



# ALCOHOL REGULATION

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**RECOMMENDED**

# Research Report: Health and Development Policy – Alcohol Regulation (2020 Recommended Idea)

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This is a summary report about alcohol regulation, a potential intervention in the field of health and development policy. In our five-step [research process](#) this report corresponds to step four: the drafting of an in-depth, 80-hour report on a potential intervention. All the ideas considered for health and development policy are listed in this [spreadsheet](#).

Thanks to Karolina Sarek and Erik Hausen for reviewing the research, and to Lavanya Mane, Urszula Zarosa, Nicoleta Faina, and Joe Benton for their contributions. We are also grateful to the four experts who took the time to offer their thoughts on this research: Gayle Amul, Aweek Bhattacharya, Frank Chaloupka, and Paula Johns.

For questions about the content of this research, please contact Ali Ladak at [ali.ladak@charityscience.com](mailto:ali.ladak@charityscience.com). For questions about the research process, charity recommendations, and intervention comparisons, please contact Karolina Sarek at [karolina@charityscience.com](mailto:karolina@charityscience.com).

*Charity Entrepreneurship is a research and training program that incubates multiple high-impact charities annually. Our mission is to cause more effective charities to exist in the world by connecting talented individuals with high-impact intervention opportunities. We achieve this through an extensive research process and through our [Incubation Program](#).*

## Research Process

Before opening the report, we think it important to introduce our **research process**. Knowing the principles of the process helps readers understand how we formed our conclusions and enables greater reasoning transparency. It will also clarify the structure of the report.

Our research process incorporates elements that are well established in some fields but uncommon in others. This is partly because of the unique goals of our research (i.e. finding new areas for impactful charities to be launched) and partly because we incorporate lessons and methodologies from other fields of research, primarily global health and medical science. Below is a quick overview of some of the key elements of our research process.

**Iterative depth:** We research the same ideas in multiple rounds of iterative depth. Our goal is to narrow down our option space from a very large number of ideas (often several hundred at the start) to a more workable number for deeper reports. This means we do a quick **30-minute prioritization**, a longer **2-hour prioritization**, and finally an **80-hour prioritization**. Each level of depth looks at fewer ideas than the previous round.

**Systematic:** The goal of our research is to compare ideas for a possible charity. To keep comparisons between different ideas consistent, our methodology is uniform across all the different ideas. This results in reports that consider similar factors and questions in a similar way across different interventions, allowing them to be more easily compared. This is commonly used in other **charity evaluations** and **encouraged in other fields**.

**Cluster approach:** Comparing different intervention ideas is complex. We are not confident that a single methodology could narrow down the field, in part due to **epistemic modesty**. To increase the robustness of our conclusions, we prefer instead to look at ideas using multiple independent methodologies and see which ideas perform well against a number of them (**more information here**). These methodologies include a **cost-effective analysis**, **expert views**, **informed consideration** and the use of a **weighted factor model**. We explain the merits and disadvantages of each method, as well as how we apply it, in the linked documents. Each methodology is commonly used in most fields of research, but they are rarely combined to arrive at a single conclusion.

**Decision-relevant:** Our research is highly specialized and focused. We only research topics that are directly related to the endline choice of what charity to found. Sometimes cross-cutting research is needed to allow comparison between different ideas, but all our research aims to be directly useful to getting new charities started. This level of focus on target practical outcomes is rare in the research world, but is necessary to our goal of generating more charity ideas with minimal time spent on concepts not related to charity ideas.

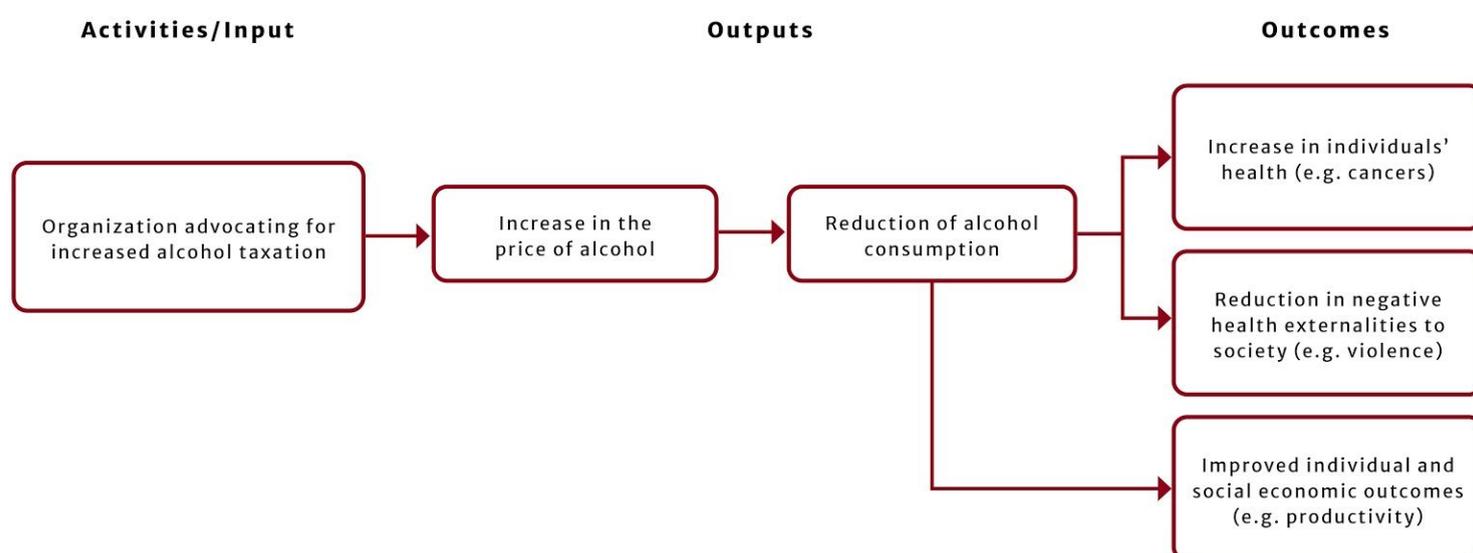
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## Description of the intervention

The intervention explored in this report is the introduction of alcohol regulations to reduce the harmful effects of alcohol consumption. We looked at several alcohol regulations, including pricing policies, such as taxation; limiting the availability of alcohol; and restricting how it can be advertised.

This diagram below sets out our theory of change for how we expect starting an organization that advocates for alcohol taxation to lead to positive health and social outcomes. Other policies, such as availability and advertising restrictions, would have a similar theory of change, though the mechanisms for reducing alcohol consumption would be different in each case.



