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REVIEW

Different Types of Alcohol Tax and Minimum Pricing Policies: An Evidence and Policy Review

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Main points

- Reducing the affordability of alcohol—by raising alcohol taxes and introducing a minimum price—is the most effective and cost-effective way to reduce alcohol consumption and subsequent harm, while raising government revenue.
- Taxing alcohol based on its strength is the best for public health, as it incentivizes the production and consumption of lower strength, less harmful products.
- Evidence shows that increasing alcohol tax rates leads to an increase in government revenue and a decrease in consumption.
- Minimum pricing is an effective way of reducing the consumption of the cheapest and most harmful products.
- Minimum pricing is most effective when introduced alongside well-structured taxation.

Abstract

This article presents the best available evidence regarding types of alcohol taxation and alcohol pricing policies and their effectiveness in reducing alcohol harm, by reviewing scholarly and grey literature. The latest evidence shows that alcohol taxation, particularly when based on alcohol content, can be highly effective at reducing alcohol consumption and subsequent harm, while providing governments with increased revenue. Minimum pricing policies can complement taxes by specifically targeting higher-risk drinking and reducing health inequalities. Alcohol taxes benefit population health as well as government revenue, and minimum pricing can complement taxes by setting limitations to commercial practices which undermine health goals.

Keywords: Alcohol minimum pricing, alcohol policy, alcohol tax

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Introduction

The Organisation for Economic Co-operation and Development (OECD) found that between 2000 and 2018, the affordability of alcohol in the off-trade in 28 countries analyzed increased by nearly 50% (OECD, 2021). Growth in real income and declines in the relative price of alcohol led to this rise.

The World Health Organization (WHO) has identified reducing the affordability of alcohol as one of the most effective and cost-effective ways of reducing alcohol consumption and associated harms (WHO, 2024). Meta-analyses show that, on average, a 10% increase in the price of alcohol leads to a 5% fall in consumption (Gallet, 2007; Wagenaar, 2009; Elder, 2010; Fogarty, 2010).

The two key policy measures to tackle alcohol affordability and associated harms are: increasing alcohol excise taxes and introducing minimum pricing policies. This review of international literature and policy guidance assesses the advantages, disadvantages, and evidence of impact of different alcohol taxation and pricing measures on alcohol consumption and harm.

Methods

A review of scholarly and grey literature was conducted between September and October 2024. Search

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terms "alcohol tax," "alcohol price," "alcohol minimum pricing," and "alcohol policy" were entered into Google, Google Scholar, and the search functions of the World Health Organization (WHO) and OECD websites. English language papers and reports published since 2010 were reviewed, and relevant data were extracted for analysis.

Results

Alcohol Taxation

Alcohol taxes are indirect taxes, meaning they are levied on products that are consumed rather than on income. There are three main types of alcohol tax: general taxes, import tariffs (or customs duties), and excise taxes. Alcohol excise taxes are considered best placed to alter consumption patterns, as import tariffs would not affect the consumption of domestic alcohol, and changing general taxes would affect many other goods and services.

There are three main tax structures for alcohol excise tax: 1) based on the price of the product (ad valorem); 2) based on the volume of the product without considering alcoholic strength (volume-based, volumetric, or unitary); or 3) based on the amount of alcohol (specific, content-based). These structures can be used independently or together.

Ad Valorem Tax

Ad valorem taxes are applied to the value of the product, for instance a 10% tax based on the retail price. One advantage of this approach is that the tax automatically adjusts with the price of alcohol and therefore will automatically adjust for inflation. However, ad valorem taxes have a lesser effect on low-cost products, which tend to be preferred by the heaviest drinkers, and therefore do not align with health improvement goals. An example of this is in Australia, where ad valorem wine tax has led to widespread consumption of very low-cost "cask" wine associated with high levels of harm. Ad valorem tax can encourage producers to keep products at a low price to keep their tax burden low. Data from Chile, which has had ad valorem taxes for decades, show a doubling in the affordability of alcohol while there was no increase in the alcohol price (World Health Organization, 2023b, p. 58).

Volumetric/Unitary Tax

A specific alcohol tax based on the volume of liquid (volumetric/unitary tax) is a tax levied on alcoholic beverages according to the volume of liquid, regardless of alcohol content or price. One advantage over ad valorem taxes is that it creates less variation in price, so there is less opportunity to avoid taxes, due to fewer incentives for consumers to move from high-priced to low-priced drinks (Shang, 2018). A disadvantage is that unless rates are increased in line with inflation, they will devalue over time. The wine tax structure in the European Union is an example of volumetric tax.

