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### 'Half-cut' science

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## Introduction

Although it is widely accepted that public health policy ought to be protected from tobacco industry interference, with the World Health Organization (WHO) enshrining this principle in Article 5.3 of the Framework Convention on Tobacco Control, such an approach has not been applied to the alcohol industry, despite the fact that its products are also health damaging (Casswell 2013, Jarma 2013, Casswell and Thararangi 2009, Collin 2012) and, by some measures, substantially more harmful in the UK (Nutt et al. 2010).

It might be argued that this different approach reflects the different behaviours of these two industries. Yet, growing evidence suggests that the tactics employed by the alcohol industry to influence policy mirror those of the tobacco industry (Casswell 2013, Jahiel and Babor 2007, Freudenberg 2014, Stuckler et al. 2012). Despite this evidence, the Scottish Government (like many other governments) has engaged with the alcohol industry in adopting approaches to address alcohol misuse and harm in collaborative ways (Casswell 2013, Casswell and Thararangi 2009, Gornall 2013, McCambridge et al. 2013) that currently seem inconceivable for tobacco (Collin 2012, Joosens and Raw 2014). For example, in 2007, the Labour-led Scottish Government formally came together with the alcohol industry to form the Scottish Government & Alcohol Industry Partnership (SGAIP), in “recognition of a shared aim to promote responsible drinking and to reduce alcohol related harm,” (Scottish Government 2007); a partnership that continued under the subsequent leadership of the Scottish National Party (SGAIP 2014). This partnership involved a number of ‘work streams’, each of which required an ‘industry co-lead’ to work alongside a Scottish Government lead (SGAIP 2014). Until recently, the partnership also involved the secondment of a fully industry funded post to the alcohol policy team in the Scottish Government (SGAIP 2010). Unlike the UK’s Public Health Responsibility Deal for alcohol (SGAIP 2010), the Scottish Partnership does not include any members from non-governmental organizations (Scottish Government 2015). More recently, following its decision to shift the alcohol policy focus away from efforts to change individual behaviour towards a population-focused, price based approach (Katikireddi et al. 2014), the SNP-led Scottish Government has decided to discontinue the SGAIP (Scottish Government 2017).

One important motivating factor in this shift seems likely to be the fact that alcohol-related harm responds to a burden that weighs heavily on the Scottish state and the tax-funded National Health Service (NHS). Between 2013 and 2014, 36,206 people were discharged for alcohol related injuries from general acute care hospitals in Scotland and the rate was 8.4 times higher for patients living in the most deprived areas of Scotland compared to the least deprived areas (Information Services Division Scotland 2014). This suggests that alcohol related harms play an important role in Scotland’s sizeable health inequalities (Leyland et al, 2007, Scottish Government 2015b), addressing which constitutes another stated policy priority of the current government (The Scottish Parliament 2015). More broadly, it has been estimated that alcohol misuse and harm cost

the Scottish economy approximately £1.1 billion per year through health related, criminal justice and social service related costs (YHEC 2010).

Given these issues, the Scottish Government has directed a range of resources towards policies intended to reduce the harms associated with alcohol consumption. The most high profile recent example is the Alcohol (Minimum Pricing) (Scotland) Bill (MUP), which was introduced in 2011 and passed in 2012, but for which implementation has been delayed by successive legal challenges from the Scotch Whisky Association (Scottish Government 2015c, Morris 2015). The MUP legislation stipulated a formula for determining an alcoholic beverage's retail price. For example, a 750 ml bottle of red wine at 12.5% alcohol by volume (ABV) could not sell below the minimum price of £4.68 if the MUP was £0.50 [ $0.50 \times .750 \times 0.125 \times 100 = 4.68$ ] (Alcohol (Minimum Pricing) (Scotland) Bill 2012). The legislation's main targets are cheap, high strength alcohols sold by off-trade retailers (Alcohol (Minimum Pricing) (Scotland) Bill 2012).

Given the health aims of the MUP Bill, it was subject to scrutiny by the Scottish Parliament's Health and Sport Committee. As part of this process, the Committee launched a call for written evidence on the topic and all relevant stakeholders were invited to participate (SPICE 2012). The alcohol industry's obvious interest in the MUP Bill was reflected in extensive engagement in the consultation, and 19.5% (n=25) of the total submissions came from this sector.

