural and Resource Economics*, 51(2), 121-135. <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1467-8489.2007.00365.x>
- Gohari, M. R., Cook, R. J., Dubin, J. A., & Leatherdale, S. T. (2021). The impact of an alcohol policy change on developmental trajectories of youth alcohol use: examination of a natural experiment in Canada. *Can J Public Health*, 112(2), 210-218. <https://doi.org/10.17269/s41997-020-00366-7>
- Gourdet, C., Giombi, K. C., Kosa, K., Wiley, J., & Cates, S. (2017). How four U.S. states are regulating recreational marijuana edibles. *International Journal of Drug Policy*, 43, 83-90. <https://doi.org/10.1016/j.drugpo.2017.01.018>



Guindon, G. E., Paraje, G. R., & Chaloupka, F. J. (2018). The Impact of Prices and Taxes on the Use of Tobacco Products in Latin America and the Caribbean. *American Journal of Public Health*, 108(S6), S492-S502. [10.2105/AJPH.2014.302396r](https://doi.org/10.2105/AJPH.2014.302396r)

Hauri, D. D., Lieb, C. M., Rajkumar, S., Kooijman, C., Sommer, H. L., & Rössli, M. (2011). Direct health costs of environmental tobacco smoke exposure and indirect health benefits due to smoking ban introduction. *European Journal of Public Health*, 21(3), 316. <http://dx.doi.org/10.1093/eurpub/ckq142>

Haden, M., & Emerson, B. (2014). A vision for cannabis regulation: a public health approach based on lessons learned from the regulation of alcohol and tobacco. *Open Medicine*, 8(2), e73.

Hahn, R. A., Middleton, J. C., Elder, R., Brewer, R., Fielding, J., Naimi, T. S., . . . Campbell, C. A. (2012). Effects of alcohol retail privatization on excessive alcohol consumption and related harms: a community guide systematic review. *Am J Prev Med*, 42(4), 418-427. <https://doi.org/10.1016/j.amepre.2012.01.002>

Halcoussis, D., Lowenberg, A. D., & Roof, Z. (2017). Estimating the price elasticity of demand for Cannabis: A geographical and crowdsourced approach. *Revista de Métodos Cuantitativos para la Economía y la Empresa*, 23, 119-136. <https://www.upo.es/revistas/index.php/RevMetCuant/article/view/2689>

Hammond, D. (2021). Communicating THC levels and 'dose' to consumers: Implications for product labelling and packaging of cannabis products in regulated markets. *International Journal of Drug Policy*, 91, 102509. <https://doi.org/10.1016/j.drugpo.2019.07.004>

Her, M., Giesbrecht, N., Room, R., & Rehm, J. (1999). Privatizing alcohol sales and alcohol consumption: evidence and implications. *Addiction*, 94(8), 1125-1139. <https://doi.org/10.1046/j.1360-0443.1999.94811253.x>

Huang, L. L., Baker, H. M., Meernik, C., Ranney, L. M., Richardson, A., & Goldstein, A. O. (2017). Impact of non-menthol flavours in tobacco products on perceptions and use among youth, young adults and adults: a systematic review. *Tob Control*, 26(6), 709-719. <https://doi.org/10.1136/tobaccocontrol-2016-053196>

Jansseune, L., Pardal, M., Decorte, T., & Pares Franquero, O. (2019). Revisiting the birthplace of the Cannabis Social Club model and the role played by Cannabis Social Club Federations. *Journal of drug issues*, 49(2), 338-354.