Specific/Content-Based Tax

From the public health perspective, the WHO recommends that alcohol-content-based specific taxes may be the most effective approach to minimize the health harms of alcohol consumption (WHO, 2023b, p. 62). Unlike a volumetric tax, an alcohol-content-based tax ensures that as the strength of a product increases, so does its tax level. When increases in such taxes are introduced, they are usually reflected in product prices, leading to decreases in alcohol consumption (Hindriks & Serse, 2019; Jernigan & Ross, 2020).

An additional public health benefit of this approach is that it gives a financial incentive to alcohol producers to reduce the strength of their products or introduce new products into the market that are lower in strength. In 2023, the United Kingdom reformed its alcohol tax structures so that all alcohol is now taxed based on the amount of alcohol in the product. Beer brand John Smith's Extra Smooth reduced its strength from 3.6% to 3.4% (Poulter, 2024), bringing it into a lower tax band and saving many millions of pounds for the brewer and, crucially, reducing health risks for consumers. Media reports claim Concha y Toro, the largest exporter of wine in Latin America, is planning to reduce the strength of its Isla Negra products sold to the United Kingdom from 12% to 13% down to 10.5% to 11% (Schmitt, 2023). If the differing tax rates are passed on to consumers as intended, it will also incentivize consumers to purchase products of lower strength, as they will be more affordable. As with volume-based taxes, a disadvantage of this system is that if rates do not keep up with inflation, alcohol will become more affordable. Another disadvantage is that it could lead to producers "overshifting" the tax increase onto higher-priced products (increasing product price by more than the tax increase) and "undershifting" to cheaper products to avoid a fall in the consumption of cheaper products. A 2024 study that looked at the early impact of the United Kingdom's new alcohol taxation system on product strength and price found that increases in the price of cider occurred among more expensive products, suggesting under and overshifting (Burton, 2024).

Alcohol-content based tax can also be varied to achieve health improvement goals, typically to encourage the consumption of lower-strength products. In the United Kingdom, beer of strength 4% alcohol by volume (ABV) is taxed at £21.01 for each liter of pure alcohol, while beer of strength 3.4% is taxed at £9.27, so the lower-strength beer has a price advantage. Almost all countries have a higher tax rate on distilled spirits, such as vodka, brandy, and whiskey—the highest strength alcohol products. This is because of concerns that spirit consumption has a particular risk of heavy consumption and harm to the drinker and those around them. The Institute for Fiscal Studies in the UK states that drinks consumed by heavier drinkers should be targeted with higher tax because:

"Taxing high-strength spirits by more than lower-strength beer, wine and cider can lead to a tax system that more effectively targets heavy drinkers, compared with one that taxes all units of alcohol equally." (Griffith, 2020)

Another consideration is that spirits are cheaper to produce and distribute than lower-strength beer and wine, so higher tax is needed to compensate for this.

Impact of Inflation

Both volumetric and content-based taxes need to increase with price and wage inflation to maintain their beneficial effect on reducing harm from alcohol. In South Africa there was a 70% real-terms decrease in the rate of excise tax over 13 years because taxes were not matched to inflation.

Alcohol Industry Responses to Taxation Policies

A problem for a health-orientated alcohol tax system in a market economy is that alcohol producers can choose how much of an increase or decrease in tax to pass on in price changes. If product prices are increased by more than the tax increase, taxes have been "overshifted". If product prices are increased by less than the tax change, they are "undershifted". A study in the United Kingdom found that alcohol retailers respond to alcohol tax increases by undershifting cheaper products to maintain their low cost and overshifting more expensive products (Ally, 2014). As the authors explain, this is likely to negatively impact the effectiveness of the tax policy:

"because high-risk groups favour cheaper alcohol and undershifting is likely to produce smaller consumption reductions··· As duty increases are not fully passed through to cheaper products, additional price-based interventions such as minimum pricing or restrictions on promotional offers may restrict retailers' capacities to engage in price competition on low-cost alcohol."

Alcohol producers and sellers may also time the release of product to minimise tax increases, with a negative effect on government revenue and health benefits. Because of this it is good practice for tax changes to come into effect as soon as possible after announcement.