## Summary conclusion

We found that alcohol regulation, particularly taxation, could be a highly cost-effective way of reducing alcohol consumption, and therefore reduce its negative health and economic effects. The intervention also has a strong evidence base. It performed particularly well on our cost-effectiveness methodology, and the experts we spoke to also considered it to be a promising intervention. A key issue is funding – two of the experts we spoke to have found this to be challenging, and there is little evidence of major grantmakers funding alcohol taxation. There may, however, be sources of funding available from effective altruist aligned donors.

**Ultimately, we tentatively, due to the funding concern, recommend this as an intervention for a new organization to work on.**

The table below offers a step-by-step summary of our research process for this intervention. Color-coding reflects how well the intervention performed at each stage. The idea sort, idea prioritization, supporting reports, and related reports involve background research prior to this report that will not be considered in the final decision on the promise of this intervention.

Report type	Summary results	Deeper reading
Idea sort	During the idea sort, this idea showed promise: it was in the top 31 of 256 total ideas.	Full report Process
Idea prioritization	After two hours of researching this intervention using the informed consideration methodology, it was one of our highest priorities for more in-depth research.	Full report Process
Prior view	This 80-hour report begins with a prior view, which summarizes the lead researcher's expectations before starting in-depth research. Prior knowledge of this area was mostly informed by our research at the two-hour stage. At this stage, alcohol regulation looked like a promising intervention.	Process
Informed consideration: Crucial considerations	Informed consideration occurs at two stages of our research process: the start and the end. At this first stage, we explored some of the key considerations of this intervention. We found that alcohol was the cause of 4.3% of the global burden of disease in 2017; that there are many policy options to reduce the harmful consumption of alcohol, with the WHO recommending a set of "best buy" policies; and that globally, there is much room for improving the implementation of each of these best buys.	Process
Expert view	We discussed the intervention with experts. We discussed a range of issues including the most cost-effective interventions in the space, the funding landscape, and potential unintended consequences. Overall, the experts we spoke to were supportive of this intervention, though two of them involved in advocacy in this space advised that funding may be challenging.	Process
Weighted factor model	We then scored the intervention on preset weighted criteria. This intervention scored quite well on 'strength of the idea' (6/10), but less well on 'limiting factor' (5/10), 'execution difficulty' (4/10), and 'externalities' (4/10), to give an overall weighted score of 25.5/50. Several factors make this a difficult issue to make progress on, including funding and the need to understand local context.	Process
Cost-effectiveness analysis	We then built models to estimate the expected cost-effectiveness of this intervention. Our modeling suggests that a 50% increase in alcohol excise taxes in an average sub-Saharan African country	Process

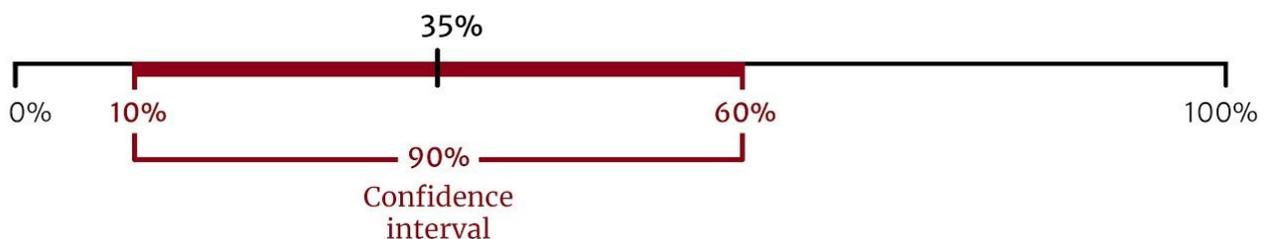
	would have a benefit-cost ratio of around 115:1. However, interpretation of these figures should be carried out cautiously due to their dependence on model assumptions (see ‘Where our CEA could go wrong’).	
Informed consideration: Internal contemplation	The second part of the informed consideration closes the report. We conclude that overall this is a strong intervention, but it depends on funding, which has been a bottleneck for this intervention outside the effective altruism space. Overall, we tentatively recommend this intervention for a new health and development policy charity to work on.	Process
Supporting reports	We rely on a couple of key reports. The WHO’s ‘Global status report on alcohol and health 2018’ is a comprehensive overview of the alcohol policy best buys, and includes country profiles for the WHO member countries. Chisholm et al. (2018), a WHO report estimating the cost-effectiveness of the best buys, is also included.	WHO global status report CEA alcohol best buys

## 1 Prior view

This brief section summarizes our thoughts on this intervention before starting in-depth research.

Overall, we have a strongly positive view of this intervention and would not be surprised if it became one of our recommended charity ideas for health and development policy. The main reasons are that the cost-effectiveness estimates are very high<sup>1</sup>, there is a lot of good evidence that we can work with from the World Health Organization (WHO), and GiveWell currently considers it to be a potentially top-rated policy intervention [1] [2] [3]. However, it is fairly controversial: there are questions about whether it is regressive, whether it is too paternalistic, and whether it is appropriate for an outside organization to be involved in this decision in another country [2] [4].

At this stage of research, our subjective likelihood of recommendation is:



This probability estimate assumes that:

- Two global health and development policy ideas will be recommended at the end of the research process, so being recommended is equivalent to being in the top two ideas.
- With no prior information, each idea is equally likely to be recommended. Because we plan to consider 7 ideas in total, this means the prior probability is  $2/7 * 100 = 29\%$ .
- Because alcohol regulation came out very promising in the previous stage of the research, we have updated the likelihood of recommendation to 35%.
- The 90% confidence interval represents how sure we are that there is a 35% chance this idea will be in the top two ideas. We have not done very much research in this area, though there are some strong indications that this is a good idea, such as GiveWell's positive view of it.

<sup>1</sup> In our two-hour report we referenced an incorrect estimate of the cost per DALY from the WHO; the true figure is actually higher (i.e. less cost-effective) than the estimate we referenced.

## 2 Informed consideration: Crucial considerations

After the prior view, we began the research process by identifying crucial considerations for alcohol regulation. In this early phase, we identified the following areas to research:

- The effect of alcohol consumption on human health and well-being;
- The alcohol regulation landscape (e.g. existing regulations, perceptions of regulation, etc.);
- The key organizations in the space;
- The impact of COVID-19 on this intervention.

The following subsections summarize our findings on each of these considerations.

