

# Evaluation of the Evidence Base for the Alcohol Industry's Actions to Reduce Drink Driving Globally

Marissa B. Esser, PhD, MPH, James Bao, MSPH, David H. Jernigan, PhD, and Adnan A. Hyder, MD, PhD, MPH

**Objectives.** To evaluate the evidence base for the content of initiatives that the alcohol industry implemented to reduce drink driving from 1982 to May 2015.

**Methods.** We systematically analyzed the content of 266 global initiatives that the alcohol industry has categorized as actions to reduce drink driving.

**Results.** Social aspects public relations organizations (i.e., organizations funded by the alcohol industry to handle issues that may be damaging to the business) sponsored the greatest proportion of the actions. Only 0.8% (n = 2) of the sampled industry actions were consistent with public health evidence of effectiveness for reducing drink driving.

**Conclusions.** The vast majority of the alcohol industry's actions to reduce drink driving does not reflect public health evidenced-based recommendations, even though effective drink-driving countermeasures exist, such as a maximum blood alcohol concentration limit of 0.05 grams per deciliter for drivers and widespread use of sobriety checkpoints. (*Am J Public Health.* 2016;106:707–713. doi:10.2105/AJPH.2015.303026)



See also Galea and Vaughan, p. 592.

**G**lobally, alcohol consumption before operating a motor vehicle contributes to approximately 15% of road traffic deaths.<sup>1</sup> To address alcohol-related harms, the World Health Organization (WHO) developed the Global Strategy to Reduce the Harmful Use of Alcohol (hereinafter referred to as the “Global Alcohol Strategy”),<sup>2</sup> which was endorsed by the World Health Assembly in 2010. In 2012, 12 companies from the global alcohol industry came together to announce the Producers’ Commitments to reduce harmful drinking (including drink driving) during the next 5 years as well as their support for the WHO Global Alcohol Strategy.<sup>3</sup>

Since the mid-1980s, the alcohol industry has implemented a growing number of initiatives to reduce harmful drinking,<sup>4</sup> with 23% of its 3503 actions focused on drink driving as of May 2015.<sup>5</sup> Drink-driving initiatives are typically part of alcohol producers’ corporate social responsibility business strategy<sup>6</sup> and are similar to initiatives carried out in other industries, such as tobacco and sugar-sweetened beverages.<sup>7,8</sup> These corporate social responsibility tactics “include companies’ economic, legal, ethical, and philanthropic

responsibilities to society.”<sup>9</sup> Emerging research shows that many of the alcohol industry’s corporate social responsibility activities have favored corporate financial interests over the goals of public health<sup>4,10,11</sup> and have interfered with public health policy recommendations in several countries.<sup>12–15</sup>

Social aspects public relations organizations (SAPROs) and trade associations are both central to the alcohol industry’s corporate social responsibility business practices. The industry funds SAPROs to “manage issues that may be detrimental to its business.”<sup>16(p1377)</sup> SAPROs, such as Drinkwise in Australia<sup>17</sup> and Drinkaware in the United Kingdom,<sup>18</sup> have been used to cast doubt on public health-effective strategies and to endorse ineffective interventions. Trade associations “represent [companies’] interests in

a specific forum or at a particular level of government” and help give sectors of the industry a uniform voice.<sup>19(p483)</sup>

Public health professionals have documented concerns about the alcohol industry (including producers, SAPROs, and trade associations) being involved in the development of interventions for reducing alcohol-related harms because of its tendency to promote strategies that lack evidence of effectiveness.<sup>15,20–22</sup> Evidence from a smaller-scale assessment of industry drink-driving actions indicates that this concern applies to preventing drink driving as well.<sup>4</sup>

There is strong evidence of the effectiveness of several drink-driving countermeasures. In their book *Alcohol: No Ordinary Commodity*, which was prepared under the auspices of the WHO, Babor et al.<sup>23</sup> comprehensively reviewed the scientific literature on alcohol and public health issues. Examples of their findings on effective drink-driving countermeasures include establishing or lowering the maximum blood alcohol concentration (BAC) limit for drivers and sobriety checkpoints, where police set up roadblocks on major roadways to randomly test drivers’ BAC.<sup>23</sup>

Conversely, the literature also documents drink-driving countermeasures that lack evidence of effectiveness, including designated driver and safe ride programs.<sup>24–28</sup> Designated driver programs are intended to incentivize patrons to abstain from alcohol (e.g., with free nonalcoholic beverages or small prizes) and drive other group members.<sup>27</sup> Safe ride programs aim to reduce drink driving by providing alternative forms of transportation

## ABOUT THE AUTHORS

At the time of the study, Marissa B. Esser, James Bao, and Adnan A. Hyder were with the Johns Hopkins International Injury Research Unit, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. David H. Jernigan was with the Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health.