Impact of Alcohol Tax Increases on Government Revenues

A 2024 study of five European countries presents evidence that increasing alcohol tax leads to an increase in government revenue (Manthey, 2024a). The study looked at tax revenue from alcohol in Estonia, Germany, Latvia, Lithuania, and Poland. It found that if no changes were made to excise taxes, there was a close correlation between sales volume and tax revenue. But when tax was increased, the correlation between alcohol sales and government revenue diminished or reversed—reinforcing that government revenue can increase while alcohol sales fall, a situation of "win – win" for a government concerned with revenue generation and population health. The authors write that in Lithuania, alcohol taxes increased almost every year from 2014 to 2022. In this period, government revenue from alcohol taxes increased by over 50%, while the volume of alcohol sales has decreased (Manthey, 2024b).

Alcohol Taxes and Covering the Cost of Alcohol Harm

As one of the key reasons for implementing alcohol taxes is to correct the negative externalities caused by alcohol—or balance out the cost of harm caused by alcohol to others—many organizations have recommended that the amount of tax raised should cover the cost of harm, although this can be difficult to estimate (Mansour, 2023).

However, a 2021 systematic review and meta-analysis estimated that the economic cost of alcohol consumption was likely between 2.0% and 3.1% of the gross domestic product (GDP) of high-income countries, and higher levels of taxation increased government revenue and limited harm from alcohol (Manthey, 2021).

The UK's Social Market Foundation has recommended that the government should undertake a comprehensive estimate of the cost of harm from alcohol every 5 – 10 years and adjust tax rates to cover the cost (Corfe, 2019). In addition to taxing alcohol fairly, this approach could incentivize alcohol producers to reduce the harm their products cause, for instance by lowering strength or reducing marketing, as it would reduce their tax burden.

Cross Border Alcohol Purchases and Other Unrecorded Alcohol Consumption

If neighboring countries have different tax rates on alcohol, and therefore quite different product prices, there is an incentive for people to travel across the border to purchase cheaper alcohol. Denmark, Finland, Norway, and Sweden have had high levels of cross-border alcohol trade, with between 10% and 15% of total alcohol consumption coming from alcohol bought in another country (Kvaavik & Rossow, 2018; Finnish Institute for Health and Welfare, 2020; Trolldal, 2020).

Finland had a short experiment of reducing alcohol taxes in order to reduce cross-border sales. This led to alcohol consumption and harms increasing, while government tax revenue fell. Cross-border shopping also continued to increase (Mäkelä & Osterberg, 2009; Johansson, 2014). The Nordic countries then took different approaches, with Norway and Sweden both maintaining higher tax levels. Total alcohol consumption and cross-border trade in alcohol declined in both countries (WHO, 2023a; WHO, 2021).

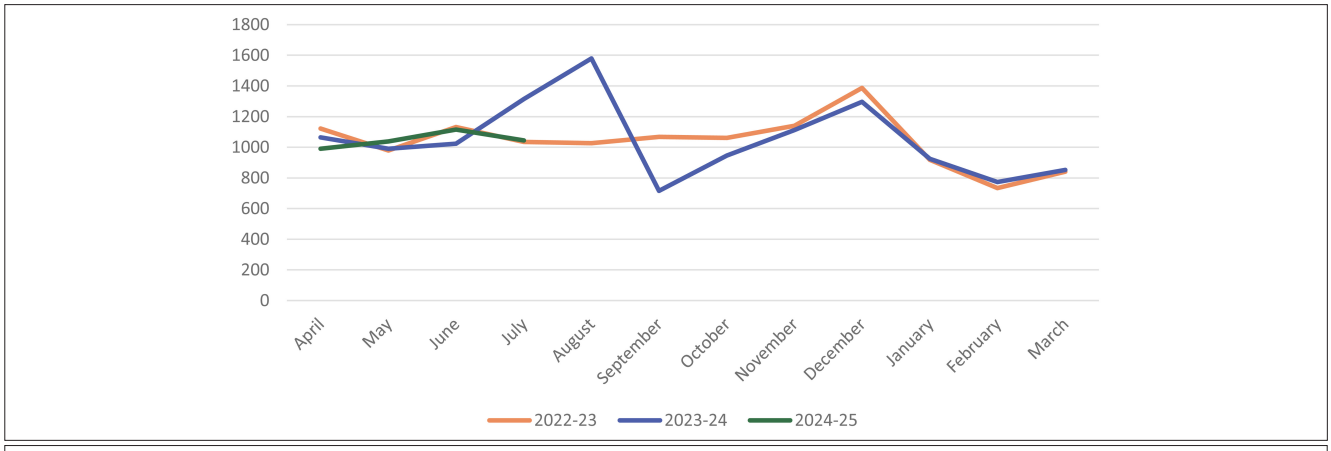

Figure 1. Alcohol Duty Receipts by Month, 2022 – 2023, 2023 – 2024, and April – July 2024 – 2025, in £million. Source: HM Revenue & Customs, Alcohol Bulletin Commentary (May – July 2024).