Jo, C. L., Ambs, A., Dresler, C. M., & Backinger, C. L. (2017). Child-resistant and tamper-resistant packaging: A systematic review to inform tobacco packaging regulation. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 95, 89-95. <http://dx.doi.org/10.1016/j.ypmed.2016.11.013>

Kim, S. J., Minich, M., Tveleneva, A., Liu, J., Padon, A. A., Silver, L. D., & Yang, S. (2022). Textual and pictorial enhancement of cannabis warning labels: An Online experiment among at-risk U.S. young adults. *Drug and Alcohol Dependence*, 237, 109520. <https://doi.org/10.1016/j.drugalcdep.2022.109520>

Kennedy, S. M., Davis, S. P., & Thorne, S. L. (2015). Smoke-free policies in U.S. prisons and jails: A review of the literature. *Nicotine and Tobacco Research*, 17(6), 629-635. <http://dx.doi.org/10.1093/ntr/ntu225>

Krishnamoorthy, Y., Majella, M. G., & Murali, S. (2020). Impact of tobacco industry pricing and marketing strategy on brand choice, loyalty and cessation in global south countries: A systematic review. *International Journal of Public Health*, 65(7), 1057-1066. <http://dx.doi.org/10.1007/s00038-020-01422-2>

Leos-Toro, C., Fong, G. T., Meyer, S. B., & Hammond, D. (2020). Cannabis labelling and consumer understanding of THC levels and serving sizes. *Drug Alcohol Depend*, 208, 107843. <https://doi.org/10.1016/j.drugalcdep.2020.107843>

Lovato, C., Linn, G., Stead, L. F., & Best, A. (2003). Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database Syst Rev*(4), Cd003439. <https://doi.org/10.1002/14651858.Cd003439>

Lovato, C., Watts, A., & Stead, L. F. (2011). Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database Syst Rev*, 2011(10), Cd003439. <https://doi.org/10.1002/14651858.CD003439.pub2>

Mackay, D. F., Irfan, M. O., Haw, S., & Pell, J. P. (2011). Republished paper: Meta-analysis of the effect of comprehensive smoke-free legislation on acute coronary events. *Postgraduate Medical Journal*, 87(1026), 311-316. <http://dx.doi.org/10.1136/pgmj.2010.199026rep>

Mäkelä, P. (2002). Whose drinking does the liberalization of alcohol policy increase? Change in alcohol consumption by the initial level in the Finnish panel survey in 1968 and 1969. *Addiction*, 97(6), 701-706. <https://doi.org/10.1046/j.1360-0443.2002.00144.x>

Manthey, J., Freeman, T. P., Kilian, C., López-Pelayo, H., & Rehm, J. (2021). Public health monitoring of cannabis use in Europe: prevalence of use, cannabis potency, and treatment rates. *The Lancet Regional Health - Europe*, 10, 100227. <https://doi.org/10.1016/j.lanepe.2021.100227>

Matheson, J., & Le Foll, B. (2020). Cannabis Legalization and Acute Harm From High Potency Cannabis Products: A Narrative Review and Recommendations for Public Health. *Front Psychiatry*, 11, 591979. <https://doi.org/10.3389/fpsy.2020.591979>

McCambridge, J., Coleman, R., & McEachern, J. (2019). Public Health Surveillance Studies of Alcohol Industry Market and Political Strategies: A Systematic Review. *J Stud Alcohol Drugs*, 80(2), 149-157. <https://doi.org/10.15288/jsad.2019.80.149>

McCambridge, J., & Mialon, M. (2018). Alcohol industry involvement in science: A systematic review of the perspectives of the alcohol research community. *Drug and Alcohol Review*, 37(5), 565-579. <http://dx.doi.org/10.1111/dar.12826>

Miracolo, A., Sophiea, M., Mills, M., & Kanavos, P. (2021). Sin taxes and their effect on consumption, revenue generation and health improvement: a systematic literature review in Latin America. *Health Policy and Planning*, 36(5), 790-810. <http://dx.doi.org/10.1093/heapol/czaa168>

Mutti-Packer, S., Collyer, B., & Hodgins, D. C. (2018). Perceptions of plain packaging and health warning labels for cannabis among young adults: findings from an experimental study. *BMC Public Health*, 18(1), 1361. <https://doi.org/10.1186/s12889-018-6247-2>

