

Rapid Synthesis

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

13 February 2018



McMaster
HEALTH FORUM

FORUM+



EVIDENCE >> INSIGHT >> ACTION

Rapid Synthesis:
Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption
30-day response

13 February 2018

McMaster Health Forum and Forum+

The goal of the McMaster Health Forum, and its Forum+ initiative, is to generate action on the pressing health- and social-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health and social systems – locally, nationally, and internationally – and get the right programs, services and products to the people who need them. In doing so, we are building on McMaster’s expertise in advancing human and societal health and well-being.

Authors

Puru Panchal, Forum Fellow, B.H.Sc. student, McMaster University

Kerry Waddell, M.Sc, Co-Lead Evidence Synthesis, McMaster Health Forum

Michael G. Wilson, PhD, Assistant Director, McMaster Health Forum, and Assistant Professor, McMaster University

Timeline

Rapid syntheses can be requested in a three-, 10-or 30-business-day timeframe. This synthesis was prepared over a 30-business-day timeframe. An overview of what can be provided and what cannot be provided in each of the different timelines is provided on the Forum’s Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response).

Funding

The rapid-response program through which this synthesis was prepared is funded by the Canadian Partnership Against Cancer. The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid synthesis are the views of the authors and should not be taken to represent the views of the Canadian Partnership Against Cancer.

Conflict of interest

The authors declare that they have no professional or commercial interests relevant to the rapid synthesis. The funder played no role in the identification, selection, assessment, synthesis or presentation of the research evidence profiled in the rapid synthesis.

Merit review

The rapid synthesis was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

Acknowledgments

The authors are especially grateful to Yann Le Bodo and Emmanuel Guindon for their insightful comments and suggestions.

Citation

Panchal P, Waddell K, Wilson MG. Rapid synthesis: Examining the costs and cost-effectiveness of policies for reducing alcohol consumption. Hamilton, Canada: McMaster Health Forum, 13 February 2018.

Product registration numbers

ISSN 2292-7999 (online)

KEY MESSAGES

Question

- What are the costs or cost-effectiveness of policies targeted at reducing alcohol consumption?

Why the issue is important

- Alcohol consumption is currently the world's third largest risk factor for disease, attributable for 5.1% of the global burden of disease, with clear links to a range of acute and chronic conditions.
- In 2015, the Chief Public Health Officer of Canada reported that at least 3.1 million Canadians drank enough to be at risk for immediate injury and harm, and at least 4.4 million drank enough to be at risk for chronic health effects such as liver cirrhosis and forms of cancer.
- Canadians are also among the largest consumers of alcohol in the world, with 2013 data indicating that the alcohol consumed in Canada is 50% higher than the global average.
- Given the clear risks associated with alcohol consumption, federal, provincial, territorial and municipal governments have an important role in developing and implementing evidence-informed policies to reduce the consumption of alcohol.
- To inform these efforts, this rapid response aims to examine the cost-effectiveness (for governments and society) and effectiveness of policies that address the availability, marketing and pricing of alcohol.

What we found

- We identified 22 relevant documents including three overviews of systematic reviews, eight systematic reviews, two rapid syntheses, one non-systematic review and eight primary studies.
- With respect to alcohol availability, the documents we found related to retail availability and included policies such as government monopolies on the sale of alcohol, establishing a minimum age for purchase, regulating the density of outlets, and reducing the days or hours of sale.
- Findings generally supported the effectiveness of policies addressing the availability of alcohol, however two recent overviews of systematic reviews noted that the effectiveness of these interventions may be largely dependent on the availability of alcohol in surrounding jurisdictions.
- Relatively little research has been undertaken regarding the relationship between marketing and alcohol consumption, particularly with respect to cost-effectiveness of policy interventions.
- The evidence we did find shows that while complete marketing bans are rarely implemented, they may be cost-effective in jurisdictions with low rates (less than five per cent) of hazardous drinking, however, their effectiveness and cost-effectiveness decrease substantially as complete marketing bans move towards partial bans.
- The majority of the literature we found addressed the pricing of alcohol, with a general consensus that adjusting the price of alcohol, whether through taxation or minimum unit pricing, may be an effective and cost-effective approach for reducing consumption.
- The literature generally shows that increases in the price or taxation of alcohol are associated with reductions in the consumption of alcohol and of alcohol-related harms.
- How this reduction is split across the population however, will vary significantly by beverage type, drinking pattern, gender, age and income.

QUESTION

What are the costs or cost-effectiveness of policies targeted at reducing alcohol consumption?

WHY THE ISSUE IS IMPORTANT

Alcohol consumption is currently the world's third largest risk factor for disease, attributable for 5.1% of the global burden of disease, with clear links to conditions such as neuropsychiatric disorders, gastrointestinal diseases, cancer, intentional injuries, unintentional injuries, cardiovascular diseases and diabetes.(1; 2) As of 2014 alcohol was responsible for 3.3 million global deaths (or 5.9% of all deaths) annually.(2) In 2014, approximately 22 million Canadians, almost 80% of the population, reported that they drank alcohol in the previous year. In 2015, the Chief Public Health Officer of Canada reported that at least 3.1 million Canadians drank enough to be at risk for immediate injury and harm, and at least 4.4 million drank enough to be at risk for chronic health effects such as liver cirrhosis and forms of cancer.(3) Canadians are also among the largest consumers of alcohol in the world, with 2013 sales data indicating that Canada consumes 50% more alcohol than the global average, and has a higher prevalence of binge-drinking than most countries in the European Union.(4)

Given the clear risks associated with alcohol consumption, federal, provincial, territorial and municipal governments have an important role in developing and implementing evidence-informed policies to reduce the consumption of alcohol. These policies may include decreasing access and availability of alcohol (e.g., via taxation, minimum pricing, outlet density, minimum age for sale, hours of sale), and regulating marketing and advertising of alcohol (e.g., via sponsorship and advertising bans).

The World Health Organization (WHO) Global Strategy to Reduce the Harmful Use of Alcohol was adopted in 2010 at the 63rd World Health Assembly.(5) The strategy categorizes 10 target policy areas to reduce the consumption of alcohol: 1) educational information through awareness and political commitments; 2) health-sector responses; 3) community action to reduce harmful alcohol use; 4) drinking and driving policies and counter-measures; 5) addressing alcohol availability; 6) addressing marketing of alcoholic beverages; 7) pricing policies; 8) harm reduction; 9) reducing the public health impact of illegal and illicit alcohol; and 10) monitoring and surveillance.(5) While the strategy recommends adopting policies from each of the targeted areas to provide a comprehensive approach, due to the compressed timeframe of this rapid review and the requestor's areas of interest, our findings focus on target areas five (addressing alcohol availability), six (addressing marketing of alcohol beverages) and seven (pricing policies). Additional findings from the other target areas, where included in retrieved literature, have been included in Appendix 1.

Box 1: Background to the rapid synthesis

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the Forum's Rapid Response program. Whenever possible, the rapid synthesis summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies, and to synthesize data from the included studies. The rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

Rapid syntheses can be requested in a three-, 10- or 30-business-day timeframe. An overview of what can be provided and what cannot be provided in each of these timelines is provided on the McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response)

This rapid synthesis was prepared over a 30-business-day timeframe and involved four steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, the Canadian Partnership Against Cancer);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
- 3) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence; and
- 4) finalizing the rapid synthesis based on the input of at least two merit reviewers.

WHAT WE FOUND

We identified 22 relevant documents with evidence of cost or cost-effectiveness of policies targeted at addressing alcohol availability, marketing of alcohol or pricing of alcohol. To be included, documents had to address at least one of: the fifth (addressing alcohol availability), sixth (addressing marketing of alcohol beverages) or seventh (pricing policies) target areas from the WHO that are outlined previously. Based on this criterion, we included three overviews of systematic reviews, (6-8) eight systematic reviews (9-16), two rapid syntheses (17; 18), one non-systematic review (19) and eight primary studies. (20-27) It should be noted that five of the systematic reviews were conducted by one author whose research is funded by the International Centre for Alcohol Policies (which is in turn funded by the international beverage alcohol industry) and so should be considered with a degree of caution. (11-15)

Our search strategy (detailed in Box 2) identified an additional 10 relevant systematic reviews, (28-37) but findings from these reviews are synthesized in the included overview of systematic reviews. While our search strategy focused on finding evidence on the costs and cost-effectiveness of policies for reducing alcohol consumption, we have also included relevant findings about the effectiveness of these policies on alcohol consumption, health outcomes, and any unintended consequences or other implementation considerations.

Target area five: Addressing alcohol availability

Public policies that seek to regulate the commercial or public availability of alcohol are important measures to reduce the easy access to alcohol by vulnerable and high-risk groups, and may contribute to changing the social and cultural norms that promote the harmful use of alcohol. The existing level of availability of alcohol will be dependent on local social, cultural and economic contexts, including the presence of an illicit or informally produced market for alcohol.