There are ways of restricting such cross-border trade that do not undermine public health goals. As the WHO states:

"Substantially lowering the indicative traveller's import quotas for personal use within the EU, as well as transforming them into binding quotas, would improve the effectiveness of tax policy while maintaining high levels of taxes." (WHO, 2023b, p. 254)

In addition to cross-border trade, the payment of alcohol tax in a country can be avoided in other ways. Some countries permit home production, which is typically expected to be on a small scale and measures can be adopted to ensure this. Illegal production of alcohol can occur, and this can include the counterfeit production of well-known local or international brands. As with tobacco, the WHO has found that illegal production is often a result of weak legal and enforcement practices and recommends that the first response to substantial illegal production should be to strengthen administration (WHO, 2023b, p. 254 & p. 217). Commercial operators will often suggest reducing taxes as the best measure to reduce unrecorded alcohol, but this is not recommended because lower taxes will increase consumption and harm (Lachenmeier, 2021).

Minimum Pricing

Minimum pricing sets a floor price below which alcoholic products cannot be sold and is a measure that can provide health benefits in addition to alcohol taxation. There are two main types: minimum pricing by volume and minimum unit pricing (MUP). With MUP, a 'unit' or standard drink has a specific price attached to it, so as the strength of the drink increases, the minimum selling price increases. This gives an incentive to producers to develop lower-strength products and to consumers to purchase such products. This is different from a minimum price by volume, where the price level is not linked to alcohol content, so the minimum price for a strong 6% beer is the same as for a 3% beer.

Most of Canada's provinces were the first to implement such measures, which have existed for decades. Many jurisdictions in the West established strong alcohol regulations in the early part of the 20th century, which controlled the price of alcohol. There are examples in US states, Canadian provinces, and Nordic countries in Europe, and many of these control measures survive despite pressure from economic operators to deregulate. In the late 2000s and early 2010s, various countries from the former USSR introduced price controls in response to rising rates of harm from alcohol—Belarus, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Ukraine, and Uzbekistan—as well as Slovakia. Then, in 2018, Scotland and Australia's Northern Territory introduced minimum *unit* pricing. Wales followed suit in 2020 and the Republic of Ireland in 2022.

Several European countries have bans on selling below the taxation level on a product, sometimes mistakenly described as "below cost selling." These price levels are typically very low, and the measure has been shown to do little to reduce harm (WHO, 2022).

The evidence of the effectiveness of minimum pricing policies in reducing harm continues to grow. There are a significant number of modeling studies that have been published, most notably from the Sheffield Addictions Research Group (SARG), which has looked at the likely impact of MUP in countries including England (Brennan, 2021), South Africa (Gibbs, 2022), and Canada (Hill-McManus, 2012), and other modeling studies have been carried out in Australia (Jiang, 2020), Canada (Sherk, 2020), and OECD member states (OECD, 2021). A consistent finding across these studies is that MUP can achieve significant reductions in population level alcohol consumption and levels of harm, if the price is set at a level that creates a significant change in the prices of the cheapest products. The findings also show that MUP is effective at targeting heavier drinkers and reducing their consumption more than moderate drinkers. This is because heavier drinkers tend to consume cheaper products, the prices of which will change more. A 2023 systematic review of studies in eight countries found that modeling studies suggest MUP could reduce alcohol-related hospital admissions by 3 – 10% a year, and real-world studies show immediate reductions in acute admissions of between 2% and 9% and reductions in hospitalizations for long-term illnesses by 4 – 9% (2 – 3 years later) (Maharaj, 2023).

The best empirical evidence on the impact of MUP comes from Scotland. A 2024 analysis found that MUP reduced the volume of alcohol sold in Scotland by around 3% over a period where sales in England and Wales increased (which did not have MUP) (Giles, 2024). As predicted, the biggest sales reduction was in cheap, strong products preferred by the heaviest drinkers. A 2023 study by Public Health Scotland found that MUP led to a 13.4% reduction in deaths from causes wholly attributable to alcohol compared with if it had not been implemented, and hospital admissions were 4.1% lower (Wyper, 2023).