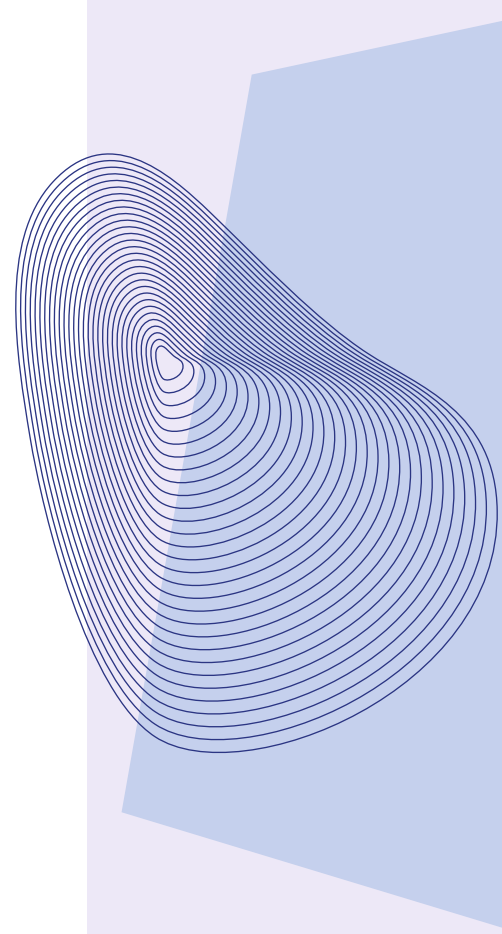
Mackay, D. F., Irfan, M. O., Haw, S., & Pell, J. P. (2011). Republished paper: Meta-analysis of the effect of comprehensive smoke-free legislation on acute coronary events. *Postgraduate Medical Journal*, 87(1026), 311-316. <http://dx.doi.org/10.1136/pgmj.2010.199026rep>

Mäkelä, P. (2002). Whose drinking does the liberalization of alcohol policy increase? Change in alcohol consumption by the initial level in the Finnish panel survey in 1968 and 1969. *Addiction*, 97(6), 701-706. <https://doi.org/10.1046/j.1360-0443.2002.00144.x>

Manthey, J., Freeman, T. P., Kilian, C., López-Pelayo, H., & Rehm, J. (2021). Public health monitoring of cannabis use in Europe: prevalence of use, cannabis potency, and treatment rates. *The Lancet Regional Health - Europe*, 10, 100227. <https://doi.org/10.1016/j.lanepe.2021.100227>

Matheson, J., & Le Foll, B. (2020). Cannabis Legalization and Acute Harm From High Potency Cannabis Products: A Narrative Review and Recommendations for Public Health. *Front Psychiatry*, 11, 591979. <https://doi.org/10.3389/fpsy.2020.591979>

McCambridge, J., Coleman, R., & McEachern, J. (2019). Public Health Surveillance Studies of Alcohol Industry Market and Political Strategies: A Systematic Review. *J Stud Alcohol Drugs*, 80(2), 149-157. <https://doi.org/10.15288/jsad.2019.80.149>