For this target area, the WHO Global Strategy to Reduce the Harmful Use of Alcohol identified the following policy options and interventions:

- establishing, operating and enforcing an appropriate system to regulate production, wholesaling and serving of alcohol beverages, by
 - introducing, where appropriate, a licensing system on retail sales, or public-health oriented government monopolies,
 - regulating the number and location of on-premise (e.g., bars or restaurants) and off-premise (e.g., supermarkets or dedicated stores) alcohol outlets,
 - regulating the days and hours of sale,

Box 2: Identification, selection and synthesis of research evidence

We identified research evidence (systematic reviews and primary studies) by searching (in January 2018) Social Systems Evidence (www.socialsystemsevidence.org), Cochrane Library, Health Evidence, PubMed and EconLit. In Social Systems Evidence we searched for “alcohol”. In the Cochrane Library we searched for (Alcohol AND harm) OR “alcohol abuse” OR “alcohol use” OR “alcoholic” OR “alcoholism” OR “alcohol misuse” OR “alcohol addiction” OR “alcohol consumption” OR “alcohol dependence” OR “alcohol use disorder” [in title, abstract, keywords] and limited search findings to economic evaluations. In Health Evidence, we used the following search filters: date (2002 to 2018); intervention strategy, limited to built environment (e.g., housing, urban planning); environmental/public health inspection (e.g., enforcement of legislation, environmental risk assessment); policy and legislation; and topic area limited to addiction/substance use and alcohol abuse/use. In PubMed, we searched for (policy AND “last 10 years”[PDat]) AND (economic evaluation OR cost-effective* OR economic analys*) AND (Alcohol AND harm) OR “alcohol abuse” OR “alcohol use” OR “alcoholic” OR “alcoholism” OR “alcohol misuse” OR “alcohol addiction” OR “alcohol consumption” OR “alcohol dependence” OR “alcohol use disorder”) AND “last 10 years”[PDat]). Finally, in EconLit, we searched for (Alcohol AND harm) OR “alcohol abuse” OR “alcohol use” OR “alcoholic” OR “alcoholism” OR “alcohol misuse” OR “alcohol addiction” OR “alcohol consumption” OR “alcohol dependence” OR “alcohol use disorder” [in abstract] AND (policy OR policies) [in abstract] [limited to 2002-present].

The results from the searches were assessed by one reviewer for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

For each systematic review we included in the synthesis, we documented the focus of the review, key findings, last year the literature was searched (as an indicator of how recently it was conducted), methodological quality using the AMSTAR quality appraisal tool (see the Appendix for more detail), and the proportion of the included studies that were conducted in Canada. For primary research, we documented the focus of the study, methods used, a description of the sample, the jurisdiction(s) studied, key features of the intervention, and key findings. We then used this extracted information to develop a synthesis of the key findings from the included reviews and primary studies.

- regulating modes of retail sales of alcohol,
- regulating retail sales in certain places or during special events;
- establishing a minimum age for purchase or consumption of alcoholic beverages;
- adopting policies to prevent sales to intoxicated persons or those below the legal age, with potential liability for sellers or servers;
- setting policies regulating drinking in public spaces or at official public agencies' activities and functions; and
- adopting policies to reduce and eliminate availability of illicit production, sale and distribution of alcoholic beverages.(5)

We found three overviews of systematic reviews (two recent and one older),(6-8) one older medium-quality systematic review,(10) and two rapid evidence syntheses relevant to this target area.(17; 18) The included literature largely focused on the effectiveness of policies at the retail level, rather than on their costs or cost effectiveness. However, two reviews included in a recent rapid synthesis found that reducing opening hours of bars and restaurants in densely populated areas with simultaneous enforcement across areas may be cost-effective.(17) It was, however, noted in the literature that some caution is needed in the implementation of policies that curb availability of alcohol, suggesting that it may result in increases in the illicit market.(18) Beyond costs, findings generally supported the effectiveness of these policies, and two systematic reviews included in a recent overview of systematic reviews suggested that restricting days or hours of sale and setting a minimum age of purchase were cost-effective when implemented regionally, nationally or in isolated communities.(6) However, the overview of systematic reviews suggested that these policies had mixed effects when implemented in less isolated areas.(6) These findings were supported by a recent overview of systematic reviews which found that the effectiveness of these policies depends largely on the availability and hours of operation in surrounding jurisdictions.(8) Moreover, a strong association was found between outlet density and social harms.(17; 18) However, the association between outlet density and consumption remains less certain.

Target area six: Addressing marketing of alcoholic beverages

Restricting the marketing of alcohol, particularly to adolescents and young adults, is important for reducing the demand (and future demand) among younger populations. The Global Strategy to Reduce the Harmful Use of Alcohol reports that marketing techniques have grown in their sophistication, including linking alcohol brands to cultural activities, sponsorships and an increased social media presence.(5) These techniques mean that stopping the marketing of alcohol at national borders or restricting marketing to certain ages, hours or locations is becoming increasingly difficult and is an emerging concern in many jurisdictions.

The WHO Global Strategy to Reduce the Harmful Use of Alcohol identified the following policy options and interventions:

- setting up regulatory or co-regulatory frameworks by regulating
 - the content and volume of marketing,
 - direct or indirect marketing in certain or all media,
 - sponsorship activities that promote alcohol beverages,
 - promotions (or banning them) connected with young people's activities,
 - new forms of alcohol marketing techniques, including social media;
- developing effective systems of surveillance of marketing of alcohol products through public agencies or independent bodies; and
- setting up effective administrative and deterrence systems for infringements on marketing restrictions.(5)

We found three overviews of systematic reviews (two recent and one older) (6-8) and two rapid syntheses relevant to this target area.(17; 18) Compared to the two other target areas this rapid synthesis focuses on, relatively little research has been undertaken regarding the relationship between marketing and alcohol

consumption, particularly with respect to their costs or cost-effectiveness of policy interventions.(17) The evidence we did find, from one modelling study included in a recent rapid synthesis, shows that complete marketing bans may be an effective and cost-effective policy for curbing levels of consumption.(17) In addition, one overview of systematic reviews suggested that in areas with a low-prevalence of hazardous drinking, these bans are more cost-effective than other interventions.(7) The literature generally agrees however, that as these bans move towards partial bans they may decrease substantially in effectiveness and cost-effectiveness.(17) With regards to the implementation of warning labels, one recent medium-quality review found that labelling of alcohol units was helpful in supporting individuals to understand their consumption.(9) However, the review found that while warning labels are beneficial for increasing knowledge, they do not mitigate drinking behaviours.(9) Similarly, one recent overview of systematic reviews found mixed results for the effects of counter-advertising, suggesting that it may not be a cost-effective option for reducing consumption levels.(6)

Target area seven: Pricing policies

Given that consumers are sensitive to changes in the price of drinking, pricing policies are among the most extensively researched public-health approaches to reduce alcohol consumption. They can be used in a variety of different ways including targeting select at-risk groups, reducing the progression towards drinking large volumes of alcohol, or changing population drinking preferences towards beverages with lower alcohol content.(5) However, the success of these policies is context specific, and is largely determined by a jurisdiction's tax system (e.g., ability to effectively and efficiently collect and enforce taxation), alcohol preferences and drinking norms, income, and what sources for alcohol exist in nearby jurisdictions.

The WHO Global Strategy to Reduce the Harmful Use of Alcohol identified the following policy options and interventions:

- establishing a system for domestic taxation on alcohol coupled with an effective enforcement system;
- regularly reviewing prices in relation to level of inflation and income;
- banning or restricting the use of direct and indirect price promotions, discounts or sales;
- establishing minimum prices for alcohol where applicable;
- providing price incentives for non-alcoholic beverages; and
- reducing or stopping subsidies to economic operators in the area of alcohol.(5)

We found three overviews of systematic reviews (one recent and one older),(6; 7) seven systematic reviews, (11-16; 38) two rapid evidence syntheses (one older and one recent),(17; 18) one non-systematic review (19) and eight primary studies that relate to this target area.(20-27) There is general agreement that adjusting the price of alcohol, whether through taxation or minimum unit pricing, affects consumption. However, there is less agreement in the literature about the estimated size of the effect of these pricing policies or the extent of cost-effectiveness. One older medium-quality systematic review found a significant relationship between alcohol tax or price measures and indices of sales or consumption of alcohol, with reported effect sizes of -0.44 for total alcohol consumption,(16) while other systematic reviews have placed price elasticity at -0.20 for beer, -0.45 for wine and -0.55 for spirits.(13; 14) However, the way in which this reduction is split across the population varies significantly by beverage type, drinking pattern, gender, age and income.(22) Establishing a minimum unit price was also found to be an effective policy for reducing the consumption of alcohol, and (as found in one primary study) particularly among harmful drinkers (more than 50 units per week for men and more than 35 for women).(22) Both of these policies (i.e., taxation and minimum unit pricing) are potentially cost-effective approaches for prevention and health improvements, and can be effectively combined to ensure that any price increase is, at least in part, passed onto the consumer which is required for these policies to be effective.(17) However, one study modelling tax increases in the Netherlands found these policies had the greatest effect on health improvements over the long term, between 20 and 40 years following implementation.(24) Lastly, one implementation concern that was highlighted in one primary study as being important to take into account when adjusting the price of alcohol is the potential for the financial burden to fall disproportionately on low-income consumers.(22)

Table 1: Summary of key findings about the costs or cost-effectiveness of policies addressing alcohol availability, marketing and pricing (adapted from Anderson et al.) (18)