The largest reductions in deaths were among people living in the 40% most socioeconomically deprived areas. This was consistent with earlier evidence from Finland, which found that reducing alcohol costs led to increases in harm that were greatest in low-income groups. The beneficial effect of MUP in Scotland has been maintained during the COVID-19 pandemic, where changes in alcohol consumption patterns led to substantial increases in harm in most countries that have been studied (Kilian, 2023). In Scotland, the impact of the pandemic and lockdown has been less than in neighboring countries. Since MUP was implemented, the alcohol-specific death rate in Scotland has increased by 9%, whereas in England it has increased by 36%.

In British Columbia, Canada, a study estimated that a 10% increase in the minimum price led to, on average a 3% reduction in alcohol consumption (Stockwell, 2012), 32% reduction in alcohol-specific deaths (Zhao et al., 2013), and a 9% reduction in hospital admissions, with the highest reductions in people on low incomes (Stockwell, 2013; Zhao & Stockwell, 2017).

A 2020 study found that MUP's introduction in Australia's Northern Territory led to an 8% fall in alcohol consumption in the first year of the policy (Coomber, 2020). There were also falls in alcohol-related ambulance callouts, emergency department presentations, road-traffic crashes, and child protection cases. This is likely due to the introduction of PALIs—police auxiliary liquor inspectors—who have the power to intervene and stop the sale of off-trade alcohol. A study the following year found that sales of cask wine in the region had fallen by 50.6%, showing it was successfully targeting the cheapest products (Taylor, 2021). A 2023 study found that the policy, alongside PALIs, led to a significant reduction in alcohol-related assaults across the

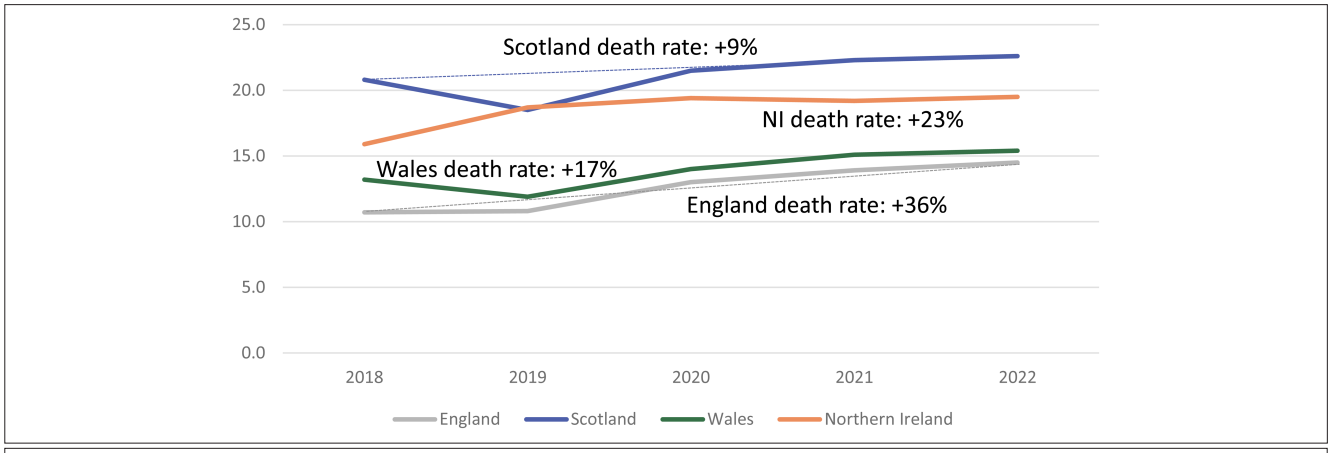

Figure 2. Alcohol-Specific Death Rate per 100,000 for Nations of the United Kingdom, 2018 – 2022. Source: Office for National Statistics, Alcohol-Specific Deaths in the United Kingdom: Registered 2022.

region, including a 14% reduction in Darwin/Palmerston (Miller, 2023). A 2022 study of the wastewater in the Northern Territory suggested that MUP did lead to an immediate drop in alcohol consumption but that this almost returned to pre-MUP levels after 15 months (O'Brien et al., 2022). The new government in the region plans to scrap the policy, claiming it does not have an effect, although others have argued that the waning effect is due to inflation eroding its value (Hewitt, 2024). As with other country studies, the effects of the pandemic made it difficult for researchers to assess the long-term effects of the policy.