- McCambridge, J., & Mialon, M. (2018). Alcohol industry involvement in science: A systematic review of the perspectives of the alcohol research community. *Drug and Alcohol Review*, 37(5), 565- 579. <http://dx.doi.org/10.1111/dar.12826>
- Miracolo, A., Sophiea, M., Mills, M., & Kanavos, P. (2021). Sin taxes and their effect on consumption, revenue generation and health improvement: a systematic literature review in Latin America. *Health Policy and Planning*, 36(5), 790-810. <http://dx.doi.org/10.1093/heapol/czaa168>
- Mutti-Packer, S., Collyer, B., & Hodgins, D. C. (2018). Perceptions of plain packaging and health warning labels for cannabis among young adults: findings from an experimental study. *BMC Public Health*, 18(1), 1361. <https://doi.org/10.1186/s12889-018-6247-2>
- Myran, D. T., Brown, C. R. L., & Tanuseputro, P. (2019). Access to cannabis retail stores across Canada 6 months following legalization: a descriptive study. *CMAJ Open*, 7(3), E454-e461. <https://doi.org/10.9778/cmajo.20190012>
- Obradors-Pineda, A., Bouso, J.-C., Parés-Franquero, Ò., & Romani, J.-O. (2021). Harm reduction and cannabis social clubs: Exploring their true potential. *International Journal of Drug Policy*, 97, 103358
- Pacek, L. R., Wiley, J. L., & Joseph McClernon, F. (2019). A conceptual framework for understanding multiple tobacco product use and the impact of regulatory action. *Nicotine and Tobacco Research*, 21(3), 268-277. <http://dx.doi.org/10.1093/ntr/nty129>
- Papanastasiou, N., Hill, S., & Amos, A. (2019). Evidence from qualitative studies of youth about the impacts of tobacco control policy on young people in Europe: A systematic review. *Nicotine & Tobacco Research*, 21(7), 863-870. <http://dx.doi.org/10.1093/ntr/nty007>
- Pardal, M., Decorte, T., Bone, M., Parés, Ò., & Johansson, J. (2020). Mapping cannabis social clubs in Europe. *European Journal of Criminology*, 1477370820941392.
- Paynter, J., & Edwards, R. (2009). The impact of tobacco promotion at the point of sale: A systematic review. *Nicotine & Tobacco Research*, 11(1), 25-35. <http://dx.doi.org/10.1093/ntr/ntn002>
- Pettigrew, M., Maani, N., Pettigrew, L., Rutter, H., & Van Schalkwyk, M. C. (2020). Dark Nudges and Sludge in Big Alcohol: Behavioral Economics, Cognitive Biases, and Alcohol Industry Corporate Social Responsibility. *Milbank Quarterly*, 98(4), 1290-1328. <https://dx.doi.org/10.1111/1468-0009.12475>
- Rado, M. K., Molenberg, F. J. M., Westenberg, L. E. H., Sheikh, A., Millett, C., Burdorf, A., . . . Been, J. V. (2021). Effect of smoke-free policies in outdoor areas and private places on children's tobacco smoke exposure and respiratory health: a systematic review and meta-analysis. *The Lancet Public Health*, 6(8), e566-e578. [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(21\)00097-9/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00097-9/fulltext)
- Rashiden, I., Tajuddin, A., Amani, N., Yee, A., Zhen, S. T. E., & bin Amir Nordin, A. S. (2020). The efficacy of smoking ban policy at the workplace on secondhand smoking: systematic review and meta-analysis. *Environmental Science and Pollution Research*, 27(24), 29856-29866.
- Robertson, L., Cameron, C., McGee, R., Marsh, L., & Hoek, J. (2016). Point-of-sale tobacco promotion and youth smoking: a meta-analysis. *Tob Control*, 25(e2), e83-e89. <https://doi.org/10.1136/tobaccocontrol-2015-052586>
- Rehm, J., & Fischer, B. (2015). Cannabis legalization with strict regulation, the overall superior policy option for public health. *Clinical Pharmacology & Therapeutics*, 97(6), 541-544