WHO-CHOICE alcohol interventions	Policy options	Key findings
Addressing alcohol availability	<ul style="list-style-type: none"> • Government monopolies • Minimum purchase age • Outlet density • Days and hours of sale 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> • One older overview of systematic reviews found that reducing hours of sale resulted in averting 250 to 750 Disability-Adjusted Life Years (DALY) per one million population.(7) <ul style="list-style-type: none"> ○ However, the overview found that in sub-regions with low and moderate rates of hazardous drinking health gains were in the range of 10 to 400 DALYs per one million population. • Studies and systematic reviews included in one recent rapid synthesis found that reducing opening hours of bars and restaurants targeting the most densely populated areas with simultaneous enforcement may be cost-effective.(17) • The effect of reducing access to retail outlets for specified periods of the week and implementation of a comprehensive advertising ban have the potential to be cost-effective if fully enforced.(18) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> • Two reviews included in a recent overview of systematic reviews found that restricting opening hours is effective for reducing alcohol consumption when implemented regionally, nationally or in isolated communities, however, two other reviews found that these policies had mixed effects when implemented in less isolated areas.(6) • Another recent overview of systematic reviews supported this finding, reporting conflicting evidence on the effect of limiting hours of operation, as the effectiveness of these policies depends largely on the availability and hours of operation in surrounding jurisdictions.(8) • One recent overview of systematic reviews and an older rapid synthesis found that government monopolies significantly benefit consumption-related harm, however the older rapid synthesis suggests that when a monopoly is not possible, implementing a licensing system for selling alcohol (with the collection of fees) may have similar benefits.(6; 18) • One older medium-quality systematic review and a recent rapid synthesis found an association between hours of sale of alcohol and increases in alcohol-related harms, including drinking and driving and road accidents. However the association is less clear for the effects on alcohol consumption or health harms.(10; 17) • One recent rapid synthesis found a strong association between density of outlets and social disorder, but the association for consumption or health harms remains unknown.(17) • One older rapid synthesis cautioned that strict regulations on the availability of alcohol may create an opportunity for an illicit market, notably in jurisdictions where large illicit markets already exist.(18)

WHO-CHOICE alcohol interventions	Policy options	Key findings
Addressing marketing of alcoholic beverages	<ul style="list-style-type: none"> • Volume of advertising • Plain packaging on alcohol • Warning labels • Self-regulation of alcohol marketing 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> • One systematic review included in an overview found that in areas with a low prevalence of hazardous drinkers, an advertising ban will be more cost-effective than other alcohol-misuse policies.(7) • Modelling studies included in one rapid synthesis found that complete marketing bans could be one of the most effective and cost-effective approaches to prevention, however there are significant losses in both effectiveness and cost-effectiveness as a complete ban moves to a partial ban.(17) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> • One recent overview of systematic reviews found that restrictions or bans on alcohol advertising may be effective at reducing alcohol consumption, however limitations in the methods used in four systematic reviews prevent making a strong conclusion.(8) • One recent medium-quality review found that persuasive advertising campaigns to discourage drinking are more effective than alcohol labelling.(9) • The same review found that warning labels increase individuals' knowledge but does not mitigate drinking behaviours.(9) • Modelling studies included in a recent rapid synthesis found evidence for the benefits of addressing marketing of alcohol beverages. In particular the synthesis found an association between exposure to advertising and alcohol consumption, estimating that each 10% increase in advertising results in a 0.3% increase in consumption.(17) • The same synthesis notes that the strongest evidence for the effect of marketing on alcohol consumption comes from longitudinal studies of youth, which found that increased exposure to alcohol advertising during childhood increased the consumption of alcohol throughout their youth and early-adult years.(17)
Pricing policies	<ul style="list-style-type: none"> • Taxes (e.g., sales tax or volumetric tax) • Minimum unit pricing • Banning price promotions • Incentivizing non-alcohol beverages 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> • Two overviews of systematic reviews found that taxation was an effective and cost-effective policy for reducing alcohol consumption. One of the overviews noted that the cost-effectiveness ratio was greater when taxation increased in jurisdictions with a high prevalence of hazardous drinkers (greater than 5%).(6; 7) • A medium-quality meta-analysis found a significant relationship between alcohol tax or price measures and indices of sales or consumption of alcohol, with reported effect sizes of -0.44 for total alcohol, -0.17 for beer, -0.30 for wine and -0.29 for spirits.(16) • One recent medium-quality systematic review examined price elasticity by gender and rates of consumptions and found that adult men have less elastic demand for alcohol than adult women.(11) The review also found that heavy drinking (greater than four drinks per week and at least one occasion of having more than three drinks on one occasion), regardless of gender, is not easily dissuaded by price.(11)

WHO-CHOICE alcohol interventions	Policy options	Key findings
		<ul style="list-style-type: none"> • One modelling study found that the implementation of a volumetric alcohol tax in Australia may lead to averting between 380 and 170,000 DALYs annually, with variation in the DALY's based on the rate of taxation.(27) • Similarly, two additional primary studies (one from the Netherlands and one from Denmark) found increases in alcohol taxes reduced the number of DALYs, with the study conducted in Denmark finding that the effects of these policies are largest 15 to 30 years following implementation.(23; 24) The study conducted in the Netherlands found that the probability of cost-effectiveness is almost 100% if a Quality-Adjusted Life Year (QALY) is valued at 6.000 euros.(24) • One primary study found that price elasticity of demand for alcohol varies across the population - those who are more disadvantaged in terms of education, health, cognitive and financial resources were found to be most responsive to price.(26) The same study found that demand for alcohol is significantly less elastic among older adults than for the general population.(26) • One recent medium-quality systematic review estimated a price elasticity for beer of -0.20, which is 50% less elastic than previously reported averages.(14) <ul style="list-style-type: none"> ◦ Another recent medium-quality systematic review and meta-analysis revealed less-elastic demand for both price and income for wine and spirits than has been previously reported, estimating average price elasticities at -0.45 for wine and -0.55 for spirits.(13) • One recent medium-quality systematic review found mixed results from two studies that examined consumption among heavy consumers (defined differently in each of the studies).(15) <ul style="list-style-type: none"> ◦ However, the same review found moderate-drinking adults (defined differently across included studies) demonstrated significant price elasticities, primarily in the United States and Australia.(15) • One older non-systematic review conducted a meta-regression and found that the consumption of alcoholic beverages has become more responsive to price since the mid-1950s.(19) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> • One recent overview of systematic reviews found that increasing alcohol taxation or alcohol price reduces overall alcohol consumption, with a 10% increase in price producing a 3-10% reduction in consumption.(8) <ul style="list-style-type: none"> ◦ The same overview found that increasing alcohol prices was associated with reductions in alcohol-related morbidity and mortality, crime, violence and sexually transmitted diseases.(8)

WHO-CHOICE alcohol interventions	Policy options	Key findings
		<ul style="list-style-type: none"> • One primary study from England found that establishing a minimum unit price led to a reduction in consumption, with the greatest reduction observed among harmful drinkers (more than 50 units of alcohol per week for men and more than 35 for women).(22) • Doubling the taxation was found in one meta-analysis included in one of the rapid syntheses to potentially result in a 35% decrease in alcohol-related mortality, as well as a significant reduction in violence, crime, road fatalities, and sexually transmitted infections.(17) • One recent primary study found that implementing state-wide tax increases (in the United States) did not result in a net job loss, but did result in a shift of employment from alcohol-related sectors to other sectors (usually public) of the economy.(20) • One primary study from Australia found that full strength beer, premium regular beer, dark spirits, and ready-to-drink beverages were those found to be most associated with negative externalities, including violence, verbal abuse and creating public disturbances.(21) The study also found that each of these beverages has high cross-price elasticity and so should be jointly taxed.(21) • One recent medium-quality systematic review examining the effects of alcohol tax and price changes in Denmark, Finland, Hong Kong, Sweden and Switzerland found that price reductions and relaxed import quotas had no consistent effect on alcohol consumption, however some included studies did show short-term increases in alcohol consumption among select populations, including older women, lower-education individuals and grade 11 girls, among others.(12) <ul style="list-style-type: none"> ○ The review found that reductions in alcohol price likely have selective effects on drinking patterns depending on the context in which they are implemented, rather than broad population-level effects.(12) • One older medium-quality systematic review found that almost all studies included reported some effect of alcohol tax or price of alcohol on consumption, whereby included studies that focused on tax or price increases generally found reductions in consumption. Those studies focused on price or tax reduction found an association with increased high-risk drinking and alcohol-related harms, including traffic crashes, crime, violence, sexually-transmitted diseases and premature mortality.(38) <ul style="list-style-type: none"> ○ However, one study included in the review found no impact from the increase of alcohol taxation or prices on rates of domestic abuse.(38)

REFERENCES

1. World Health Organization. Global status report on alcohol and health. Geneva: World Health Organization; 2011.
2. World Health Organization. Global status report on alcohol and health 2014. Geneva: World Health Organization; 2014.
3. Public Health Agency of Canada. The Chief Public Health Officer's Report on the state of public health in Canada, 2015: Alcohol Consumption in Canada. Ottawa: Government of Canada; 2016.
4. Shield KD, Rylett M, Gmel G, Gmel G, Kehoe-Chan TA, Rehm J. Global alcohol exposure estimates by country, territory and region for 2005: A contribution to the Comparative Risk Assessment for the 2010 Global Burden of Disease Study. *Addiction* 2013; 108(5): 912-22.
5. World Health Organization. Global strategy to reduce the harmful use of alcohol. Geneva: World Health Organization; 2010.
6. Martineau F, Tyner E, Lorenc T, Petticrew M, Lock K. Population-level interventions to reduce alcohol-related harm: an overview of systematic reviews. *Preventative Medicine* 2013; 57(4): 278-96.
7. Latimer N, Guillaume L, Goyder E, Chilcott J, Payne N. Prevention and early identification of alcohol use disorders in adults and young people: Screening and brief interventions: Cost-effectiveness review. Sheffield: Sheffield Public Health Collaborating Centre; 2009.
8. Stockings E, Hall WD, Lynskey M, et al. Prevention, early intervention, harm reduction, and treatment of substance use in young people. *Lancet Psychiatry* 2016; 3(3): 280-96.
9. Knai C, Petticrew M, Durand MA, Eastmure E, Mays N. Are the Public Health Responsibility Deal alcohol pledges likely to improve public health? An evidence synthesis. *Addiction* 2015; 110(8): 1232-46.
10. Hahn RA, Kuzara JL, Elder R, et al. Effectiveness of policies restricting hours of alcohol sales in preventing excessive alcohol consumption and related harms. *American Journal of Preventative Medicine* 2010; 39(6): 590-604.
11. Nelson JP. Gender differences in alcohol demand: A systematic review of the role of prices and taxes. *Health Econ* 2014; 23(10): 1260-80.
12. Nelson JP, McNall AD. What happens to drinking when alcohol policy changes? A review of five natural experiments for alcohol taxes, prices, and availability. *European Journal of Health Economics* 2017; 18(4): 417-434.
13. Nelson JP. Robust demand elasticities for wine and distilled spirits: Meta-analysis with corrections for outliers and publication bias. *Journal of Wine Economics* 2013; 8(3): 294-317.
14. Nelson JP. Estimating the price elasticity of beer: meta-analysis of data with heterogeneity, dependence, and publication bias. *Journal of Health Economics* 2014; 33: 180-7.
15. Nelson JP. Does heavy drinking by adults respond to higher alcohol prices and taxes? A survey and assessment. *Economic Analysis and Policy* 2013; 43(3): 265-291.
16. Wagenaar AC, Salois MJ, Komro KA. Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction* 2009; 104(2): 179-90.
17. Burton R, Henn C, Lavoie D, et al. A rapid evidence review of the effectiveness and cost-effectiveness of alcohol control policies: an English perspective. *Lancet* 2017; 389(10078): 1558-1580.
18. Anderson P, Chisholm D, Fuhr DC. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet* 2009; 373(9682): 2234-46.