The introduction of minimum unit pricing can have a marked effect on the cost of alcohol for high-level consumers of the lowest-cost products, and there are criticisms that the financial impact of the policy can add to the harm experienced by people with alcohol dependence. For this reason, many charities campaign for increased resources for treatment and support for people with alcohol dependence to coincide with MUP introduction.

Alcohol Taxes and/or Minimum Pricing

The WHO and Institute for Fiscal Studies (IFS) (Griffith, 2020) recommend combining an effective tax regime with a minimum price, as the two mechanisms can complement each other to achieve fiscal and public health aims. Minimum unit pricing is targeted towards products mainly consumed by the heaviest drinkers who experience the greatest risk and harm from alcohol. These products may be low-cost because of tax distortions arising from government policy choices; for instance many countries in Europe do not have any alcohol tax on wine, and the United Kingdom has a much lower tax level on cider than other products. Minimum price can partially correct the market and health impact of these policy choices. Increases to excise taxes affect all products and all consumers. Minimum unit pricing is likely to raise revenue for retailers, whereas taxes raise government revenue. The WHO states that:

"Increasing alcohol taxes is likely to grant an immediate and direct increase in government revenue. Minimum prices are likely to increase revenue for alcohol producers and retailers and, to a lesser extent, reduce government tax revenue. These losses, however, are likely to be offset by other economic gains, such as reduced health-care costs and greater economic productivity." (WHO, 2022)

There are other pricing policies that may be considered such as a ban on "happy hours," where prices are reduced in bars for short periods of time to increase sales. Stores and bars may use practices such as "three for the price of two" as a sales promotion. Some governments have categories of "irresponsible promotions" and restrict these practices, which can be a useful addition to other pricing measures.

Hypothecation/Earmarking and Industry Levies

Hypothecation or earmarking is about using government revenue raised from alcohol sales for a specific purpose, for instance, using it to fund alcohol treatment services. The decision to earmark tax revenues for specific purposes depends on the country's context and can be done through "soft" or "hard" earmarking. Soft earmarks allow more flexibility in fund allocation, while hard earmarks strictly tie the revenue to particular spending.

Earmarking alcohol tax can increase public and political support for raising taxes if the revenue is clearly directed toward health promotion or social programs. However, effective earmarking requires strong public financial management and governance systems, a clearly defined timeframe, and flexibility to adjust the allocation if priorities change.

Thailand's Health Promotion Foundation is a successful example of earmarking. Revenue from alcohol and tobacco excise taxes is allocated to health promotion activities, including efforts to reduce alcohol consumption. This hard earmark helps ensure transparency and accountability while linking tax revenue directly to public health benefits, such as reducing alcohol-related harms. Over the years, Thailand has seen a reduction in alcohol consumption—from 8.1 liters of pure alcohol per capita each year in 2005 to 6.9 liters in 2019—partly due to the health campaigns funded by these earmarked taxes (WHO, 2023b, p. 198).

One of the criticisms of minimum pricing is that additional revenue goes to alcohol producers, who can then invest that in marketing their products or even developing additional products. One way to avoid this is by imposing a levy on alcohol retailers and/or producers, to recoup some of the additional money, and potentially earmarking it for use in health promotion. These levies can be difficult to structure and implement, and Scotland had an unsuccessful attempt during the period when the minimum

unit price policy was being developed (Hellowell, 2016). Alcohol charities continue to campaign for a better-designed levy (Alcohol Focus Scotland, 2024).

Discussion

Alcohol taxes benefit population health as well as government revenue. Other pricing policies—such as minimum pricing—can complement taxes by setting limitations to commercial practices which undermine health goals.

The design of alcohol taxes is a complex task that should be free from commercial interests. In many countries, industry lobbying has had a negative impact by lowering tax rates and increasing subsequent rates of alcohol harm. Best practices should be identified to ensure effective administration of taxation policies.

Tax and pricing policies should be subject to continual evaluation with established timescales and mechanisms for review to ensure they continue to work as effectively as possible.

These policies also interact with measures to regulate alcohol availability through licensing and the regulation of alcohol marketing. All of these measures should be part of national alcohol strategies, especially in countries with high rates of alcohol harm, along with treatment and support systems for risky and dependent drinkers.

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Author Contributions: Concept – P.R., J.R.; Design – J.R.; Supervision – P.R., K.S.; Resources – J.R., P.R.; Materials – J.R., P.R.; Data Collection and/or Processing – J.R.; Analysis and/or Interpretation – J.R., P.R.; Literature Search – J.R., P.R.; Writing – J.R., P.R., K.S.; Critical Review – P.R., K.S.

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