Against the backdrop of the Scottish Government's commitment to MUP, several academic papers have been published which seek to better understand alcohol industry interests in, and claims about, this issue (McCambridge et al. 2013, Katikireddi et al. 2014, Hilton et al. 2014, Holden et al. 2012). This includes a paper by McCambridge and colleagues (2013) which presents an analysis of the evidence used by the alcohol industry in submissions to the Scottish Parliament's 2008 public consultation on a Government discussion paper, *Changing Scotland's relationship with Alcohol* (Scottish Government 2009). Their review found that alcohol industry submissions often promote weak evidence to support their positions, whilst also misrepresenting strong evidence against their positions. Responding to the dearth of studies of alcohol industry documents noted by McCambridge and colleagues (2013), this paper aims to strengthen the literature base using alcohol industry submissions from the more recent, 2011 call for written evidence concerning the MUP Bill. This paper builds on published work in aiming to specifically to assess the extent to which alcohol industry actors cited evidence in submissions to call for written evidence on the Alcohol (Minimum Pricing) (Scotland) Bill and to compare any citations of peer-reviewed evidence to original sources (whereas McCambridge and colleagues focused on analysing alcohol industry evidence against "the most authoritative and up-to-date international review of the effectiveness of alcohol policy measures by Babor and colleagues") (McCambridge et al. 2013). Although other groups of actors, for example, councils and NGOs also engaged with peer-reviewed evidence, their submissions overwhelmingly supported the MUP policy in line with the available public health evidence. The alcohol industry, in contrast, was the largest and most

significant group to oppose the MUP bill, and as such, we found analysis of their use of evidence to be of greater interest. To date, we are unaware of any publication that which has either considered this set of policy submissions or which has examined this facet of alcohol industry use of evidence.

## Methods

Submissions to the call for written evidence are publicly available via the Scottish Parliament website available at: [<http://www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/45563.aspx>]. All submissions, inclusive of those 'received in response to the call for evidence' and those labelled under, 'other written evidence received', 'written evidence received in response to the call for views on pricing mechanisms', and 'correspondence received' (n=128) were manually searched to identify those written by 'alcohol industry' actors. While there is no settled definition of the alcohol industry (IAS 2016), for the purposes of this paper, these were identified as commercial sector actors involved with the distribution, production and/or sale of alcoholic beverages (e.g. on and off-trade actors), and any organization representing the interests of this sector (e.g. lobbying/consultancy companies or trade groups working on behalf of commercial alcohol companies). Using this definition, the alcohol industry was the third most represented group of the 128 submissions, accounting for 19.5% of the total submissions, behind non-governmental organizations (34.4%) and local councils (21.1%), as shown in Table 1.

[Insert Table 1]

We examined the reference lists of all alcohol industry submissions and categorised evidence citations into the following four groups as shown in Table 2: 1) Peer-reviewed 2) Governmental Reports/Data 3) Independent Organization Reports/Data 4) Other. 'Peer-reviewed' literature is defined as material published in academic peer-reviewed journals and academic books. 'Governmental Reports/Data' refer to materials produced by a government directly, by a government funded public body, or commissioned by a government. 'Independent Organization Reports/Data' are reports produced by a private or third sector organization which are not related to or regulated by a government organization (e.g. think-tank or private market research). We used 'Other' for any other source that did not fit in the three categories just described, including for references for which the origin was unclear and expert opinion. The most commonly cited category of evidence was government reports/data representing 45% of the total citations, followed by the independent organization reports/data and peer-reviewed categories with 30% and 15% of the total citations, respectively (see Table 2). Alcohol industry submissions were also categorised according to the extent to which they supported MUP. The majority of alcohol industry submissions, 12 out of the 19 (63%), were opposed to MUP, with only 2 (11%) submissions in favour of MUP and the other 5 (26%) unclear or partially supportive of MUP. We further examined whether these alcohol industry actors participated in the prior 2009 call for evidence on MUP conducted by the Scottish

Parliament's Health and Sport Committee as part of the introduction of primary legislation process, and compared submissions' positions across consultations using support level categorisations for the 2009 call for evidence reported by a previous paper (Katikireddi and Hilton 2015). With the exception of the Wine and Spirit Trade Association, every respondent from the 2011 call for evidence participated in the 2009 call for evidence (see Table 2). The support level for MUP across alcohol industry actors' submissions to both calls for evidence remained relatively constant over the 2 year period, with only 2 alcohol industry actors changing support category despite the fact more evidence had been published in the interim period. [Insert Table 2] Figure 1 shows the total number of peer-reviewed sources cited by each submission against the total number of references per submission. Respondents from the alcohol industry who opposed MUP cited peer-reviewed material more than the other groups of alcohol industry respondents. Almost all alcohol industry submissions opposed to MUP cite at least one peer-reviewed source with Diageo citing the most (n=8).