19. Fogarty J. The demand for beer, wine and spirits: A survey of the literature. *Journal of Economic Surveys* 2009; 24(3): 428-78.
20. Wada R, Chaloupka FJ, Powell LM, Jernigan DH. Employment impacts of alcohol taxes. *Preventative Medicine* 2017; 105s: s50-5.
21. Mansdotter AM, Rydberg MK, Wallin E, Lindholm LA, Andreasson S. A cost-effectiveness analysis of alcohol prevention targeting licensed premises. *European Journal of Public Health* 2007; 17(6): 618-23.
22. Holmes J, Meng Y, Meier PS, et al. Effects of minimum unit pricing for alcohol on different income and socioeconomic groups: A modelling study. *Lancet* 2014; 383(9929): 1655-1664.
23. Holm AL, Veerman L, Cobiac L, Ekholm O, Diderichsen F. Cost-effectiveness of changes in alcohol taxation in Denmark: a modelling study. *Cost Effective Resource Allocation* 2014; 12(1): 1.
24. van den Berg M, van Baal PH, Tariq L, Schuit AJ, de Wit GA, Hoogenveen RT. The cost-effectiveness of increasing alcohol taxes: a modelling study. *BMC Medicine* 2008; 6: 36.
25. Srivastava P, McLaren KR, Wohlgenant M, Zhao X. Disaggregated econometric estimation of consumer demand response by alcoholic beverages types. *The Australian Journal of Agricultural and Resource Economics* 2014; 59(3): 412-32.
26. Ayyagari P, Deb P, Fletcher J, Gallo W, Sindelar JL. Understanding heterogeneity in price elasticities in the demand for alcohol for older individuals. *Health Economics* 2013; 22(1): 89-105.
27. Byrnes J, Petrie DJ, Doran CM, Shakeshaft A. The efficiency of a volumetric alcohol tax in Australia. *Applied Health Economics & Health Policy* 2012; 10(1): 37-49.
28. Wilson IM, Graham K, Taft A. Alcohol interventions, alcohol policy and intimate partner violence: A systematic review. *BMC Public Health* 2014; 14: 881.
29. Hahn RA, Middleton JC, Elder R, et al. Effects of alcohol retail privatization on excessive alcohol consumption and related harms: a community guide systematic review. *American Journal of Preventative Medicine* 2012; 42(4): 418-27.
30. Jones L, Hughes K, Atkinson AM, Bellis MA. Reducing harm in drinking environments: A systematic review of effective approaches. *Health Place* 2011; 17(2): 508-18.
31. Brennan I, Moore SC, Byrne E, Murphy S. Interventions for disorder and severe intoxication in and around licensed premises, 1989-2009. *Addiction* 2011; 106(4): 706-13.
32. Bolier L, Voorham L, Monshouwer K, van Hasselt N, Bellis M. Alcohol and drug prevention in nightlife settings: A review of experimental studies. *Substance Use & Misuse* 2011; 46(13): 1569-91.
33. Middleton JC, Hahn RA, Kuzara JL, et al. Effectiveness of policies maintaining or restricting days of alcohol sales on excessive alcohol consumption and related harms. *American Journal of Preventative Medicine* 2010; 39(6): 575-89.
34. Jackson R, Johnson M, Campbell F, et al. Interventions on control of alcohol price, promotion and availability for prevention of alcohol use disorders in adults and young people. Sheffield: Sheffield Public Health Collaborating Centre; 2010.
35. Elder RW, Lawrence B, Ferguson A, et al. The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms. *American Journal of Preventative Medicine* 2010; 38(2): 217-229.
36. Campbell CA, Hahn RA, Elder R, et al. The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *American Journal of Preventative Medicine* 2009; 37(6): 556-69.

37. Booth A, Meier P, Stockwell T, Sutton A, Wilkinson A, Wang R. Independent review of the effects of alcohol pricing and promotion. Part A systematic reviews. Sheffield: Sheffield Public Health Collaborating Centre; 2008.
38. Patra J, Giesbrecht N, Rehm J, Bekmuradov D, Popova S. Are alcohol prices and taxes an evidence-based approach to reducing alcohol-related harm and promoting public health and safety? A literature review. *Contemporary Drug Problems* 2012; 39(1): 7-48.

Appendix 1: Summary of key findings about costs and cost-effectiveness of policies for reducing alcohol consumption (adapted from Anderson et al.) (18)

WHO-CHOICE alcohol interventions	Policy options	Key findings
Educational information through awareness and political commitments	<ul style="list-style-type: none"> School-based education Parenting programs Social marketing programs Public information campaigns Counter-advertising Drinking guidelines 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> One recent overview of systematic reviews found that neither school-based education nor mass-media awareness campaigns were cost-effective, given they do not notably affect consumption levels or overall health effects.(6) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> Several reviews (one recent overview of systematic reviews, two rapid syntheses and one recent medium-quality systematic review) found school-based education programs, social-media campaigns and health warnings improve knowledge and attitudes about drinking, and in the case of health warning had some effect on intentions to change drinking behaviour, but did not result in sustained behaviour change.(6; 9; 17; 18) One recent rapid synthesis found that social-media campaigns for addressing alcohol use significantly reduce the knowledge deficit, particularly for bringing attention to the relationship between alcohol and cancer.(17)
Health-sector response	<ul style="list-style-type: none"> Brief advice Cognitive-behavioural therapies for alcohol dependence Benzodiazepines for alcohol withdrawal Glutamate inhibitors for alcohol dependence Opiate antagonists for alcohol dependence 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> One rapid synthesis found that compared to no alcohol control policies, the cost-effectiveness of these interventions are in the range of \$2,000-\$4,000 per disability adjusted life year (DALY), however this was not seen as being as favourable as population policy instruments.(18) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> Brief advice was found in several systematic reviews and meta-analyses to be the most effective health-sector response to problem-drinking among those who are not severely dependent.(17; 18) Other specialized treatments such as benzodiazepines, glutamate inhibitors and opiate antagonists have been found to reduce the harm of alcohol withdrawal among those who are severely dependent.(17)
Community action to reduce harmful alcohol use	<ul style="list-style-type: none"> Media advocacy Community interventions Workplace policies Public consumption bans 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> None identified. <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> One recent overview of systematic reviews and meta-analyses found that workplace interventions such as mandatory testing, staff training and mailing out health information had a beneficial effect on reducing alcohol consumption among employees (but the overview cautioned that the findings may not be generalizable across workplaces).(6)

WHO-CHOICE alcohol interventions	Policy options	Key findings
		<ul style="list-style-type: none"> One recent rapid synthesis found that public drinking bans were found to have negative implications for marginalized populations, particularly homeless populations, and resulted in displacing them to more covert and less safe locations.(17)
Drinking and driving policies and counter-measures	<ul style="list-style-type: none"> Reductions in the legal blood-alcohol limit Sobriety checkpoints and random breath testing Restrictions on young or inexperienced drivers Mandatory treatment Ignition locks Designated driver and safe-ride programs 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> One rapid synthesis found that drunk-driving laws and their enforcement through roadside checkpoints was generally effective, with estimates of cost per DALY ranging from \$762 to \$1264.(17) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> One recent overview of systematic reviews found that driver checkpoints resulted in lowering average blood alcohol concentrations among drivers and a decrease in fatal accidents.(6) One recent rapid synthesis found that reducing the legal blood-alcohol limit resulted in cost-effectiveness ratios that ranged from 2:1 to 57:1.(17) The same non-systematic review found that graded limits on legal blood-alcohol limits for young or inexperienced drivers resulted in a reduction of 8-14% in alcohol-related motor-vehicle accidents.(17)
Harm reduction	<ul style="list-style-type: none"> Training of bar staff Responsible serving practices Security staff in bars Safety-oriented design of the premise 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> One recent overview of systematic reviews found mixed effects from server training and driver-home programs, suggesting that these intervention on their own may not be the most cost-effective policy options.(17) One older primary study evaluating the cost-effectiveness of a multi-component alcohol-prevention intervention (including training in responsible beverage service, community awareness and mobilization, and stricter law enforcement) found cost savings, largely attributable to reductions in the use of the judicial system, improvements in productivity and reductions in healthcare use. However, the study cautioned that its results may not be generalizable.(21) <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> None identified
Reducing the public-health impact of illegal and illicit alcohol	<ul style="list-style-type: none"> Informal and surrogate alcohols Strict tax labelling 	<p><i>Key findings related to costs or cost-effectiveness of policy options</i></p> <ul style="list-style-type: none"> None identified <p><i>Additional key findings related to benefits and harms of policy options</i></p> <ul style="list-style-type: none"> One non-systematic review found some evidence that banning the use of methanol in products can help to reduce alcohol-related harms in jurisdictions with high rates of illegally produced alcohol or alcohol replacements. (17)

APPENDIX 2

The following tables provide detailed information about the systematic reviews and primary studies identified in the rapid synthesis. The ensuing information was extracted from the following sources:

- systematic reviews - the focus of the review, key findings, last year the literature was searched, and the proportion of studies conducted in Canada; and
- primary studies (in this case, economic evaluations and costing studies) - the focus of the study, methods used, study sample, jurisdiction studied, key features of the intervention and the study findings (based on the outcomes reported in the study).