### 2.1 The effect of alcohol consumption on human health and well-being

Alcohol is a widely consumed psychoactive substance which is a risk factor for more than 200 health conditions. These include mental and behavioral disorders, noncommunicable disease such as liver cirrhosis, various cancers, cardiovascular diseases, and injuries due to violence and road accidents [5].

The Institute for Health and Metrics and Evaluation (IHME) estimated that 108 million disability-adjusted life years (DALYs) and 2.8 million lives were lost in 2017 as a result of alcohol use [6]. This amounts to 4.3% of the total global disease burden (and 5.1% of global deaths). About 29% of the total disease burden is in East Asia and Pacific, 12% in sub-Saharan Africa, 10% in Latin America and the Caribbean, 23% in Europe and Central Asia, 4% in North America, 1% in the Middle East and North Africa, and 22% in South Asia [6].

### 2.2 The alcohol regulation landscape

#### Types of alcohol regulation

There are many possible avenues for alcohol regulation: advertising and product placement, age limits, community action, drunk driving, licensing, monopolies, marketing, price measures, sales promotions, taxation, use in public places, and warning and consumer label information [7].

## What are the most effective interventions?

The World Health Organization considers the “best buys” in alcohol policy to be increasing taxes on alcohol, restricting physical availability, and banning alcohol advertising across multiple types of media [1]. Each of these are estimated to avert a DALY for less than \$100, taking into account costs including enforcement of bans, monitoring, and advocacy support and partnerships. However, these estimates do not take into account the probability of convincing the government to try and introduce alcohol restrictions in the first place [8].

## What does alcohol regulation look like across the world?

The WHO reports that 155 countries (95% of those providing data) already have excise taxes on alcohol, covering 99% of the total population in these countries. However, only around a quarter adjust these taxes in line with inflation, making them less effective over time [1].

They consider that there is room for improvement on pricing promotion policies – only four countries reported bans on below-cost selling, and seven a ban on volume discounts, covering less than 10% of the responding countries.

Between 85% and 93% of respondent countries had national or subnational licensing systems in place. The population covered by licensing was lowest at the retail level (86%). For on-premise outlets, 31% of the population were covered by day restrictions, 47% by hours restrictions, and 16% by outlet density restrictions. For off-premise outlets, 15% were covered by day restrictions, 51% by hours restrictions, and 10% by outlet density restrictions.

Most countries have minimum age purchase laws for alcohol, though these only cover between two-thirds and three-quarters of the overall population.

Around half the population is covered by some form of advertising restriction, but these vary in their degree of restrictiveness. Among those covered, 28% are covered by policies which are classified by WHO as ‘least restrictive’ or ‘slightly restrictive’.

Overall, the evidence on the implementation of the three best buys across the world suggest that there is room for improvement for each of them.

## 2.3 The key organizations in the space

Some of the key organizations working on alcohol policy and their main activities are briefly described below. A comprehensive list can be found on Movendi International's website [9].

**Global Alcohol Policy Alliance (GAPA)** formed in 2001 with a mission “to reduce alcohol-related harm worldwide by promoting science-based policies independent of commercial interests” [10]. It has a network of regional organizations and NGO members, which a new organization could become a part of. Its main activities are attending and hosting various conferences, providing a platform for advocates to connect, carrying out research on alcohol policy, and working with and lobbying governments and other bodies to introduce alcohol policy. It hosts the Annual Alcohol Policy Conference [11].

**The World Health Organization** has a global strategy, produced in 2013, to reduce harmful alcohol use. The strategy has agreement from 193 member countries. It has ten areas for national action, including the best buys discussed above. It has carried out a lot of research in this area, including detailed country profiles setting out the alcohol policy landscape in different countries. Its research is synthesized in its global status reports on alcohol [1]. A new organization in the space would have a research base which it can use and build on to identify the most effective strategies.

**Movendi International** is a global network which promotes development through alcohol prevention [12]. It advocates for evidence-based policy measures and conducts community-based interventions to prevent and reduce alcohol harm. Movendi has a network of 136 organizations in 56 countries. It has helped to start alcohol policy alliance networks in Asia, Africa, and Europe [13].

There are several research institutes focused on alcohol policy, including the Institute of Alcohol Studies [14], the University of Sheffield's Alcohol Research Group [15], UK Centre for Tobacco and Alcohol Studies [16], and the Centre for Alcohol Policy Research [17].

## 2.4 The impact of COVID-19 on this intervention

The impact of COVID-19 on this intervention is currently unclear. It is plausible that because of the connection between noncommunicable diseases and vulnerability to COVID-19, issues like alcohol regulation will become higher priorities on the global health agenda. However, it is also possible that less funding in general will be available for social interventions for a period of time after the pandemic is over, due

to its negative impact on the economy and a need to focus resources on the immediate impacts of COVID-19.

### 3 Expert view

We spoke with four experts about starting a new organization in this space. These experts were generally positive about the idea of a new organization advocating for alcohol regulation, though a common concern was the limited interest from donors compared to other noncommunicable disease risk factors such as tobacco and diet. The conversations are briefly summarized below, with links to the full conversation notes.

#### Aveek Bhattacharya, Senior Policy Analyst at the Institute of Alcohol Studies

**Profile:** Aveek is Senior Policy Analyst at the Institute of Alcohol Studies, a research institute that aims to promote the use of the best available evidence to inform policy decisions on alcohol.

**Summary:** Aveek was generally positive about the idea of starting a new organization in this area, as it is a growing and underresourced issue, particularly in lower-income countries. However, he also noted that policy interventions in general have a low chance of success, so the charity founders will need to have a greater appetite for risk than in the case of more direct interventions. The conversation also covered the WHO's best buys (where pricing policies were generally considered most effective), modeling the relationship between alcohol consumption and health outcomes, the economic approach to alcohol regulation, and potential unintended consequences.

*More information can be found in the [conversation summary](#).*

#### Frank Chaloupka, Professor of Economics at University of Illinois

**Profile:** Frank is a Professor of Economics at the University of Illinois, and is also Director of Tobacconomics, an organization that carries out economic research to inform and shape tobacco control policies.

**Summary:** Frank was positive about the idea of a new organization being started in this space, considering taxation and other pricing policies to be the most important interventions. However, a key barrier to success for a new organization in this space will be funding – it is an area that has less donor support compared to other noncommunicable disease risk factors such as tobacco and diet. The conversation also covered non-pricing policies, the regions/countries to focus on, and public perceptions of alcohol regulation.

More information can be found in the [conversation summary](#).