[Insert Table 2]

[Insert Figure 1]

Our approach, detailed in the next section, was based on a content analysis, grouped into broad themes and organized by the level of accuracy with which peer-reviewed evidence is cited within alcohol industry submissions. Our assessment of accuracy was determined by the lead author comparing the citations to the original sources and making an assessment which was then checked against the assessment of one of the other authors. Disagreements or uncertainties about how to classify citations were resolved through discussion between all three authors.

## **Results**

The following analysis assesses only peer-reviewed evidence cited by alcohol industry submissions. This is because, of the four evidence categories, peer-reviewed evidence has a particular significance as the only category to have a "quality assurance" stamp provided via other experts independently appraising the research and analysis for its "validity, significance and originality" (Voice of Young Science 2012), albeit a view that has been challenged by some (Smith 2006, Weller 2001). Previous research has already explored how alcohol industry actors have selectively highlighted evidence and figures from governmental sources that are favourable to their arguments (Katikireddi et al. 2014) and produce and employ their own evidence to support their preferred policy approaches (Jernigan 2009). It could therefore be argued that policymakers already have a sufficient evidence base to treat alcohol industry submissions citing such broader kinds of evidence with caution.

The section below considers how accurately alcohol industry submissions cited peer-reviewed evidence against the original sources. In total, we identified 17 citations used

to support 5 overarching claims across 7 alcohol industry submissions. Of these, we assessed that comparing the citation to the original source, only 18% were accurately cited with the remaining 82% being in some way questionably or inaccurately cited. A summary is presented below in Table 3.

[Insert Table 3]

### **Claims which were Accurately Cited**

In this section we describe one overarching claim against MUP that we identified as being supported by 3 citations of peer-reviewed evidence.

#### *Challenging the legality of MUP*

In response to issues over the legality of MUP, the Edrington Group (2011), Scottish Grocer's Federation (2011) and Scotch Whisky Association (SWA) (2011) cite Baumberg and Anderson (2008) to support claims that multiple academic sources question the legality of implementing MUP, which in the case of the SWA can be regarded as something of a self-fulfilling prophecy. Baumberg and Anderson (2008) do suggest it "seems strongly likely that minimum pricing for alcohol will not be seen as permissible". Thus, with regards to the specific point about legality, these alcohol industry submissions' claims are accurately supported by peer-reviewed evidence. However, it is worth noting that while Baumberg and Anderson's paper queries the feasibility of MUP, it also explicitly states it is the "price of the cheapest beverage that has the greatest influence on levels of consumption" (Baumberg and Anderson 2008) and, in this sense, is supportive of MUP as a policy response.

### **Claims which were Questionably Cited**

This section presents four overarching claims, supported in industry submissions by 14 citations of peer-reviewed evidence which, on examination, appear to have been used in a manner that could be construed as inaccurate or misleading (e.g. by overstating the strength of the underlying evidence or which are unlikely to be transferrable to a Scottish contexts). The following analysis is organized according to two sub-categories, with 'selective accurately' used to reflect claims which did accurately reflect data or arguments advanced in the source document, but did not reflect the broader analysis or conclusions of cited work, and 'inaccurate' used to reflect claims that more fundamentally did not represent the cited work.

#### Selectively Accurate

##### *Challenging the Relationship between Price and Alcohol Consumption*

The policy submission by Diageo (2011) cites peer-reviewed evidence to support three different points relating to the company's efforts to challenge the claimed relationship between price and alcohol consumption that underpins MUP. The first point simply