Correspondence should be sent to Adnan A. Hyder, MD, PhD, MPH, Johns Hopkins International Injury Research Unit, Department of International Health, Johns Hopkins Bloomberg School of Public Health, 615 North Wolfe Street, Suite E-8132, Baltimore, MD 21205 (e-mail: ahyder1@jhu.edu). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints” link.

This article was accepted November 28, 2015.

doi: 10.2105/AJPH.2015.303026

home, such as taxis or vans; however, these programs lack effectiveness.<sup>23</sup> Additionally, when a designated driver or a safe ride is available, people may actually increase their own alcohol consumption.<sup>28,29</sup> Mass media campaigns are generally ineffective if the focus is messages to drivers about limiting drinking<sup>23</sup>; they show evidence of effectiveness only when they are rigorously planned, reach a large enough audience, and are used in combination with other evidence-based prevention strategies to effectively reduce drink driving.<sup>30</sup>

It is not well known whether the industry-funded global initiatives are consistent with evidence-based recommendations for reducing drink driving that have been examined in the public health literature.<sup>23,31</sup> Therefore, we evaluated the content of the alcohol industry's drink-driving actions with respect to the current public health evidence base. We sought to examine the types of drink-driving actions that alcohol producers or their SAPROs have implemented globally. Additionally, in this initial evaluation study, we assessed the feasibility of our methodology for evaluating industry drink-driving initiatives. We limited our study to an examination of initiatives that the industry has categorized as actions to reduce drink driving.

## METHODS

The International Alliance for Responsible Drinking—a newly formed industry organization representing a merge between the International Center for Alcohol Policies and the Global Alcohol Producers Group<sup>32</sup>—maintains an online compendium of industry initiatives for reducing harmful drinking.<sup>5</sup> As of the middle of May 2015, the industry has classified 803 initiatives as drink-driving prevention. Using data exported from the Web site's print view, we sorted the drink-driving actions alphabetically by title and selected every third action for this analysis, obtaining a systematic random sample of 268 initiatives.<sup>33</sup> We identified and removed 2 duplicates, leaving 266 drink-driving actions in this content analysis. This random selection process was intended to generate a sample from a range of sponsors, regions, and country income levels.

We adapted the coding procedures from a research protocol for rating industry initiatives in all action areas (e.g., alcohol availability and pricing policies), which were developed by researchers at the University of Connecticut School of Medicine (Thomas Babor and Kate Robaina, personal communication, February 2015). We extracted information on the sponsoring organization, partners, year, country, and industry-reported evaluation directly from the database. From qualitative summaries of actions (i.e., programs that the industry has implemented), the first 2 authors assigned numeric codes for whether the partners listed included a government agency and for the type of evaluation reported by the International Alliance for Responsible Drinking.

We used country names to define geographic regions, following the WHO's classifications,<sup>34</sup> and income levels, according to the World Bank database.<sup>35</sup> On the basis of the International Alliance for Responsible Drinking's summaries of the actions in the database, we rated the potential for harm or damage from a public health perspective, marketing potential, policy influence, and estimated population reach (small number of people; state, municipality, or large community; or national or large cumulative effect in a population).

We coded each drink-driving countermeasure as 1 of 14 activity types that have been evaluated for evidence of effectiveness in the literature, with each type assigned a number (1–14). We used 2 sources to determine the evidence base from the public health perspective.<sup>23,31</sup> If actions did not fall into any of the 14 activity types, we coded them as “other,” which had 10 subcodes. Following a scale used by Babor et al.,<sup>23</sup> we scored each action's level of evidence on the effectiveness for reducing drink driving: 0 = lack of effectiveness; 1 = limited effectiveness; 2 = moderate effectiveness; 3 = high degree of effectiveness; 9 = no studies have been undertaken or there is insufficient evidence on which to make a judgment. We obtained effectiveness scores for additional activity types from the Delphi expert panel ratings of Nelson et al., which had an outcome category for reducing alcohol-impaired driving.<sup>31</sup> If effectiveness ratings differed in the 2 sources,<sup>23,31</sup> we calculated an average. The average score was applicable only to

sobriety checkpoints (score of 2.5), which was considered highly effective. Other actions that these 2 sources evaluated differently were not part of the sampled actions.