### Gayle Amul, Research Associate at University of Singapore

**Profile:** Gayle is a Research Associate at the Lee Kuan Yew School of Public Policy, National University of Singapore, and is currently a PhD student at the Institute of Global Health, University of Geneva, focused on the policy process and policy actors in alcohol and tobacco control in Southeast Asia, particularly in the Philippines and Singapore.

**Summary:** Gayle considered this a promising intervention, with space for a policy research and advocacy organization working for the implementation of the WHO's SAFER initiative in Southeast Asia [18]. Alcohol policy is neglected in public health, creating an opportunity, although there are some barriers which a new organization in the space will need to overcome. Other issues covered in the conversation include industry interference in the space, the experience of Asian countries in trying to introduce alcohol policies, and regions/countries to focus on.

More information can be found in the [conversation summary](#).

### Paula Johns, Managing Director at ACT Health Promotion

**Profile:** Paula is Managing Director at ACT Health Promotion, a Brazilian organization that advocates for and promotes public policies that reduce risk factors for noncommunicable diseases.

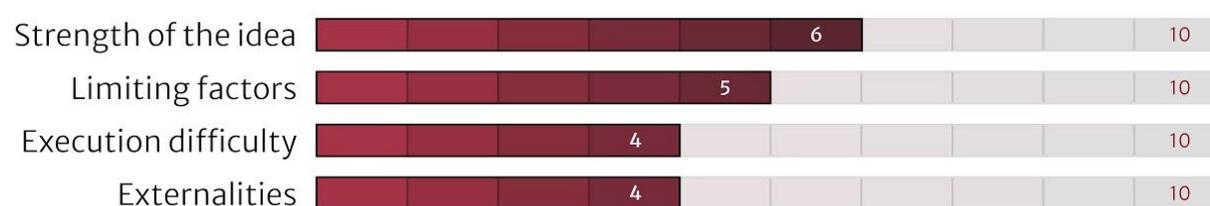
**Summary:** Paula considered that this intervention depends crucially on the funding available. Donors tend to be less interested currently in alcohol policies compared with other health interventions such as tobacco control and diet change. Some momentum may be building, but big donors are still not focused on this issue. The conversation covered why this is the case, the WHO's best buys and SAFER initiative, lessons from policy change achieved by ACT Health Promotion, and the potential impact of COVID-19 on this intervention.

*Conversation summary pending expert's review.*

## 4 Weighted factor model

At this stage of research, we scored alcohol regulation on each of the following preset criteria, with weightings in parentheses: strength of the idea (2), limiting factor (1.5), execution difficulty (1), and externalities (0.5).

Overall, the weighted factor model (WFM) suggests that alcohol regulation is a strong intervention in terms of the strength of the idea. It is weaker in terms of limiting factors, execution difficulty, and externalities. The graphic below summarizes how this intervention performed on each of the criteria; details of how we arrived at these scores follow.



### 4.1 Strength of the idea

Score: 6/10

#### Strength of evidence

Two key points of evidence are important for this intervention: the relationship between alcohol policies and consumption (i.e. the elasticities), and the impact of alcohol consumption on health and well-being.

There are several meta-analyses that estimate alcohol policy elasticities (e.g. see [19] [20] [21]). There is a general rule that the own-price elasticity of alcohol is  $-0.5$ , i.e., that a 10% increase in the price of alcohol will reduce alcohol consumption by 5%. This rule is supported by Open Philanthropy and the Institute of Alcohol Studies [22] [23]. The evidence for non-pricing policies seems a bit weaker, with less of a consensus on the overall expected impact.

The second point of evidence is the impact of alcohol consumption on health and well-being. For health, there is a strong evidence base, with data on the number of DALYs lost due to alcohol consumption estimated in the Global Burden of Disease studies [24]. As discussed in the ‘**Informed Consideration**’ section, alcohol

consumption accounts for around 4.3% of the total global burden of disease through its impact on a vast range of health conditions and injuries.

Alcohol consumption also has broader societal costs, and several studies have tried to estimate these. Methods include estimating government health and crime expenditure related to alcohol (direct costs), and estimating earnings lost due to alcohol-related workplace absence and early death (indirect costs). The studies also often include intangible costs, i.e. costs which are non-monetary, such as health costs. Since we use the GBD estimates for health impacts, we exclude the intangible costs in what follows.

Baumberg (2009) found a range of 0.3% to 5.5% of GDP in a review of 23 countries, consisting of direct costs and indirect costs [25]. A second review found an average cost of 1.75% of GDP, with a range of 0.6% to 3.6%<sup>2</sup> [26]. A third review estimates the average impact across countries to be 2.1% to 2.5% of GDP [27]. Several of the studies considered in these three reviews overlap. A study has also been carried out in South Africa, which suggests 1.6% of GDP lost due to alcohol consumption [28].

### Cost-effectiveness

The WHO's three "best buys" for alcohol policy – pricing policies, advertising restrictions, and availability restrictions – are each estimated to avert a DALY for less than \$100 [1]. If each DALY is worth a country's per capita GDP, and we assume an average per capita GDP in sub-Saharan Africa of \$1600, then this would suggest a return on investment of \$16 for every dollar invested<sup>3</sup>. These estimates are broadly in line with several other estimates in the literature [29] [30] [31].

There are two limitations to the WHO's estimates for our purposes (both of which are outside the scope of the WHO's work). First, they do not account for the likelihood of convincing the government to try and implement alcohol policies in the first place [8]. Second, they only consider the health impacts of alcohol, not the broader economic impacts. These impacts are particularly important for alcohol, which creates a range of social costs, and also causes mortality and morbidity in people's peak working years [32]. We will need to factor these into our cost-effectiveness analysis.

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<sup>2</sup> These estimates are our own calculations of the proportion of total costs, made up by direct and indirect costs. The 3.6% is of New Zealand's Gross National Product, but this was roughly equal to its Gross Domestic Product in that year.

<sup>3</sup> Note that in our own analysis we use different estimates for the trade-off and use estimates of GDP in international dollars (see 'Cost-effectiveness analysis' section).

## 4.2 Limiting factor

Score: 5/10

This intervention seems neglected compared to other noncommunicable disease risks, such as tobacco regulation. While there are a number of charitable foundations investing significant resources into tobacco regulation, this does not seem to be the case for alcohol [32]. This report finds that no global health charities have prioritized investment in alcohol regulation, despite the fact that it is neglected and needs to be addressed. Bloomberg Philanthropies found that alcohol taxation could save up to 22 million lives over fifty years, but has not currently invested in it [33] [34]. A look at the major philanthropic donors also indicates this is a neglected area: while there are some grants awarded to tackle alcohol problems, these generally relate to addiction rather than broader health challenges (for examples, see [35] [36] [37] [38] [39]).