states (Diageo 2011) that “the assumption of an inverse relationship between levels of taxation and total per capita consumption is largely based on basic economic theory and the relationship between supply and demand, as well as models projecting the impact of reduced taxation on drinking” and cites three peer-reviewed references (Andreasson et al. 2006, Edwards et al. 1995, Holder et al. 1995). Two of these three references consider the impact of reduced taxation on drinking in Scandinavia (Andreasson et al. 2006, Holder et al. 1995); one is a modelling study (Holder et al. 1995) (providing support for the claim that *some* of the available evidence base employs basic economic theory), but the other is a comparison of a predictive study with indicators of the actual impacts of reduced taxes in Sweden and it concludes that the predictive study “provided reasonable results” (Andreasson et al. 2006) which hardly strengthens a critique of this genre of evidence. Only one of these three references (Edwards et al. 1995) makes a specific claim about the methodological nature of the available evidence regarding price and consumption; the book chapter notes that the majority of studies on this topic are econometric, while also noting that studies with a variety of other methods exist (which the chapter goes on to review). Not only does this book chapter not make the precise claim that Diageo make but, since it was published over twenty years ago, it cannot in any way be considered a reliable assessment of the current evidence-base (Edwards et al. 1995). Indeed, all three citations are rather dated, the book chapter and the predictive modelling study were both published in 1995 (Edwards et al. 1995, Holder et al. 1995). In summary, none of these citations provide up-to-date support for the claim advanced by Diageo.

Regarding the same overarching claim, Diageo (2011) cites Österberg (1995) to support their second point that “consumers respond differently to price changes in different countries”. This a non-controversial claim and the chapter, written by Österberg (1995), does support this point but is yet another dated text, having been published in 1995.

Diageo (2011) also cites Mäkelä and colleagues (2008) to support their third point, “...recent empirical evidence from Denmark, Finland, and Sweden indicates that despite predictions to the contrary, the lowering of the price of alcohol (through decreased taxation) did not lead to increased consumption.” Whilst, Mäkelä and colleagues’ (2008) study, based on survey data, does establish lower taxes on alcohol in Finland compared to bordering Sweden and Denmark did not lead to higher population level alcohol consumption, the paper also finds that Finland’s liver cirrhosis rates increased by 20% over the period in which taxes declined (Mäkelä et al. 2008), indicating that lower taxes increased consumption among heavier drinkers, leading to increased alcohol-related harms. Thus, lowering of prices, may not have had a large effect on population level consumption, but clearly exacerbated heavy drinking within the country. Additionally, the authors acknowledge survey data is prone to non-response bias, which is an important limitation and could contribute to their null finding regarding increased consumption. Taking the full results and limitations into account, this paper provides minimal support for Diageo’s position.

While these specific claims presented above are accurately cited, the overall context and conclusions of such research are not evident in the Diageo submission. Importantly, the Diageo document does not make clear that all five peer-reviewed references it cites to question evidence of the relationship between alcohol price and consumption (Andreasson et al. 2006, Edwards et al. 1995, Holder et al. 1995, Österberg 1995, Mäkelä et al. 2008) actually conclude that there is a clear relationship between the two.

### *Querying the Role of MUP in Reducing Alcohol-Related Harm*

Diageo (2011), SWA (2011) and Edrington Group (2011) cite Babor and colleagues (2010) to support their claim that, “There is no strong evidence as to the effectiveness of minimum pricing as a policy to reduce alcohol-related harm.” This phrase is used identically in all three submissions, suggesting a collective strategy in advancing this claim. Babor and colleagues’ (2010) book overwhelmingly supports price controls as an effective method of alcohol control policy, however, they do write, “Although minimum pricing (or floor pricing) has been implemented in some jurisdictions...there has been almost no research into its impact on consumption or harm.” Thus, the submissions do not technically misquote Babor and colleagues, but fail to interpret this singular statement within the book’s wider context. For example, following this quoted statement, Babor and colleagues conclude, “Despite the lack of research in this area, a complex modelling process using data from England and Wales suggest that minimum prices for a standard unit of alcohol would be one of the most effective ways to reduce alcohol-related problems,” (Babor et al. 2010). The suggestion within these three alcohol industry policy submissions that this study supports their claim of a lack of evidence of effectiveness for MUP is therefore misleading.

### Inaccurate

#### *Challenging the Relationship between Price and Alcohol Consumption*

The previous section already identified that Diageo’s peer-reviewed citations to support challenges to the relationship between alcohol price and consumption were limited and out of date. This section demonstrates that the peer-reviewed citations employed to advance this argument in other alcohol industry submissions were more fundamentally inaccurate. The submission from supermarket chain, WM Morrison, claims that, “Whilst [heavy drinkers] are more likely to switch from one drink to another if the price of the former exceeds the latter, they are less likely to reduce their overall alcohol consumption in the event of a general, across the board price increase”, (WM Morrison 2011) and cites two references, Gallet (2007) and Wagenaar and colleagues (2009). These two papers support the sub-claim that consumers are “likely to switch from one drink to another if the price of the former exceeds the latter” because both papers show differences in price elasticities for different groups of alcohol (Gallet 2007, Wagenaar et al. 2009). However, they do not provide support for the larger contextual claim that price increases are not