The first 2 authors coded 20 actions independently and discussed discrepancies until consensus was achieved. Both then coded all actions independently, achieving high inter-rater reliability ( $r = 0.73$ ). The authors discussed subsequent coding differences to reach agreement. We tabulated data using Stata version 12.1.<sup>36</sup>

## RESULTS

The majority of the 266 actions in this study were implemented in Europe (61.7%), followed by the Americas (22.2%; Table 1). SAPROs (21.8%) and trade associations (19.6%) sponsored the greatest proportion of the drink-driving actions. Diageo was the leading producer sponsoring drink-driving actions (16.9%), followed by Anheuser-Busch InBev (12.8%). Seventy-six percent of the sampled actions were based in high-income countries, followed by 16.3% in upper-middle-income countries (Table 2). The annual average of industry actions implemented has increased in the past decade. Between 1982 and 2004, 60 actions began, averaging 2.6 per year. The annual average of actions implemented increased to 13.8 in 2005 to 2008 and to 37.8 in 2009 to 2012.

### Partners

Sponsors' partners were not specified for 53.0% of the sampled actions, whereas multiple partner types were specified for 21.4%, such as both a government agency and a nongovernmental organization. In total, sponsors partnering with a government agency were reported for 27.4% of the actions. Among these, 24.7% listed sponsors' partners as police, another 24.7% listed partnering with more than 1 government agency, 20.6% with a transportation-related agency, and 26.0% with another type of government agency or did not specify.

Less than 3.0% listed a health-related agency partner. In 8.7% of the actions, sponsors listed partnering solely with a government agency, which was similar to the 8.3% of actions in which sponsors reported

**TABLE 1—Worldwide Regions Where Industry Drink-Driving Actions Have Been Implemented by Sponsor: International Alliance for Responsible Drinking Online Compendium, 1982–May 2015**

Region <sup>a</sup>	Trade		Diageo, <sup>b</sup> No. (%)	AB InBev, <sup>c</sup> No. (%)	Bacardi-Martini, No. (%)	SABMiller, <sup>d</sup> No. (%)	Other Producers, <sup>e</sup> No. (%)	Heineken, No. (%)	Region Totals, No. (%)
	SAPROs, No. (%)	Associations, No. (%)							
Africa	0 (0.0)	1 (1.9)	7 (15.6)	0 (0.0)	0 (0.0)	4 (17.4)	2 (11.1)	1 (7.7)	15 (5.6)
Americas	6 (10.3)	8 (15.4)	5 (11.1)	22 (64.7)	0 (0.0)	13 (56.5)	4 (22.2)	1 (7.7)	59 (22.2)
Eastern Mediterranean	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Europe	44 (75.9)	40 (76.9)	24 (53.3)	10 (29.4)	21 (91.3)	4 (17.4)	10 (55.6)	11 (84.6)	164 (61.7)
Southeast Asia	1 (1.7)	0 (0.0)	6 (13.3)	0 (0.0)	1 (4.4)	1 (4.4)	0 (0.0)	0 (0.0)	9 (3.4)
Western Pacific	6 (10.3)	3 (5.8)	3 (6.7)	1 (2.9)	0 (0.0)	0 (0.0)	2 (11.1)	0 (0.0)	15 (5.6)
International	1 (1.7)	0 (0.0)	0 (0.0)	1 (2.9)	1 (4.4)	1 (4.4)	0 (0.0)	0 (0.0)	4 (1.5)
Sponsor totals	58 (21.8)	52 (19.6)	45 (16.9)	34 (12.8)	23 (8.7)	23 (8.7)	18 (6.8)	13 (4.9)	266 (100.0)

Note. AB InBev = Anheuser-Busch InBev; SAPROs = social aspects public relations organizations.

<sup>a</sup>According to the World Health Organization's classifications.<sup>34</sup>

<sup>b</sup>Two actions categorized as sponsored by Diageo were labeled as sponsored by East African Breweries Limited, which is a subsidiary of Diageo.

<sup>c</sup>Two actions categorized as sponsored by AB InBev were cosponsored by the Beer Institute and MillerCoors.