- Rehm, J., Neufeld, M., Room, R., Sornpaisarn, B., Stelemekas, M., Swahn, M. H., & Lachenmeier, D. W. (2022). The impact of alcohol taxation changes on unrecorded alcohol consumption: A review and recommendations. *International Journal of Drug Policy*, 99, 103420. <https://dx.doi.org/10.1016/j.drugpo.2021.103420>
- Riley, S., Vellios, N., & van Walbeek, C. (2020). An economic analysis of the demand for cannabis: some results from South Africa. *Drugs: Education, Prevention and Policy*, 27(2), 123-130. <https://doi.org/10.1080/09687637.2019.1581139>
- Rotering, T., & Apollonio, D. E. (2022). Cannabis industry lobbying in the Colorado state legislature in fiscal years 2010–2021. *International Journal of Drug Policy*, 102, 103585. <https://doi.org/10.1016/j.drugpo.2022.103585>
- Savell, E., Fooks, G., & Gilmore, A. B. (2016). How does the alcohol industry attempt to influence marketing regulations? A systematic review. *Addiction*, 111(1), 18-32. <http://dx.doi.org/10.1111/add.13048>
- Savell, E., Gilmore, A. B., & Fooks, G. (2014). How does the tobacco industry attempt to influence marketing regulations? A systematic review. *PLoS ONE*, 9(2), e87389.
- Scott, S., Muirhead, C., Shucksmith, J., Tyrrell, R., & Kaner, E. (2017). Does Industry-Driven Alcohol Marketing Influence Adolescent Drinking Behaviour? A Systematic Review. *Alcohol Alcohol*, 52(1), 84-94. <https://academic.oup.com/alcal/article/52/1/84/2614654>
- Sharma, A., Sinha, K., & Vandenberg, B. (2017). Pricing as a means of controlling alcohol consumption. *British Medical Bulletin*, 123(1), 149-158. <http://dx.doi.org/10.1093/bmb/ldx020>
- Solowij, N., Broyd, S., Greenwood, L.-m., van Hell, H., Martellozzo, D., Rueb, K., . . . Croft, R. (2019). A randomised controlled trial of vaporised Δ^9 -tetrahydrocannabinol and cannabidiol alone and in combination in frequent and infrequent cannabis users: acute intoxication effects. *European Archives of Psychiatry and Clinical Neuroscience*, 269(1), 17-35. <https://doi.org/10.1007/s00406-019-00978-2>
- Stockwell, T., Zhao, J., Macdonald, S., Pakula, B., Gruenewald, P., & Holder, H. (2009). Changes in per capita alcohol sales during the partial privatization of British Columbia's retail alcohol monopoly 2003-2008: a multi-level local area analysis. *Addiction*, 104(11), 1827-1836. <https://doi.org/10.1111/j.1360-0443.2009.02658.x>
- Subritzky, T., Pettigrew, S., & Lenton, S. (2017). Into the void: Regulating pesticide use in Colorado's commercial cannabis markets. *International Journal of Drug Policy*, 42, 86-96
- Wagenaar, A. C., Toomey, T. L., & Erickson, D. J. (2005a). Complying with the minimum drinking age: Effects of enforcement and training interventions. *Alcoholism: Clinical and Experimental Research*, 29(2), 255-262.
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104(2), 179-190. <http://dx.doi.org/10.1111/j.1360-0443.2008.02438.x>
- Wagenaar, A. C., Tobler, A. L., & Komro, K. A. (2010). Effects of alcohol tax and price policies on morbidity and mortality: a systematic review. *Am J Public Health*, 100(11), 2270-2278. <https://doi.org/10.2105/ajph.2009.186007>
- Wellman, R. J., Sugarman, D. B., DiFranza, J. R., & Winickoff, J. P. (2006). 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*, 160(12), 1285-1296. <https://doi.org/10.1001/archpedi.160.12.1285>
- Wilkinson, C., & Room, R. (2009). Warnings on alcohol containers and advertisements: international experience and evidence on effects. *Drug Alcohol Review*, 28(4), 426-435.
- Winstock, A. R., Lynskey, M. T., Maier, L. J., Ferris, J. A., & Davies, E. L. (2021). Perceptions of cannabis health information labels among people who use cannabis in the U.S. and Canada. *International Journal of Drug Policy*, 91, 102789. <https://www.sciencedirect.com/science/article/abs/pii/S0955395920301304?via%3Dihub>