likely to reduce overall consumption for heavy drinkers. Indeed, Gallet's meta-analysis study of price elasticities (Gallet 2007) hardly mentions heavy drinkers, noting only in their conclusion that controlling for addiction in multiple regression did not materially change the model, signalling addiction is not a strong predictor of price elasticity of alcohol demand. There is no evidence in this paper to conclude heavier drinkers are less responsive to price changes in alcohol than moderate drinkers, nor that overall price increases would not result in less consumption. The only group this analysis found to be less responsive to price changes of alcohol in comparison to another group were younger ages versus older ages (Gallet 2007). We could also find no evidence in Wagenaar and colleagues' systematic review and meta-analysis (Wagenaar et al. 2009) to support this claim. In fact, the abstract states, "A large literature establishes that beverage alcohol prices and taxes are inversely related to drinking. Effects are large compared to other prevention policies and programs. Public policies that raise prices of alcohol are an effective means to reduce drinking" (Wagenaar et al. 2009). Indeed, from the outset, the paper presents a view directly counter to WM Morrison's claim, arguing that the available evidence shows that "price/tax also affects heavy drinking significantly", while acknowledging that "the magnitude of effect is smaller than effects on overall drinking" (Wagenaar et al. 2009).

#### *Claiming that MUP will increase illicit trade*

Two submissions from Diageo (2011) and Wine and Spirit Trade Association (WSTA) (2011) cite Alavaikko and Osterber (2000) to support claims that MUP will fuel illicit and cross-border trade. For example, Diageo (2011) writes, "There is very strong evidence to suggest that price increases fuel illicit production or cross-border trade in alcohol, particularly where there is a disparity between one country and another." However, the paper by Alavaikko and Osterber (2000) is largely a historical account of alcohol policy changes that occurred when Finland joined the European Economic Area (EEA) in 1994 and the European Union in 1995. It devotes only one short section to cross-border and illicit trade and here the focus is on the increase to cross-border imports and smuggling that occurred after Finland joined the EEA in 1994. Although tax (and price) changes occurred in this period (in line with European requirements), the authors note that "the reform of alcohol taxation was put into force without reducing total state alcohol tax revenue", being achieved by raising taxes on some products while lowering them on others (Alavaikko and Osterber 2000). While the authors acknowledge that the increases in legal and illegal alcohol imports might arguably provide a rationale for reducing Finland's high alcohol taxes, the study does not provide clear evidence of price increases being linked to increases in illicit trade since: (i) the changes in prices of alcohol products were variable, with some products becoming cheaper; (ii) concurrent policy changes, notably the fact that Finland joined the European Economic Area, may explain the increase in traveller imports and smuggling the authors refer to. In addition, Finland's particularly high alcohol taxes mark the country out as unusual, suggesting caution is needed in considering the transferability of this experience. All of this makes this source

a weak supporting reference for this point and far from the “very strong supporting evidence” Diageo and WSTA claim (Diageo 2011, WSTA 2011).

In regards to the same overarching theme, Diageo (2011) additionally cites a paper by Nordlund (2007) which shows that cross-border sales between Norway and Sweden began to rise after EU regulations led to cheaper alcohol in Sweden versus Norway. However, the paper also reveals the price differentials between Sweden/Norway were relatively high, with spirits 25% cheaper in Sweden than Norway, wine 30% cheaper and beer 40% cheaper (Nordlund 2007). The exchange rate between the countries’ currency also made shopping in Sweden attractive for Norwegians. Yet, despite this, cross-border trade at its height, accounted for only 5.5% of total Norwegian alcohol consumption, suggesting the problem was not severe (Nordlund 2007). Since price differentials between Scotland and England post MUP would be far smaller, and there would be no effect from different currencies, this example is unlikely to be transferable.

#### *Past Policy Experiences Demonstrate Effectiveness of MUP*

The submission from the Campaign for Real Ale (2011), which was the only alcohol industry submission not opposed to MUP to use peer-reviewed evidence, claims, “Minimum pricing or bans on below cost sales of alcohol and other products have been effective where they have been introduced in parts of Canada, the USA, Poland, Spain, Greece, Belgium, France and Luxembourg” referencing a paper by Anderson and Johnson (Anderson and Johnson 1999). Whilst this paper does support this claim with regards to gasoline in the USA, it fails to provide evidence for any other country’s experience or, indeed, any other product. . Since evidence from other countries that is specific to alcohol price control policies exists, it seems odd that this submission employed only one peer reviewed citation that relates solely related to gasoline (Anderson and Johnson 1999).