<sup>d</sup>Ten actions categorized as SABMiller include those labeled as sponsored by MillerCoors, which is a joint venture of SABMiller and Molson Coors Brewing Company.

<sup>e</sup>Includes alcohol producers not listed in other categories, such as Carlsberg, Brown-Forman, Jose Cuervo, and Pernod Richard.

partnering solely with nonalcohol commercial or retail partners.

### Activity Type and Level of Evidence of Effectiveness

SAPROs and trade associations did not differ significantly from producers in the proportions of actions implemented by level of effectiveness ( $P = .15$ ; Table 3). Of the sampled actions, we coded 42.5% into 5 activity types that have been evaluated in the literature, including designated driver programs (3.8%), ride services (5.6%), mass media campaigns (32.3%), sobriety checkpoints (0.4%), and the installation of ignition interlocks (0.4%; Figure 1). The mass media campaigns generally involved components promoting designated drivers or public awareness of the dangers of drinking and driving. As denoted by the gray bars in Figure 1, designated driver programs, ride services, and mass media campaigns have been scientifically evaluated and found to lack evidence of effectively reducing drink driving; these activities constituted 41.7% of the sample.

Sobriety checkpoints and the installation of ignition interlocks have high levels of evidence of effectiveness for reducing drink driving, suggesting that 0.8% ( $n = 2$ ) of the sampled industry actions were consistent with the evidence of effectiveness. However, it is

noteworthy that both of these interventions included components that potentially limit their effectiveness. First, the Taiwan Beverage Alcohol Forum's Anti-Drink Driving on Halloween sobriety checkpoint action also involved "Promotion-girls dressed in Halloween costume[s who] gave sweets to drivers who passed the test."<sup>5</sup> Second, Carlsberg Sverige's ignition interlock action in Sweden only involved the installation of the device on company trucks and did not involve the general population.

We rated approximately 56.0% of the actions as activity types that have not been scientifically evaluated or for which there is insufficient evidence to make a determination (Table 3). We rated more than one half (51.7%) of these as activities that did not fit into the other categories or that involved multiple independent components, such as allowing young drivers to test their BAC and drive in a simulator (Figure 1). Another drink-driving activity type that is not consistent with the evidence of effectiveness that appears to be common (18.1%) is the distribution of leaflets, stickers, posters, or other handouts. In 14.1% of the actions, the primary purpose was the promotion of "responsible drinking" messages, such as SABMiller's slogan, "Drink responsibly, drive responsibly, live responsibly," and Diageo's campaign that "reminds viewers to drink responsibly and

always arrange a safe ride home." Another 3.8% involved the industry's engagement in research, typically in the form of public opinion surveys.

### Potential Source of Harm, Marketing, and Policy Influence

Two thirds of the actions were possibly harmful or damaging from an evidence-based public health perspective on the basis of current theory or evidence, such as those promoting the increased use of designated drivers that may lead to increased drinking among others in the group (Table 2). Another 1.1% had a high potential; for example, Anheuser-Busch InBev's Educating Young Drivers in Germany action involves having young people "under the supervision of the police, drive twice round a fairly precarious circuit: once when they are sober, and a second time after they have drunk alcohol."<sup>5</sup>

The majority of the actions also have the possibility of serving as brand or company marketing (87.6%), such as the distribution of "promotional leaflets and branded water bottles," "branded taxis," and "branded panels in key car park locations." Most actions (91.4%) did not have the direct potential to influence policies, although it was possible in 5.3% of actions and highly possible in 1.5% of actions. An example of a high policy influence

**TABLE 2—Global Alcohol Industry Drink-Driving Actions by Selected Indicators: International Alliance for Responsible Drinking Online Compendium, 1982–May 2015**

Indicator	No. (%)	Annual Average
<b>Country income level<sup>a</sup></b>		
High	197 (76.4)	
Upper middle	42 (16.3)	
Lower middle	12 (4.7)	
Low	7 (2.7)	
<b>Years implemented<sup>b</sup></b>		
1982–2004	60 (22.6)	2.6
2005–2008	55 (20.7)	13.8
2009–2012	151 (56.8)	37.8
<b>Potential source of harm</b>		
None	80 (30.1)	
Possibly harmful or damaging from an evidence-based public health perspective	178 (66.9)	
High potential to be harmful	3 (1.1)	
Too vague to determine	5 (1.9)	
<b>Potential for marketing</b>		
None	28 (10.5)	
Possible	233 (87.6)	
Too vague to determine	5 (1.9)	
<b>Potential to influence policy</b>		
None	243 (91.4)	
Possible	14 (5.3)	
High	4 (1.5)	
Too vague to determine	5 (1.9)	