The lack of funding in this area may mean that it is easier to have a larger impact, because the marginal benefit of funding may be higher. Open Philanthropy considers this area to be uncrowded [40], and donors aligned with effective altruist principles may be particularly attracted to this area. However, this intervention has not yet received much attention within effective altruism. This suggests that some work would be necessary to get EA donors excited about it, which could make it more challenging compared to other interventions where there is already a lot of interest and excitement among EAs.

If funds were very difficult for a new organization to raise, it is possible that the organization could be run for a period of time at a relatively low cost, for example, hiring volunteers and carrying out advocacy actions mostly online. This would give it time to build a track record of success before larger amounts of funding were sought.

Overall, this seems like a space with significant opportunity for an organization to grow into, but it may be challenging for a new organization to successfully fundraise and become self-sustainable.

### 4.3 Execution difficulty

Score: 4/10

This intervention is likely to be difficult to execute successfully. There is a strong and well-organized industry lobby that spends significant resources on alcohol policy [41] [42]. This will make it challenging for a new organization to have an influence. The best approach for a new organization may be to align itself with the WHO, and with bodies such as GAPA and Movendi, to provide a broader network of support.

Relatedly, another important requirement for the success of this intervention will be to build good relationships with governments and other NGOs working in the space. This may be difficult for a new charity, especially one coming from another country. Additionally, a new organization with founders from another country will not have a good understanding of the local context, such as the beliefs and preferences of the people. This may be particularly relevant for alcohol regulation, as people's values with respect to alcohol may differ across countries, unlike some other less controversial health interventions.

This intervention will face similar challenges to other policy interventions at the early stages of its existence, in terms of measuring whether it is advocating effectively. This is particularly challenging in the policy space because it is possible to do everything right, but still not achieve the desired outcome because the probability of success is so low. It will be difficult for a new organization to accurately determine whether it failed because it is ineffective or because of the nature of policy change.

Once a policy is implemented, it will be possible to estimate the impact, for example, by measuring changes in alcohol consumption. Some health impacts (such as injuries) should be reduced straightaway, so these should also be measurable. Since policy change occurs at the population level, assigning changes in outcomes of interest to the introduction of the policy will be more challenging, as we will not know the counterfactual trends in the outcomes.

One important positive element is that WHO is strongly supportive of alcohol policies. It has already done a lot of research into which interventions are likely to be most effective, both in terms of cost-effectiveness and implementation difficulty. So there is a large body of research to rely on, which does not appear to have been widely implemented yet.

## 4.4 Externalities

Score: 4/10

The externalities for this intervention seem mixed. There is broad agreement that alcohol consumption causes significant harm to individuals and society, but there are some reasons to be cautious about this intervention. A key issue is whether ‘sin taxes’, that is, taxes on products which society considers harmful, are (1) an infringement on people’s freedom, and (2) regressive.

Regarding the first issue, economic theory would suggest that under a certain set of assumptions, imposing taxes to restrict people from making choices which harm only themselves could reduce their welfare, as presumably if the decision were making them worse off they would make a different choice [43]. But, this depends on whether those choices are truly free. Market failures caused by issues such as misinformation about the harmful impacts of alcohol, or cognitive biases resulting in people making welfare-reducing decisions, could justify a tax to promote individuals’ welfare [44]. This kind of taxation goes beyond taxing the externalities of alcohol, to ‘paternalistic’ taxation for people’s own good, which is more controversial [45].

The second issue is whether alcohol taxation or other pricing policies are regressive. They may increase aggregate social welfare, but impose more of a burden on people on lower incomes. A report by the World Bank suggests that when considered in terms of current incomes, alcohol taxes are likely to be regressive, because they impose a relatively higher burden on consumers of the product who have lower incomes [46]. However, the report also suggests that there may be counterbalancing effects; for example, those on lower incomes may be more responsive to price changes, so taxes may reduce their consumption more and so have disproportionately positive effects on their incomes and health. If revenue raised from taxation were spent on health, this could also disproportionately benefit people on lower incomes.

## 5 Cost-effectiveness analysis (CEA)

This section provides an overview of our CEA, which weighs the expected cost of this intervention against the expected good accomplished.

Several sources suggest that taxation is likely to be the most cost-effective alcohol policy, and it is also the policy which has the strongest evidence base. We therefore focus on this in our CEA, modeling the effect of a 50% increase in excise taxes, in line with what the WHO considers an “ambitious but feasible strategy” and how it has recently modeled alcohol taxation [47]. We model the impact on a notional average sub-Saharan African country, meaning the intervention is assumed to affect a constructed population which has the average features of the region (e.g. population size, GDP per capita, etc.). This approach allows us to compare interventions that will likely affect similar populations.

Overall, our modeling suggests this is a highly cost-effective intervention, with each dollar invested expected to generate a return of around \$115 (all figures are in international dollars [48]). Using estimates of the trade-off between income and health based on GiveWell’s research [49] [50], this is equal to averting the equivalent of a DALY for \$96. This estimate is broadly in line with the WHO’s estimate of the cost-effectiveness of taxation and the other best buys [47].

When interpreting the benefit-cost ratio and cost per DALY, it is important to note that our estimates depend on various model assumptions, which are consistently estimated within our global health and development policy research, but not necessarily outside of it. See 5.4 ‘Where our CEA could go wrong’ for discussion of the key assumptions.