#### **Concluding discussion**

Existing studies have repeatedly called attention to the potential for corporate interests to shape research that they fund and this has led to calls for research funded, or undertaken, by tobacco, pharmaceutical and sugar industry interests to be treated with caution (Kearns et al. 2006, Barnes and Bero 1996, Goldacre 2014). In this context, the process of peer-review, in which research analysis must be appraised by independent academic colleagues and considered to be sufficiently rigorous for publication, potentially performs an important ‘quality assurance’ role (Bornmann and Daniel 2010). Given the value that policy actors attach to the perceived trustworthiness of evidence, and the important role evidence played in the MUP debate (Bornmann and Daniel 2010, Katikireddi et al. 2015), citing supportive ‘peer-reviewed’ evidence seems likely to increase the credibility of claims being advanced within policy submissions. Since our results find that the majority (82%) of the peer-reviewed citations in alcohol industry policy submissions concerning MUP were cited in ways that are questionable, and which therefore create potential to be misleading. We conclude that the claims advanced in

alcohol industry policy submissions need to be treated with caution, even when they appear to be supported by peer-reviewed evidence.

The peer-reviewed citations that we classed as being misleadingly employed included examples in which assumptions appeared to have been made about the transferability of evidence from other geographical contexts, with very different alcohol pricing strategies and socio-economic contexts (Alavaikko and Osterber 2000, Nordlund 2007), and an example in which a single sentence was taken out of context. Here, the original source (Babor et al. 2010) only very briefly discusses MUP but where it does, Babor and colleagues (2010) explicitly state that this policy approach, “may be the most effective way of ensuring price increases result in decreased consumption,” (Babor et al. 2010). Since the expressed aim of the Scottish Government, in pursuing MUP, has been to reduce alcohol-related harms, efforts to undermine its perceived potential effectiveness represents perhaps the most serious challenge in the submissions that argued against MUP. It is therefore an important finding that, despite being presented in a manner that suggested alcohol industry actors had identified peer-reviewed evidence to support their claim of unproven effectiveness, an examination of the cited source found it was, in fact, supportive of MUP as an effective policy approach.

In addition to employing some peer-reviewed references misleadingly, it is worth noting we also found examples in which alcohol industry submissions’ use of peer-reviewed evidence contradicted sections of their submission elsewhere. For example, in the sentence preceding the one in which Diageo (2011) appropriately cite Österberg (1995) to support their claim, “...similar alcohol policies yield different results in different societies because of the different economic, cultural, political, and social circumstances, they write, “There is little evidence to support a direct correlation between the level of alcohol price in a country and the level of drinking.” However, Österberg (1995) demonstrates that there is a direct link between alcohol and price, concluding, “the evidence examined above suggests that alcohol price levels do have an independent effect on the level of alcohol consumption.” The tendency of alcohol industry actors to present accurately supported claims among unsupported claims is particularly concerning since including a reference in sentences with a multiple claims implies that the reference corroborates the entire sentence, not just a portion.

These examples demonstrate that, while the process of peer-review provides some level of quality assurance for original published articles, it can provide no assurance regarding the use of these articles as citations. Policymakers and officials reviewing industry submissions can therefore not assume that those which employ peer-reviewed citations do so accurately, at least not without some assessment of the cited material. The track record of alcohol industry actors in framing issues in ways which support their interests, misrepresenting facts, and employing weak and (as we now show) potentially misleading citations, reinforces McCambridge and colleagues (2010) assessment that evidence-based policy-making may be more difficult to achieve where industry actors are involved.

This finding is important in the context of the Scottish and UK governments' commitments to working in partnership with alcohol industry, as well as broader international acceptance of industry participation in alcohol control policy debates (Casswell 2013, Collin 2012, WHO 2010). The findings presented in this paper add to the growing literature which highlights a need for policymakers to carefully examine alcohol industry claims about potential (and existing) policy efforts to reduce alcohol related harms especially where any such policy may be perceived as a threat to industry profitability. Although the findings presented in this paper relate only to the alcohol industry, similar research, focusing on the ways in which other industries cite research (especially peer-reviewed outputs) would be a useful next step, enabling cross-industry comparisons.

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