<sup>a</sup>According to the World Bank database.<sup>35</sup>

<sup>b</sup>We exported data on year of implementation from the Web site’s print view. We calculated annual averages by dividing the number of actions implemented in the period by the number of years included in the period.

action is Diageo’s UK Drink Driving Policy Network, in which

Diageo partnered with the European Transport Safety Council (ETSC) to establish Europe’s first dedicated Drink Driving Policy Network to promote road safety. The research programme aims to identify best practices for reducing

alcohol-related accidents among repeat drink drivers and novice drivers.<sup>5</sup>

### Industry-Reported Evaluation

The industry reported an evaluation for 36.7% of the sampled actions. Among them,

we found that 17.4% did not meet minimum criteria to be considered an evaluation, such as reporting percentages of people who had certain opinions without any indication of the survey sample size.

We rated another 79.6% of them as process evaluations about implementation of the action, such as “Over 10,000 leaflets were distributed during events.”<sup>5</sup> We found only 3.1% of its evaluated actions to be outcome evaluations measuring change. We did not find that the industry rigorously evaluated any actions to determine the action’s actual effectiveness for reducing drink driving.

### Population Reach

Forty-two percent of the drink-driving actions potentially had national population reach in the country of implementation, commonly through television and radio campaigns. Another 37.2% had nearly state-wide reach, and 13.2% had small population reach.

Population reach was not applicable in 3.4% of the actions, such as the Alcohol Advisory Council of New Zealand’s action that they were “rethinking its current advice on young people drinking.”<sup>5</sup> Descriptions were too vague to evaluate the population reach in 4.1% of the sampled actions.

## DISCUSSION

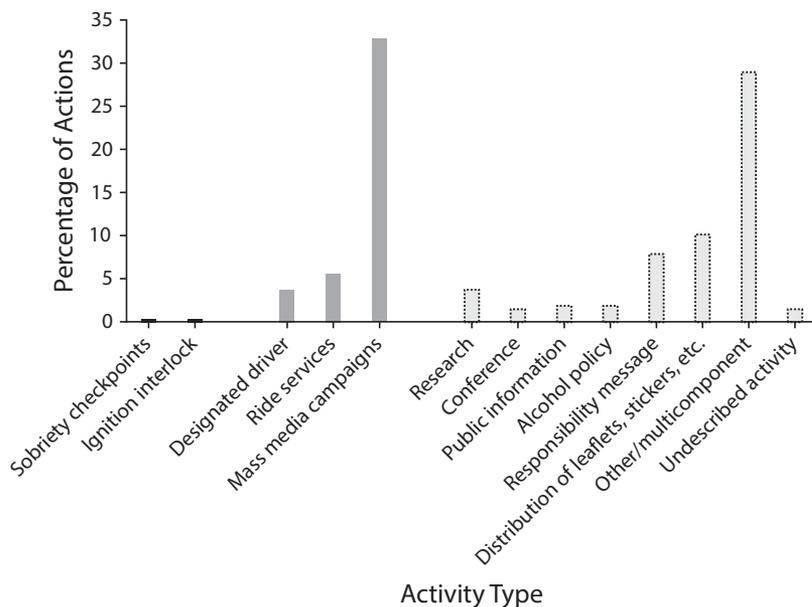
We found that most of the alcohol industry’s drink-driving initiatives are based in high-income countries, particularly Europe and the Americas, aligning with the regions with the highest levels of alcohol consumption.<sup>1</sup> As the alcohol industry increases its presence in low- and middle-income countries,<sup>37–40</sup> the distribution of its drink-driving actions may shift accordingly. The annual average of industry drink-driving actions implemented in the 4 years around the time of the development of the WHO Global Alcohol Strategy (2009–2012) was 2.7 times more than that implemented 4 years earlier (2005–2008) and 14.5 times more than that implemented 23 years earlier (1982–2004).