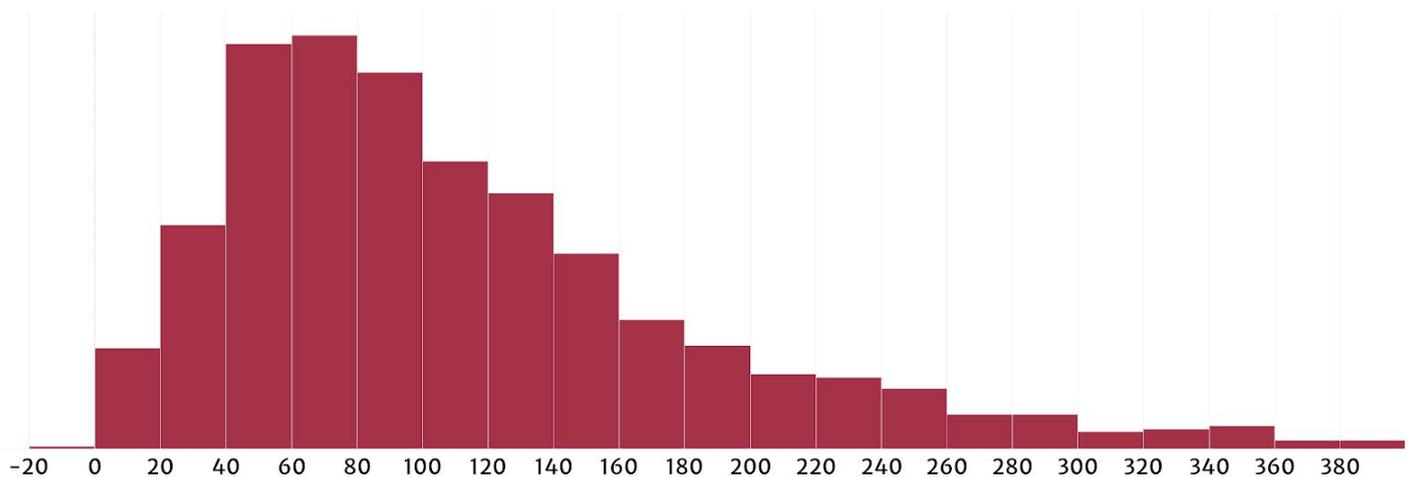
We estimated the following benefit-cost figures:

**Spreadsheet CEA model** estimates:

Benefit-cost ratio 115:1 (90% credible interval, 25:1 to 274:1)

The histogram below plots the distribution of benefit-cost ratios (BCR) simulated in the spreadsheet model. As the chart shows, the distribution is skewed to the right, indicating that in the majority of cases the estimated BCRs were clustered around the peak of the distribution, but in some cases the BCRs were much higher than the peak. This has the effect of dragging the mean BCR upwards. The median BCR in the spreadsheet model is 91:1; it is lower than the mean, which reflects the skew in the distribution.

### Distribution of benefit–cost ratios estimated in the uncertainty analysis



We also ran the CEA accounting for the counterfactual impact of co-founder time and funding costs. We assume that co-founders' impact would be equivalent to a donation of \$25,000 each per year to GiveWell's top charities. To account for the counterfactual funding cost, we assume a range of impacts. Our central estimate assumes that 25% of the funding would come from charities equivalent to the Against Malaria Foundation, and 75% from charities equivalent to GiveDirectly. With these assumptions, the BCR falls to around 58:1. Note that these numbers are based on very rough comparisons of the impact of GiveWell charities versus this potential charity, and should be interpreted cautiously.

The remainder of this section provides details of the model which generated the impacts described above. We look at the following factors:

- Effectiveness
- Costs
- Other model assumptions

We then discuss the main model limitations and report results of sensitivity analysis of several of the key model assumptions in the '[Where our CEA could go wrong](#)' section.

## 5.1 Effectiveness

There are two sources of impact for this intervention: health and economic impact.

## Health effects

The health effects of alcohol consumption are estimated in the Global Burden of Disease 2017 study [24]. The study estimates the impact in disability-adjusted life years on a range of health outcomes covering personal health impacts (e.g. cancers, cardiovascular diseases), road accidents, injuries, and violence.

The total estimated DALYs in sub-Saharan Africa due to alcohol consumption is 12.6 million. For the analysis, we adjust this figure to apply to a notional average sub-Saharan African country. We then estimate the impact of a 50% increase in the excise tax rate on alcohol consumption, using a price elasticity of  $-0.5$  (see [excise tax rate](#) and [elasticity](#) sections below).

Then, to estimate the number of DALYs averted, we assume a linear relationship between alcohol consumption and the number of DALYs averted, with no alcohol consumption modeled as the point at which all DALYs are averted. We considered modeling this relationship as a J-curve in line with a suggestion made in one of our expert interviews, but decided instead to go with a linear relationship as it is simpler and more conservative.

The number of DALYs averted are adjusted for the counterfactual impact and the probability of success (see sections on these below). The trend in alcohol consumption is assumed to be constant, based on analysis by the WHO [1]. This means the annual number of DALYs averted stays constant over the period analyzed. The impacts are estimated over a twenty year time horizon, starting eleven years after the policy is introduced.

We then convert the health impacts into monetary terms. The monetary value of averting a DALY is assumed to be equal to 2.8 times the per capita income in sub-Saharan Africa. This is based on research on the trade-offs people are willing to make between income and health (see [‘Moral weights’](#) section below). The monetary value grows over time, in line with income growth in the region. The total estimate is then converted to present value terms using a discount rate of 4% per year. Further details of the assumptions set out here can be found in the [‘Other assumptions’](#) section below.

## Economic effects

We use three studies for our estimates of the economic impacts of alcohol consumption: two reviews by Baumberg (2009) and Thavorncharoensap et al. (2009) covering a number of higher income countries [25] [26], and a third study on

South Africa by Matzopoulos (2014) [28]. We take the average impact across all the reported estimates, and where the countries in the studies overlap, we first take the average of the estimates in each study. The impacts include direct costs (e.g. additional costs to the healthcare system and to deal with crime) and indirect costs (e.g. workplace productivity and absenteeism). We exclude the impact of earnings foregone due to premature deaths, as we do not consider this to be relevant. The final estimate is just under 1% of GDP. This percentage is directly applied to the notional sub-Saharan African country.

The economic impacts of the regulation are then estimated using the same approach as that used to estimate the health effects. We use an elasticity estimate of -0.5 to estimate the impact on alcohol consumption, and assume the reduction in consumption is associated with a proportional reduction in economic costs. The same adjustments for probability of success and counterfactual impact are applied, and impacts are estimated over a 20 year time horizon and converted to present value terms using a discount rate of 4% per year.

## 5.2 Costs

### Charity costs

The charity costs are made up of fixed costs to set up the charity and ongoing annual costs to operate it. Fixed costs in the first year are assumed to be \$100,000; costs after this are assumed to be \$250,000 per year for the first five years of operation, and reduced to \$125,000 after this point, around the point the policy is expected to be introduced and costs are expected to fall. While these are rough estimates, they are expected to be roughly constant across interventions so should allow for comparisons of cost-effectiveness.