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

Appendix 2a: Summary of findings from systematic reviews on the effectiveness and cost-effectiveness of policies for reducing alcohol consumption

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Overview of systematic reviews	Effectiveness of public-health interventions to reduce alcohol-related harm (6)	<p>This overview of systematic reviews examined evidence on the effectiveness of population-level interventions in non-clinical settings to reduce alcohol consumption or related health or social harm. Evidence was collected and analyzed based on key policy areas: alcohol server setting, availability, illicit alcohol, taxation, mass media, drinking and driving, schooling, higher education, family and communities, and workplace. The majority of studies examining server setting, which included interventions such as server training, community nightlife interventions and driver-home services, found mixed effects of these interventions on alcohol consumption, suggesting this policy area may not be entirely cost-effective or feasible in all contexts. The next policy area, availability, included interventions such as restricting opening hours and government monopolization of sales. Two of the eight reviews in this area found that such interventions would be cost-effective if implemented regionally or in isolated communities, and two other studies found that government monopolization and enforcing minimum drinking age limits significantly benefit consumption-related harm and drinking and driving.</p> <p>All three reviews examining taxation found clear and consistent evidence that increasing alcohol price or taxation reduces overall consumption and related harm. Of the three reviews examining the effects of mass media, two meta-analyses calculated an overall beneficial effect of mass-media campaigns on alcohol use or behaviour; however, both lack primary study details. One review found conflicting evidence regarding the effectiveness of counter-advertising, suggesting this may not be a cost-effective technique to reduce harm. Eleven reviews examined the policy area of drinking and driving, with three high and medium-quality reviews concluding that driver checkpoints and enforcing lower blood-alcohol concentrations have the greatest effect on reducing fatal accident rates. One review also found that alcohol-themed road safety campaigns were more effective at reducing harms compared to non-alcohol themed interventions. Overall, based on 11 reviews, results for policy interventions in schools demonstrated mixed results; the study concludes that such interventions are highly population- and setting-specific.</p> <p>Regarding higher education settings, only one review out of four was of high quality; nonetheless, the results from all studies indicated indeterminate effects of social-norm interventions and alcohol-consumption-restriction policies for fraternity-based student housing. Three reviews focused on family and community interventions and found that parenting interventions, rather than those between various health workers and families, were the most effective in reducing alcohol use and initiation. Regarding the policy focus within the workplace, two studies found that general workplace alcohol-based interventions such as mandatory testing, staff training and health information mail-outs indicated a beneficial effect on alcohol consumption or harm. However, the review urges caution in applying the</p>	2013	No rating tool available	23/52

McMaster Health Forum

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		effectiveness of these findings broadly, as heterogeneity of study setting and design as well as a lack of intervention replication may impinge on the generalizability of these results.			
Overview of reviews	Cost-effectiveness of macro-economic policies to reduce alcohol-related harms (7)	<p>The overview reported findings from 62 studies and two meta-analyses on three issues of cost-effectiveness: 1) price controls; 2) managing alcohol availability; and 3) alcohol promotion.</p> <p>Relatively few papers assessing the cost-effectiveness of pricing interventions were found. However, one review reported that in areas with a high prevalence (greater than five per cent) of hazardous drinkers, taxation will be more cost-effective than other interventions.</p> <p>Similarly, relatively little evidence was found that reports on the cost-effectiveness of promotion controls. One review suggests that in areas with a low prevalence of hazardous drinkers, an advertising ban will be more cost-effective than other alcohol-misuse interventions.</p> <p>Finally, relatively more information was found on the cost-effectiveness of availability restrictions. One study found that an alcohol taxation policy levied on young people had an equivalent consumption effect as a minimum legal age of alcohol purchase policy, however, a tax levied is likely preferable as it may result in lower societal losses due to reduced consumer surplus. Three studies were found that address the cost-benefit of server interventions designed to stop alcohol sales to intoxicated people, however, they all resulted in mixed effects whereby it was difficult to determine whether crime was actually reduced or simply displaced. One study examined licensed hours and days of alcohol sales and found that reducing the licensed hours provided quality of life benefits but that these were relatively small. However, as the intervention was very low-cost it was found to be cost-effective when compared to no intervention.</p>	2008	No rating tool available	0/64
Overview of reviews	Examining the effectiveness of prevention, early interventions, harm reduction and treatments of substance abuse in young people(8)	This systematic review of reviews focused on policy strategies that aim to address the use of tobacco, alcohol and illicit drugs in young people. It identified structural, school- and family-based universal interventions, screening and brief interventions and harm reductions, as well as local treatment strategies. The review found that restrictions or bans for alcohol advertising lacked methodological consistency across four reviews; poor quality reviews therefore make it difficult to assess if such approaches are effective in reducing alcohol consumption. Enforcing minimum legal drinking ages was found to have small meaningful benefits, however, other strategies such as taxation were found to be more effective in reducing use. High-quality evidence from four reviews indicated that educational interventions in colleges or university were found to have no effect on consumption. Furthermore, screening and brief interventions in primary-care settings and emergency departments or hospitals were also found to have insufficient evidence or small meaningful benefits, respectively. Overall, it was found that taxation, consumption bans, advertising restrictions and minimum legal age are effective in reducing alcohol use. However, the review emphasizes the lack of research and high-quality	2015	No rating tool available	Not reported

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		evidence on interventions among young people, making it difficult to draw strong conclusions from this review.			
Systematic review	Examining the likelihood of the alcohol pledges taken by the Public Health Responsibility Deal in improving public health (9)	<p>The Public Health Responsibility Deal (RD) is a public-private partnership intended to improve public health through voluntary pledges between government, industry and other stakeholders. Pledges specific to alcohol consumption in the RD included alcohol labelling, awareness of alcohol units in clubs and bars, awareness of alcohol units, calories and other information in supermarkets and off-licensed locations, tackling underage alcohol sales, support for Drinkaware (an independent alcohol information source), responsible advertising of alcohol, community actions to tackle alcohol harms, and actions to reduce alcohol unit consumption. This review sought to examine the likelihood of the pledges of the RD on improving public health.</p> <p>After identifying the range of policy options, this evidence synthesis compared the evidence of potential policy effects against those advocated for by the RD approach. Overall, 14 reviews were included. It was found that alcohol labelling mainly concerning impairment information to consumers would not be as effective as more persuasive advertising campaigns to discourage problematic drinking habits. Two of the included reviews found that unit alcohol content is helpful in assisting drinkers to determine the quantity of alcohol being consumed. Five studies on the effects of warning labels generally supported the finding that such information is generally beneficial for warning consumers, but is not likely to mitigate drinking behaviours of “at risk” consumers, including pregnant women. Four reviews concluded that responsible drinking statements have significant subjectivity in their interpretations, owing to the different types of consumers. Four reviews summarized the evidence on the effectiveness of age verification, concluding that policy campaigns and other enforcement approaches of alcohol sales laws (such as underage sales checks) were shown to be largely effective at reducing alcohol use and associated harms.</p>	2013	6/11 (AMSTAR rating from McMaster Health Forum)	0/14
Systematic review	Examining the effects of beverage alcohol price and tax levels on drinking (16)	<p>The review included 112 studies examining the effects of alcohol tax or price on consumption.</p> <p>When calculated for individual alcohols, the simple mean elasticities were found to be -0.46 for beer, -0.69 for wine, -0.80 for spirits, and -0.28 for alcohol consumption among heavy drinkers (no consumption level was indicated). However, the meta-analysis revealed slightly different results, with -0.17 for beer, -0.30 for wine, -0.29 for spirits, and -0.44 for total alcohol consumptions. This shows a significant relationship between alcohol tax or price measures and consumption.</p>	2007	6/11 (AMSTAR rating from the McMaster Health Forum)	Not reported
Systematic review	Effectiveness of restricting hours of alcohol sales in preventing alcohol-related harms (10)	<p>The review included six studies, reported in 10 papers, which resulted in a change of less than two hours of sale.</p> <p>The review found that increasing the hours when alcohol may be sold by more than two hours increased alcohol-related harms. Since no studies examined whether reducing hours of sales reduced alcohol-related harms, only inferences can be made. The review found insufficient</p>	2008	6/9 (AMSTAR rating from McMaster)	1/10

McMaster Health Forum

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		evidence and no consistent effect on excessive alcohol consumption or related harms from increasing the hours of sales by less than two hours.		Health Forum)	
Systematic review	Gender differences in the demand for alcohol following price increases (11)	<p>Generally, literature finds that prices and taxation increases have different effects on heavy and dependent drinkers than on moderate drinkers. Heavy and dependent drinkers tend to include a greater proportion of men. The challenge with taxation has been that moderate drinkers have more elastic demands that account for a smaller share of social costs. Evidence generally supports that women are more likely to abstain and are more likely to be light drinkers (three to four drinks per week) than male drinkers, who are more likely to fall into the heavy drinking category (greater than four drinks per week and more than three drinks on at least one occasion per week). Other research, however, categorizes moderate drinkers as consumption levels below four drinks a day, and heavy drinking above five drinks per day.</p> <p>The review included 15 studies in efforts to assess whether male drinkers are less responsive to alcohol prices and taxes. Mixed results were found for moderate drinking by young adults, with some evidence to support an effect of price on drinking participation. Mixed effects were also found for studies examining binge or heavy drinking among young adults, and generally suggest that heavy drinking by young adults is not easily dissuaded by higher prices, regardless of gender.</p> <p>Overall, the review found four primary conclusions: 1) adults men have less elastic demands compared with women; 2) there is little or no price response by heavy-drinking adults, regardless of gender; 3) though mixed results were found, price may be important for drinking participation for younger adults; and 4) heavy drinking by young adults, regardless of gender, is not easily dissuaded by price.</p>	2012	6/11 (AMSTAR rating from McMaster Health Forum)	2/15
Rapid synthesis	Effectiveness and cost-effectiveness of alcohol control policies (17)	<p>The rapid review included 216 studies and systematic reviews examining the effectiveness and cost-effectiveness of: taxation and price regulation; regulating marketing; regulating availability; providing information and education; managing the drinking environment; preventing drunk-driving; and brief interventions and treatment on alcohol-related harms.</p> <p><u>Taxation and price regulation</u></p> <p>With respect to the effects of taxation and price regulation on consumption, findings generally show that an increase in alcohol price is consistently associated with a decrease in its consumption. Specifically, reviews have found that a 10% price increase is associated with a 5% decrease in consumption. Beer was found to be less price elastic than wine or spirits, but when purchased off-market (e.g., supermarkets) the price elasticity of beer increased. Moderate drinkers are more susceptible to price change than heavy drinkers, but in absolute terms the reduction in alcohol consumption among heavy drinkers is higher. Heavy drinkers however, have a greater tendency to substitute for cheaper alternatives when faced with a price increase.</p>	2016	No rating tool is available	2/216

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		<p>Taxation and price increases were also found to lead to significant improvements in health, with one meta-analysis finding that doubling the tax rate led to an average 35% reduction in alcohol-related mortality, as well as significant reductions in violence, crime, road fatalities and sexually transmitted infections.</p> <p>The rapid review found that to bring about these reductions in harm (and societal benefits), both taxes and price increases need to be passed directly to the consumer through an increase in the price of the product or through legislating a minimum price. These two policies can be implemented together, with British literature finding that the most effective combination is phased duty taxes (annual increases tied to inflation) with a minimum unit price</p> <p><u>Regulating marketing</u></p> <p>The review found relatively little publicly available information from which to assess the impact of marketing on alcohol consumption. However, the existing evidence reports that for each 10% increase in advertising expenditure there is a 0.3% increase in consumption.</p> <p>While complete marketing bans are rarely implemented, modelling studies have found that they are one of the most effective and cost-effective approaches to prevention, with significant losses in effectiveness as a complete ban moves to a partial ban. A policy alternative to a complete ban is either to implement legislation that restricts what types of media advertisers are permitted to use, and the content of the ads, or the implementation of a watershed ban (e.g., time restrictions). Generally, evidence suggested that reduced exposure to advertising and marketing is expected to benefit prevention and cessation efforts by reducing environmental cues to drink.</p> <p><u>Regulating availability</u></p> <p>Regulating the availability of alcohol can occur on two levels, either the retail level (e.g., determining where and when it can be sold) or the production level (e.g., encouraging the marketing of lower alcohol products). These policies have been found to have mixed results. Generally, the evidence supports that higher outlet density is related to higher levels of social disorder, however, the relationship is less clear for alcohol consumption or health harms. Reviews have found that increases in the time and days in which alcohol is sold increases consumption and some harms, such as road accidents. Similarly, reducing late-night hours has been found to reduce violence.</p> <p><u>Providing information and education</u></p> <p>The evidence generally supports the use of well executed campaigns with high public exposure, and finds these sufficient for raising awareness, particularly for the links between alcohol</p>			

McMaster Health Forum

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		<p>consumption and cancer. Industry sponsored messages and campaigns are reported to be ineffective, however, temporary, voluntary campaigns such as “dry January” have shown a tendency towards healthier drinking behaviour. The larger findings though, are that providing information and education do not produce sustained behavioural changes, but this may be due to the widespread and unrestricted marketing of alcohol.</p> <p><u>Managing the drinking environment</u> Select community-based multi-component programs aim to increase enforcement activity and improve serving practices and standards of licensed facilities. The existing literature is sparse and has a number of methodological challenges.</p> <p>Policies that can help to manage the drinking environment, include server training, changing glasswear and bottles, and changes to public drinking laws. Small effects have been reported from server training, however larger effects have been reported for the implementation of server liability, which holds servers legally responsible for harm caused by their customers. Evidence has not supported switching to glass alternatives, as it has not been found to reduce violence or police-recorded crime. Finally, public drinking bans were found to have some negative consequences on marginalized groups, particularly homeless peoples, and resulted in their displacement to more covert and less safe places.</p> <p><u>Preventing drinking and driving</u> Substantial evidence supports setting and enforcing a legal blood-alcohol concentration limit for drivers and applying a penalty if the law is broken. Estimates have reported that lowering the legal blood-alcohol concentration from 80mg/ 100ml to 50mg/100ml would avert 25 deaths and 100 serious injuries in Britain each year. While relatively few cost-effectiveness studies were found, those that were report benefit-cost ratios of 2:1 to 57:1. Similarly, using mass-media campaigns to inform drivers of new regulations and punishments have also been found to be cost-effective.</p> <p>Setting graded limits on alcohol based on driving experience has also been found to be effective, with median reductions of 8-14% among young drivers. Mixed effects, however, have been found for the use of incentive programs for designated-driver programs, with studies showing that the programs increased the propensity to use a designated driver, but did not change the prevalence of people driving after drinking or riding with someone who has been drinking.</p> <p><u>Brief interventions and treatment</u> Reviews and meta-analyses have found that in England alone, delivery of identification and brief advice would reduce alcohol-related deaths by 25,000, and alcohol-related hospital admissions by 125,000. These gains benefit those in low socio-economic groups who</p>			

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		demonstrate the greatest absolute reduction in harm. Further, one systematic review included in the rapid synthesis found this treatment to be cost-saving. The treatment also has been found to be effective in emergency departments, reducing weekly alcohol consumption after six months and 12 months. There has been little evidence however, to support its use in community pharmacies.			
Rapid synthesis	Effectiveness and cost-effectiveness of policies to reduce alcohol-related harms (18)	<p>The review examines the effects various policies have on alcohol-related harms. These policies include: information and education; health-sector programs; community programs; drunk-driving policies; addressing the availability of alcohol; addressing the marketing of alcohol; pricing policies; harm reduction; and reducing the public-health effect of illegally and informally produced alcohol.</p> <p><u>Information and education</u></p> <p>Evidence has generally found that information and education campaigns do not lead to sustained behaviour change, though they may serve to increase knowledge about alcohol and its use, such as in the case of classroom education. Similarly, mandated health warnings have been found to increase the intention to change, but have not been found to effect long-term behaviour change. No findings were available on the effectiveness of publicizing drinking guidelines.</p> <p><u>Health sector programs</u></p> <p>Early identification and brief advice has been found to be the most effective evidence-based treatment for those with hazardous or harmful alcohol use, but who are not severely dependent. Furthermore, the treatment has been found to be effective for this population regardless of the level of intensity.</p> <p>For those with severe dependence, effective treatments include behavioural therapies and pharmacological therapies.</p> <p><u>Community programs</u></p> <p>Community programs include education and information campaigns; media advocacy; counter-advertising and health promotion; controls on selling and consumption venues; enhanced law enforcement; and community organization and coalition development.</p> <p>Evidence has found that media advocacy may lead to reframing solutions to alcohol-related problems, and as a result increase attention to alcohol on political and public agendas.</p>	2009	No rating tool available	Not reported

McMaster Health Forum

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		<p>Generally, interventions that control access such as changing where alcohol is sold and distributed are effective in reducing alcohol related fatalities and violence.</p> <p><u>Drunk-driving policies</u></p> <p>Evidence on policies to reduce drunk-driving have generally found the following to be effective: increase in the price of alcohol; minimum purchase age laws; changing the outlet density; establishment of a legal concentration of alcohol in the blood; and use of ignition locks.</p> <p><u>Availability of alcohol</u></p> <p>Government monopolies on the sale of alcohol may help to reduce alcohol-related harms, however, when that policy option is not available implementing licensing systems (with collection fees) for retailers to sell alcohol, can mimic the retail control and have some of the same benefits as a government monopoly.</p> <p>Other policies that control the availability of alcohol including implementing minimum drinking age, restricting the density of outlets, and reducing times of sale, have been found to lead to fewer alcohol-related problems, including homicides and assaults.</p> <p>One caution however, is that strict availability of alcohol can create an opportunity for an illicit market. This policy challenge can usually be managed on a small scale through enforcement, however, these policies should be implemented cautiously in places where a large illicit market already exists.</p> <p><u>Marketing of alcoholic beverages</u></p> <p>Evidence has generally shown a weak relationship between advertising and consumption of alcoholic beverages. The strongest evidence however comes from longitudinal studies which show an association between advertising and youth drinking.</p> <p><u>Pricing policies</u></p> <p>Alcohol has been shown to be a fairly inelastic good, however, increases in prices do result in some reduction in consumption, and also serve to increase government revenue. There is however, a need to consider overall consumption levels, beverage preferences and time period for tax increases as each of these will have an impact on the implementation of the policy and may dictate the extent to which there is a boom in the illicit market.</p>			