### Ongoing cost of regulation

Alcohol taxation is one of the WHO's best buys, and it has an estimated cost of less than \$0.10 per person per year [47]. In a report on the cost of scaling up the best buys, the WHO estimates the cost of increasing excise taxes in low- and middle-income countries to be \$0.004 per person, with additional costs of monitoring of \$0.01 and costs of advocacy/partnerships of \$0.056 per person [8]. This totals to \$0.07 in 2008 prices, or \$0.084 in 2020 prices. Given the uncertainty around these figures, we have conservatively used the upper end of the estimate of \$0.10 per person per year as the central estimate in our analysis.

## Discount to government costs

We expect that government spending will be less impactful than philanthropic spending, which can be directed to highly cost-effective charities. Therefore, we discount government costs that we expect to redirect to alcohol policy. Our approach is to discount these costs by 50%. This is an approach that has been used by GiveWell in the past, for example in its CEA of pesticide regulation [51] [52].

## 5.3 Other assumptions

### Charity years operating

The WHO's guidance on cost-effectiveness analysis suggests that an intervention should be assumed to run for ten years [53]. In line with this, we have assumed the charity will operate for ten years.

### Stopping point if charity is unsuccessful

We assume that the charity will definitely run for five years at full cost. At this point, if the intervention is looking very unlikely to succeed, we assume the charity will end its operations. Therefore, the charity costs after year five are incurred only in expectation.

### Time taken to write and introduce regulation

We have assumed it will take seven years to write and introduce the regulation. This period will include time taken for the charity to build the required knowledge around alcohol policy, to convince the government to introduce the regulation, and for the regulation to be written up and introduced. GiveWell estimates that it will take three to four years for the Centre for Pesticide Suicide Prevention to introduce pesticide regulation in India and Nepal – this is for an organization with a strong track record in the space [51]. Our estimate of seven years is calculated based on this figure, discussions with experts on the time taken for policy change to be brought about, and our earlier estimates of the time taken to introduce policy change in the animal advocacy sector [54].

### Year at which regulation costs begin

This is estimated as 50% of the total time taken to write and introduce the regulation. It reflects the fact that it will take some time before the new charity convinces the government to introduce alcohol excise taxes, and the costs to the government of doing this will not be incurred until the government decides to do so.

### Alcohol excise tax rate

This input estimates the average tax rate in the notional sub-Saharan African country. There is relatively little information on the actual level of excise taxes in African countries. One study estimates this for a range of African countries; in our model we use an estimate of 36%, which is the average across all the countries where data are available from this study [55]. Another study estimates significantly higher rates of taxes in Africa, though this study was carried out several years earlier [56]. The rate assumed in our model is slightly above the average rate in the OECD according to this paper [57], and close to the highest levels in the EU according to these sources [58] [59]. Several Asian countries have rates as high as or higher than the rate assumed in our analysis [60].

### Alcohol excise tax rate increase

We model a 50% increase in the tax rate, based on the increase the WHO models and considers “ambitious but feasible” [47]. There are several examples of similar tax increases; for example, Belgium has increased its tax rates at levels greater than this [61], and there are comparable increases in U.S. states [62]. However, our analysis suggests this is likely to be at the higher end of the historic increases.

### Price increase

The price increase is calculated as the current excise tax rate multiplied by the increase in tax rate. This gives a price increase of 18% in our model, equal to a new tax rate of around 55%. At this level, the proportion of taxation given our assumptions would still be below the taxes imposed by many countries on tobacco [63], and is broadly in line with the highest rates in the EU and Asia [58] [59] [60].

### Price elasticity

This input estimates how alcohol consumption changes with an increase in price. A figure of -0.5 has been used, which is widely supported as a good approximation as a central estimate [64] [65]. This means that a 10% increase in the price of alcohol would result in a 5% reduction in consumption.

### Current level of alcohol consumption

The current level of alcohol consumption is the amount consumed per person in sub-Saharan Africa [66].

## Trend in alcohol consumption

We have assumed that alcohol consumption remains constant, and this is in line with WHO analysis of the trend in alcohol consumption over the last twenty years. However, this does conflict with the general idea that alcohol consumption is increasing in lower-income countries, and alcohol companies are focusing there [67]. Given this, this is likely to be a conservative assumption.

## New level of alcohol consumption

The new level of alcohol consumption is calculated based on the initial level of consumption, a 50% increase in the excise tax rate, and the price elasticity of demand.

## Years until benefit will be felt

Some impacts will take time before they are felt, such as the cancers and cardiovascular diseases, but this is not true for others, such as the injuries and violence. We have estimated the point in time that we expect the average impact to start at 18 years, based on analysis of the proportion of health and economic impacts that we expect to be incurred immediately versus in the future.

## Discount rate

We assume an annual discount rate for future costs and benefits of 4%, in line with GiveWell [68]. There is a debate over the appropriate discount rate, with the WHO using a rate of 3% for health impacts [53], and the UK government guidance suggesting a lower rate than this for health impacts and a slightly higher rate for other impacts [69]. We believe a rate of 4% appropriately captures our views on a relatively low pure time preference (i.e. a low discount to future utility), the impact of increasing incomes over time which reduces the benefit of income, and uncertainty. It also has the additional benefit of being comparable with GiveWell.

## Time horizon

We assume that once introduced, the impacts of the regulation will last for twenty years. A range of time horizons are used in cost-effectiveness analyses. In our case, we consider twenty years to be reasonable because this is a regulatory change that can be expected to have lasting effects, though its impact may weaken over time – for example, if it does not rise in line with inflation in the future. This is quite a subjective assumption and we will model the time horizon consistently across all of our interventions to ensure they are comparable.

## Counterfactual impact

While many organizations have done a lot of work to build a foundation for the introduction of alcohol policy (for example, the WHO's global status reports, which we have relied heavily upon for this report), we consider that a new organization in this space could have large counterfactual value. This is because there is a lack of funding in this area and it is quite neglected, meaning we could pick a country where legislation is unlikely to be introduced. We have therefore assumed 80%, though this assumption is quite subjective.

## Probability of success

This reflects the probability that the price increase will be introduced and remain in place for the period analyzed. We have assumed 5.5%, which is the average estimate of CE staff members working on this report. It is based on the assumptions that policy change is very difficult to achieve, there are several limiting factors, and there will be significant opposition from the industry. We also take into account GiveWell's estimates of the likelihood of policy change in its pesticides CEA model [51]. Given that we have assumed a fairly large up-front time and money investment, and that we will pick a promising country to work in, we consider a roughly 1 in 20 chance of success to be reasonable. We believe that the most important part of this assumption is to ensure the probabilities across the interventions being considered are consistently estimated.