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		<p><u>Harm reduction</u></p> <p>Safety-oriented environments and employment of security staff have both been shown to be effective in reducing alcohol-related harm. While interventions modifying the behaviour of people serving alcohol have not on their own been effective, when coupled with additional enforcement these have also been shown to reduce harms.</p> <p><u>Illegally and informally produced alcohol</u></p> <p>Policy options for curbing the illegally and informally produced alcohol market include banning methanol from all products and introducing tax stamps to show that a duty has been paid. Generally, the banning of methanol has been found to be effective in reducing morbidity and mortality in jurisdictions with high use of illegal or informally produced alcohol.</p>			
Systematic review	Examining if alcohol prices and taxes are evidence-based approaches to reducing alcohol-related harm and promoting public health and safety (38)	<p>This literature review examined outcomes such as drinking patterns and high-risk drinking as well as harms from alcohol. The majority of 54 reviewed studies found that changes in prices or taxes had impacts on at least one of the main outcome variables. Six papers examined the impact of taxes on alcohol consumption; a U.S.-based study estimated that a tax on alcohol that matched inflation would reduce heavy consumption in youth by up to 19%. In Germany, similar results were obtained, with projected reductions in consumption of up to 30%. Studies focusing on drinking patterns and alcohol-related harms also reported that taxes were positively associated with a reduction in drunk-driving related arrests and deaths. However, an economic model assessing tax cuts in Switzerland noted that reductions in alcohol taxation did not result in persistent increases in alcohol consumption among heavy drinkers, although such a policy would still lead to an overall increased consumption of alcohol with up to 289 more projected alcohol-related deaths.</p> <p>Regarding the impact of taxes on alcohol-related harms, 22 studies examined the impact of increased taxation on traffic crashes, crime, violence, sexually-transmitted diseases and premature mortality. Overall, it was found that when taxes on alcohol are increased, such alcohol-related “problems” tend to decline. For example, a U.S.-based study found that increases in taxes on beer, the most common alcoholic beverage in North America, were associated with a reduced prevalence of alcohol consumption and dependence. Although the review consistently identifies positive relationships between higher alcohol prices and taxation on consumption and related harms, it emphasizes caution in interpreting its results, as significant variants were found to exist across studies in terms of design, settings and harms evaluated.</p>	2011	7/9 (AMSTAR rating from McMaster Health Forum)	11/54

McMaster Health Forum

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Systematic review	Examining the demand elasticities for wine and distilled spirits (13)	This review focused on the price and income elasticities for wine and distilled spirits. Based on 104 primary studies examining wine elasticities and 111 primary studies examining spirits elasticities, it was found that less-elastic demands exist for both price and income than what were previously estimated. This was largely attributed to publication bias selectivity in previous reports, which was analyzed through funnel plots for both types of beverages. Analysis revealed that price and income elasticities have been previously biased toward more elastic values for price and income. The review suggests that price elasticities may be particularly interesting to policymakers, in that reducing overall population-level alcohol consumption is a more effective strategy to reduce consumption-related harms than strictly focusing on the heaviest of drinkers.	2013	5/11 (AMSTAR rating from McMaster Health Forum)	1/215
Systematic review	Estimating the price elasticity of beer (14)	This review focused on beer price elasticities as a tool for informed tax policies using 114 empirical studies. It was found that after accounting for heterogeneity, dependence and publication bias, the price elasticity for beer was -0.20. This value is 50% less elastic than previously reported averages. This report concludes that higher prices and taxes on alcohol may or may not provide any social benefits in reducing alcohol consumption, depending on the elasticity of regional demands. Establishing optimal alcohol taxes is discussed as being complex, partially due to differences in drinking patterns within regions or countries. Ultimately, given the lack of consistency in publication bias and other confounders in the existing literature, this meta-analysis concludes that population-based alcohol tax policies are unlikely to achieve desired effects of reducing alcohol consumption.	2014	6/9 (AMSTAR rating from McMaster Health Forum)	3/114
Systematic review	Examining the effect of higher alcohol prices and taxes on heavy alcohol consumption (15)	This review examined empirical studies to examine the price responsiveness of heavy consumers of alcohol. It also examined the relationship between alcohol prices and liver cirrhosis-related mortality. Overall, the review found only two studies of heavy consumption with a significant and substantial negative price response. Many studies, on the other hand, demonstrated that moderate-drinking adults were found to have significant price and tax elasticities, primarily in the U.S. and Australia. Only two of nine studies examining liver cirrhosis found significant negative price and tax effects; other studies contained mixed results or were not specific to economic specifications. Geographic variation and a lack of consistency among reporting measures was noted in this review. Overall, the study concludes that price and tax elasticities for heavy consumers of alcohol approach zero in most cases. This was found to be consistent across time periods and economic model specifications.	2013	4/10 (AMSTAR rating from McMaster Health Forum)	Not reported
Systematic review	Examining changes in alcohol consumption following changes in taxes, prices and availability (12)	This review examined empirical studies that followed natural experiments in alcohol policy. It examined studies that followed changes in alcohol price and tax in Denmark, Finland, Hong Kong, Sweden and Switzerland from 1999 to 2008. Across jurisdictions, there were 18 studies that presented results for binge drinking and intoxication. Most of these studies suggested largely negative or null results, in that alcohol policy interventions that reduced prices had little or no positive effect on heavy alcohol consumption. Eighteen studies examined results for young adults, among which 14 indicate negative results, showing that policy interventions to increase or decrease prices and taxation had little effect on population-level consumption. Similar results were seen regarding the effect of policy changes on consumption habits by older adults. Overall, this review identifies a lack of clear results for major segments of populations	2014	5/9 (AMSTAR rating by McMaster Health Forum)	0/29

Type of review	Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
		across the five countries. It also specifies that most policy interventions result in short-term changes in drinking behaviour; as such, the review concludes that economic interventions are likely to have selective effects on consumption patterns rather than population-level impacts.			
Non-systematic review	Examining the demand for beer, wine and spirits (19)	This study assessed the literature regarding the demand for alcoholic beverages and presented insights into the nature of this demand. Meta-regression information from this economic study suggests that the demand for imported beverages was found to be more elastic than the demand for domestic beverages. Since 1953, there has been a gradual trend towards own price elasticity estimates. The study hypothesizes this is due to an increase in alcohol consumption in previous decades as well as a tendency for consumers to substitute beverages such as beer and wine.	2008	No reporting tool available	Not reported

Appendix 2b: Summary of findings from primary studies on the effectiveness and cost-effectiveness of policies for reducing alcohol consumption

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
Employment impacts of implementing an excise or sales tax on alcohol (20)	<p><i>Publication date:</i> 2017</p> <p><i>Jurisdiction studied:</i> United States</p> <p><i>Methods used:</i> Macro-economic modeling</p>	Labour market data from alcohol-industry employment in five states (Arkansas, Florida, Massachusetts, New Mexico and Wisconsin)	Used a macro-economic model that forecasted the effects of an increase in alcohol tax on alcohol-industry employment	<p>The study found that implementing a five cent per drink excise tax reduced alcohol sales in all states, with the largest decline in Florida (valued at \$279.1 million) and the smallest in New Mexico (valued at \$27.4 million). Similar results were found for the implementation of a 5% sales tax. Across types of alcohol, the taxes had different effects in each state, with the largest declines in consumption for distilled spirits in Florida, Massachusetts, and Wisconsin, but the largest decline in wine in Florida and Massachusetts.</p> <p>With respect to employment, the gross total employment changes are consistently negative across states and industry sector, with a larger reduction in jobs seen in response to the 5% sales tax as opposed to the five cent excise tax. The largest employment losses were seen in the following industries: beverage manufacturing; retailers; wholesalers; and food service and drinking places. Additional losses however were seen in the private sector due to the indirect association with industry and manufacturing alcohol.</p> <p>Net total employment (which includes substitution, income effects and the increase in government tax revenue) is</p>

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				<p>consistently positive. Across industries, while employment results in the alcohol industry are consistently negative, employment gains were positive in the rest of the private sector and for state and local government.</p> <p>Overall, increases in state-level alcohol taxes would not lead to net job losses in any of the included states. The implementation of the taxes however, would serve to shift jobs from alcohol-related sectors to other sectors of the economy, but the overall impact on the total number of jobs is positive and relatively small.</p>
Cost-effectiveness of community programs to improve the safety of licensed facilities (21)	<p><i>Publication date:</i> 2007</p> <p><i>Jurisdiction studied:</i> Sweden</p> <p><i>Methods used:</i> Cost-effectiveness analysis</p>	604 randomly selected respondents from the National Policy Board's register of assaults, unlawful threats/harassment, and assaults/threats towards officials in 2003	Intervention to improve the safety of restaurant environments including: community mobilization aimed at increasing awareness of problems connected with alcohol consumptions; a two-day course about alcohol law, medical effects and conflict management for servers, doormen and restaurant owners; and strengthened enforcement of alcohol laws.	<p>The study found that implementing the community program, which targeted all licensed facilities in Stockholm City, resulted in a net savings of 30.5 million euros in the base case and 13.6 million euros working on the assumption that the only violence-related consequence among non-respondents was the cost of police handling.</p> <p>Cost savings ratios were found to be 1:18 and 1:7. The study also found that preventing violence resulted in health gains and 236 discounted Quality-Adjusted Life Years (QALYs).</p> <p>Authors of the study however, cautioned that the low response rate in the survey may have skewed the results, and as a result they may not transfer to other settings.</p>
Assessing the cost-effectiveness of volumetric alcohol taxes (27)	<p><i>Publication date:</i> 2010</p> <p><i>Jurisdiction studied:</i> Australia</p> <p><i>Methods used:</i> Macro-economic modelling</p>	Published estimates of price elasticity for beer, wine and spirits from 1994 and estimated the cost of implementing a volumetric tax at between \$14.4 million and \$21.6 million	Mathematical modelling of three scenarios of volumetric alcohol tax: 1) no change in deadweight loss; 2) no change in tax revenue; and 3) all alcohol beverages taxed at the same rate as spirits.	<p>The study found that a tax with no change in deadweight loss resulted in a 2.77% reduction in annual consumption of pure alcohol, and increased government taxation revenue by \$492 million. To maintain the deadweight loss, the price of spirits and ready-to-drink beverages decreased, but the price of both wine and beer increased.</p> <p>In the second scenario (equal tax revenue), there was only a marginal reduction in overall alcohol consumption.</p> <p>The final scenario resulted in the largest reduction in alcohol consumption of 23.85%, and an increase in tax revenue of \$3.94 million.</p> <p>The three scenarios resulted in an estimated 21,000 Disability-Adjusted Life Years (DALYs) averted, 380 DALYs averted, and 170,000 DALYs averted, respectively.</p>

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				<p>In each of these scenarios, it is likely that the reduction in consumption was not equal across the population and might vary between subgroups. If the price changes less for high-risk drinkers however, the estimated health benefits are over estimated.</p> <p>Overall, taxation has generally been found to be cost-effective, and an equalized volumetric tax is a cost-effective policy. However, other criteria such as the capacity of the intervention to reduce inequity, acceptability to stakeholders, feasibility, and potential for other consequences, need to be considered prior to implementation.</p>
Cost-effectiveness of increasing alcohol taxation in Denmark (23)	<p><i>Publication date:</i> 2014</p> <p><i>Jurisdiction studied:</i> Denmark</p> <p><i>Methods used:</i> Cost-effectiveness analysis</p>	Consumption rates were estimated based on findings from The Danish Health and Morbidity Survey in 2010.	Analysed cost effectiveness of three different scenarios of changed taxation of alcohol beverages in Denmark: 1) 20%; 2) 100%; and 3) 10% decrease.	<p>The scenarios found that an increase in tax resulted in 20,000 DALYs averted, 96,000 DALY averted, and an additional 10,000 DALY, respectively.</p> <p>The cost offsets for the tax increase scenarios were 119 million and 575 million euros, respectively, for each of the tax increases, and a reduction in 60 million euros for the tax decrease. These generally indicate that the interventions are cost-saving and health promoting.</p> <p>For the two tax increase scenarios, the lower consumption of alcohol reduces the incidence of alcohol related diseases and the number of DALYs experienced by the population when compared to existing tax rates. The health effects of taxation build up and are largest around 15-20 years after the change in taxation.</p> <p>While the model did not undertake any subgroup analyses, authors of the study noted that these pricing changes may affect populations differently. Further, they noted that due to price differences compared to neighbouring countries, large increases in alcohol taxes may result in cross-border purchases, and may in turn decrease tax revenue and not result in the estimated health improvements.</p>
Examining the cost-effectiveness of increasing alcohol taxes in the Netherlands (24)	<p><i>Publication date:</i> 2008</p> <p><i>Jurisdiction studied:</i> Netherlands</p>	Consumption rates and health data was taken from the Dutch National Institute for Public Health.	Cost-effectiveness modelling of three different scenarios: 1) current practice whereby taxes on alcohol are 8 cents per bottle of beer, 44 cents per bottle of wine, and 371 cents per bottle of spirit; 2) 'the	<p>In the Dutch scenario, alcohol consumption decreased marginally by 0.3%, while there was an average of 18.3% decrease from the Swedish scenario.</p> <p>These reductions were found to be associated with decreases in the incidence of alcohol-related mortality, which cause a gain in life-years and QALYs when compared to current practice.</p>

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
	<i>Methods used:</i> Cost-effectiveness analysis		Dutch scenario' in which tax increases of 2.7 centres per bottle of beer are planned; and 3) 'the Swedish scenario' in which tax levels increase to the same level as in Sweden, which has one of the highest alcohol taxes in the EU	<p>These effects, however, occur 30 years following the tax increase.</p> <p>Both scenarios also found significant reductions in alcohol-related diseases, however these savings are outweighed by increases in healthcare costs from non-alcohol related conditions, a result of the population generally living longer.</p> <p>The study found that when a QALY is valued at more than 6000 euros per QALY, the probability of cost-effectiveness of the intervention for either the Dutch or Swedish reaches almost 100%.</p>
Estimating price elasticity for alcohol by beverage type (25)	<p><i>Publication date:</i> 2014</p> <p><i>Jurisdiction studied:</i> Australia</p> <p><i>Methods used:</i> Economic evaluation</p>	Data were collected using ScanTrack Liquor that tracks the value and volume of sales for off-premise consumption of liquor from supermarkets, grocery stores and liquor chains from January 2004 to August 2010	Employs the Almost Ideal Demand System model to model within-group substitution across 12 different alcohol drinks.	<p>All 12 alcohol types were found to be normal goods. Beer was found to have a slightly higher price elasticity as compared to wine, ready-to-drink beverages, or spirits. Among the alcohol types, premium beer and mid-strength beer were found to have the highest own-price elasticities.</p> <p>With respect to cross-price elasticities, it was found that full-strength beer and premium regular beer are close substitutes to each other, and with dark ready-to-drink spirits, dark spirits and mid-strength beer. Full-strength beer was found to have the highest budget share, and is a close substitute for cask wine.</p> <p>Generally, these results show that any tax policy aimed at beverages most associated with negative externalities such as violence, verbal abuse and creating public disturbances (e.g., full-strength beer, premium regular beer, dark spirits, dark ready-to-drink beverages), may need to target these beverages jointly. As well, any tax change to increase the price of cask wine may result in consumers shifting demand for cask wine to another beverage that is more associated with negative drinking behaviours.</p>
Determining the impact of age on price elasticity of alcohol (26)	<p><i>Publication date:</i> 2013</p> <p><i>Jurisdiction:</i> United States</p> <p><i>Methods used:</i> Economic evaluation</p>	Data of 97,250 individuals taken from the Health and Retirement Study of birth cohorts between 1931 and 1953	An econometric model was designed to determine the effect of changing prices and taxation of alcohol on consumption	<p>The study found that heterogeneity in the population is often masked when combining populations. The study found that for the majority of individuals, price is a significant determinant of demand for alcohol, and demand for alcohol is quite elastic (-1.686), whereas most estimates of price elasticity for alcohol suggest that it is relatively inelastic.</p> <p>A sub-group analysis revealed that those who are more disadvantaged in terms of education, health, cognitive and financial resources are most responsive to price. The more</p>

Examining the Costs and Cost-effectiveness of Policies for Reducing Alcohol Consumption

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				<p>responsive group is more likely to be non-white, female and older.</p> <p>The study cautions that the increase on taxes for alcohol may be at the cost of welfare loss for many older individuals with little reduction in negative externalities. Results indicate that the heavier drinking group (five or more drinks per day) are more likely to cause negative externalities, but are also less sensitive to price, thus higher taxes would be unlikely to reduce negative externalities.</p>
Examining the effects of minimum unit pricing for alcohol on different income and socio-economic groups (22)	<p><i>Publication date:</i> 2014</p> <p><i>Jurisdiction:</i> England</p> <p><i>Methods used:</i> Economic analysis</p>	10,588 respondents aged 16 and over living in England	Estimated price elasticities from nine years of survey data and assess effects of the policy on moderate, hazardous, and harmful drinkers by socio-economic groups	<p>The study found that a minimum unit price of 0.45 pounds led to a reduction in consumption of 1.6% or 11.7 units of alcohol per drinker per year. Moderate drinkers (less than 21 units per week for men and less than 14 units per week for women) were least affected in terms of consumption and spending. However, the greatest behavioural change occurred among harmful drinkers, with a change in consumption of -3.7% or 138.2 units per individual per year, with a decrease in spending of 4.01 pounds per week. The lowest income quintile among harmful drinkers (more than 50 units per week for men and more than 35 for women) were particularly affected, with a decrease of 7.6% or 299.8 units per individual per year, and decreased spending of 34.63 pounds per week.</p> <p>In addition, there was also an uneven distribution of health benefits, whereby individuals in the lowest socio-economic group saw 81.8% of the reduction in premature death and 87.1% of gains in quality of life.</p> <p>Overall, moderate drinkers were not very affected by the implementation of a minimum unit price (0.45 pence), and the greatest effects were observed for harmful drinkers. This finding is likely attributable to low-income harmful drinkers currently purchasing the majority of their alcohol at under the minimum unit price. Further, the policy's implementation coincided with substantial health gains in terms of alcohol-related morbidity and mortality among this population.</p>



McMaster
HEALTH FORUM

>> Contact us
1280 Main St. West, MML-417
Hamilton, ON, Canada L8S 4L6
+1.905.525.9140 x 22121
forum@mcmaster.ca

>> Find and follow us
mcmasterforum.org
healthsystemsevidence.org
mcmasteroptimalaging.org

• • • mcmasterforum

FORUM+