## Population affected

We have assumed this intervention will affect a notional average country in sub-Saharan Africa. The total population of sub-Saharan Africa is 1.1 billion, and there are 46 countries in the region, so we assume the population affected is roughly 23.4 million [70] [71].

## Population growth rate

The population growth rate value is taken from the World Bank [72]. The current annual growth rate is assumed to continue throughout the period of the project. It results in the population approximately doubling by 2050, which is in line with projections for sub-Saharan Africa [73].

## Country income per capita

This is the current income per capita in sub-Saharan Africa in international dollars from the World Bank [74].

## Country growth rate

This is the World Bank’s estimate for growth in Africa [75]. It has been assumed to continue for the period of the project.

## Moral weights

The moral weights allow us to convert between impacts expressed in health and monetary terms. They are estimated based on GiveWell’s and IDinsight’s research on how people make trade-offs between income and health [49]. In its CEA model on Fortify Health, GiveWell assumes that 2.8 years of income is equivalent to one DALY [50]. We use this assumption in our analysis to convert between health and economic impacts so that we can report benefit-cost ratios and costs per DALY equivalent averted.

## 5.4 Where our CEA could go wrong

We considered how our CEA could go wrong at each step. There are several key assumptions which we believe are worth noting:

- Our estimates rely on subjective assumptions about counterfactual impact and probability of success. We are quite uncertain about these assumptions, and another researcher could have significantly different intuitions about these inputs. We assume a 5.5% probability of success; at a level of 1%, this intervention would generate a return around 30% as large as our central estimate.
- We assume that benefits and costs will continue for twenty years once the regulation is introduced. This assumption is also very subjective, and there is a wide range in the time horizons considered by different organizations and analysts modeling cost-effectiveness. We will need to ensure we are consistent with this assumption across different interventions, as it has a relatively large impact.
- Our model does not account for the fact that there may be negative welfare effects of this intervention through restricting people’s ability to make choices which they consider to be in their own interest (See ‘[Externalities](#)’ section of weighted factor model).
- Our analysis models the impact on a constructed population reflecting the average characteristics of a sub-Saharan African country. This was done to ensure comparability across interventions, but it may result in an underestimate of the true cost-effectiveness, as a new organization would choose to work in a country that has the highest potential for impact.

- Our analysis assumes that a 50% increase in the tax rate is feasible. It also relies on quite weak evidence on the existing level of taxation in sub-Saharan Africa. This assumption is important; if the price change achieved is half as large, this intervention will be half as cost-effective (though this would also probably increase the likelihood of success to some degree, reducing the net impact of this assumption).
- Our model does not account for any government tax revenues raised by the tax. This is because we consider the increase in revenue is effectively a transfer from individuals to government – the government may spend it more effectively (for example, on public goods), but we assume the money would have been spent equally well by the government or individuals, mainly for simplicity.
- The economic impacts rely largely on studies that focus mainly on higher-income countries. The impacts on the lower-income countries in our sample are fairly consistent with the rest of the sample, but our estimate could still be inaccurate.
- We do not apply discounts for the evidence on health and economic impacts, though there are arguments to do this [76]. Our approach is to use the quality of evidence behind the interventions as a criterion to make an overall judgment about which interventions are likely to be most impactful.
- In our main model, we do not account for the counterfactual impact of co-founder time and funding. This is because these inputs are very uncertain, and are also expected to be roughly consistent between the interventions. However, interpreting the main CEA estimates directly may overestimate the benefits, because we do not account for the fact that some of the resources would have gone to high-impact interventions otherwise.

## 6 Informed consideration: Internal contemplation

At this stage, we analyzed all the data and insights gathered through previous steps in the research process. The most important conclusions from each are summarized here, as are our overall thoughts on alcohol policy as an intervention.

The first informed consideration stage was used to build background knowledge of alcohol policy as an intervention. We found that harmful alcohol consumption was the cause of 108 million DALYs worldwide in 2017, equal to 4.3% of the global burden of disease. There are many policy options to reduce the harmful use of alcohol, with the most effective identified by the WHO in its best buys for noncommunicable diseases as pricing policies, availability restrictions, and advertising restrictions. Globally, there is much room for improving the implementation of each of the best buys.

We carried out four interviews with experts to obtain a deeper understanding of how promising this intervention is. The experts were supportive of the intervention, considering the best buys to be appropriate to focus on. Several experts suggested focusing on the WHO's SAFER initiative, which expands the scope of the best buys to include health services and drunk driving [18]. Pricing policies, in particular taxation, were generally regarded as a key intervention.

A key point raised by several of the experts was the difficulty of raising funding for this intervention. While there tends to be strong support for other similar behavior change interventions such as tobacco and diet, there is less donor support for alcohol regulation.

Our weighted factor model (WFM) suggested a mixed picture. We judged the idea overall to be relatively strong, with a strong evidence base and suggestions of high cost-effectiveness (around \$100 per DALY averted, as well as economic benefits). We looked further into the funding issue, and found that this is likely to be challenging, with a current lack of support from major foundations. Alcohol regulation is, however, relatively uncrowded, making it more promising to work on.

The WFM also indicated that several factors will make execution of this idea more difficult, including the existence of a strong industry lobby, and the fact that this intervention will require a very good understanding of local context. A new

organization could seek support from several key existing organizations in the space, such as the Global Alcohol Policy Alliance and the WHO.

There may be some negative externalities associated with this intervention – part of the estimated benefits may be genuine trade-offs people are willing to make which increase their own welfare, and there may be some regressive effects from pricing policies. These factors will be important to take into account. However, there are market failures associated with alcohol consumption suggesting intervention is appropriate, and regressive income effects may be counterbalanced by higher responsiveness to price changes of low-income drinkers, who may then end up saving more (in terms of both income and health) when prices rise [46].

We modeled the impact of a 50% increase in the alcohol excise tax rate in a notional sub-Saharan African country in our cost-effectiveness analysis, as this was generally considered to be the most cost-effective of the possible regulations. We modeled both health and economic impacts. Our analysis suggests a high return on investment, with a benefit-cost ratio of 115:1. Using GiveWell's moral weights, this is equal to averting the equivalent of a DALY for \$96. This is in line with the WHO's estimates of the cost-effectiveness of taxation and the other best buys [47].

Overall, we conclude that this could be a very strong intervention. A key issue will be funding, but given there is some interest in the EA community (e.g. GiveWell identifying it as a potentially promising policy intervention), there may be funding sources from within this space. We therefore tentatively recommend this as a promising intervention for a new organization to work on.

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