Our findings suggest that the majority of the alcohol industry global actions to reduce drink driving conflict with the public health recommendations on the basis of scientific

**TABLE 3—Category of Effectiveness of Global Alcohol Industry Actions by Sponsor Type: International Alliance for Responsible Drinking Online Compendium, 1982–May 2015**

Effectiveness Category	SAPROs and Trade Associations, No. (%)	Alcohol Producers, No. (%)	Total No. (%)
Evidence of effectiveness	1 (0.9)	1 (0.6)	2 (0.8)
Lacks evidence of effectiveness	38 (34.6)	73 (46.8)	111 (41.7)
Have not been scientifically evaluated or there is insufficient evidence to make a determination	68 (61.8)	81 (52.3)	149 (56.0)
Undescribed activity	3 (2.7)	1 (0.6)	4 (1.5)

Note. SAPROs = social aspects public relations organizations.



Note. Black bars indicate activities with high evidence of effectiveness for reducing drink driving. Gray bars indicate activities that have been scientifically evaluated and found to lack evidence of effectiveness. Dashed outline bars indicate activities that have not been scientifically evaluated or for which there is insufficient evidence to make a determination.

**FIGURE 1—Global Alcohol Industry Drink-Driving Actions by Activity Type (n = 266): International Alliance for Responsible Drinking Online Compendium, 1982–May 2015**

evidence of effectiveness. Establishing a legal BAC limit for drivers of 0.05 grams per deciliter or lower is recommended for reducing drink driving.<sup>41</sup> The installation of ignition interlocks, a device that prohibits an impaired person from driving the vehicle, can effectively help enforce lowered BAC limits.<sup>31,42</sup>

One study modeled the effect if ignition interlocks were installed on all new cars in the United States and found that more than 84% of injuries and deaths stemming from alcohol-involved road traffic crashes would be prevented.<sup>43</sup> Additionally, the findings from systematic reviews on sobriety checkpoints<sup>44,45</sup> and the Delphi expert panel ratings of Nelson et al.<sup>31</sup> consistently indicate the effectiveness of sobriety checkpoints for reducing drink-driving, particularly if they are frequently implemented and highly visible. Instead of supporting these highly effective interventions, the sampled industry actions involved less effective actions, such as mass media campaigns, designated driver programs or ride services, the promotion of “responsible drinking,” and the distribution of handouts (e.g., leaflets or stickers).

The industry’s use of drink-driving interventions that lack evidence of effectiveness may compromise public health goals. A systematic review on mass media campaigns concluded that such campaigns need to be carefully planned to motivate behavior change, well executed, and used alongside other interventions to effectively reduce drink driving<sup>30</sup>; without these components, they lack evidence of effectiveness.<sup>23</sup> On the basis of the brief descriptions of the industry’s mass media campaigns, it appears that they are typically not used in conjunction with other evidence-based strategies. Furthermore, scientific evidence also points to problems with the industry’s use of designated driver and safe ride programs.<sup>24–28</sup> Although the BAC of designated drivers is often lower than that of nondesignated drivers, designated drivers may still consume alcohol.<sup>46</sup> Drinkers using designated drivers and ride services may consume more alcohol than they would have without these services,<sup>28</sup> increasing the risk of other negative consequences of alcohol use, such as interpersonal violence and injuries.

The promotion of “responsible drinking” is also concerning; these messages

ineffectively promote public health, can stimulate favorable views of the industry, and serve as brand advertising.<sup>47–51</sup> We found that the industry also commonly distributed flyers, leaflets, and small giveaways. Although there is no scientific evidence of effectiveness of these materials in reducing drink driving, they do provide opportunities for marketing and brand exposure. Indeed, we found that overall 88% of the actions contained possible marketing components such as branded materials, branded taxis, and corporate promotions in campaigns. Moreover, with these conflicts between the scientific evidence base and the industry’s implementation of less effective initiatives, our analysis suggested that 67% of the actions had the potential to be harmful or damaging, although this was only highly likely in 1% of them. In this study of industry actions specific to drink driving, 91% of the actions were determined not to influence policies; however, in other regulatory areas, such as pricing and marketing, industry interference has been shown to be detrimental for public health policies.<sup>11,13,14,52</sup>

The alcohol industry did not report evaluations for nearly two thirds (63%) of its actions. Among the reported evaluations, none were rigorous and none compared behavior changes between participants exposed and unexposed to the action to assist in drawing conclusions on the effectiveness of the intervention for reducing drink driving.<sup>53</sup> Although the industry conducted process evaluations for some of its actions (e.g., assessing the number of people who received leaflets), process evaluations do not provide adequate information to gauge changes in drink-driving behavior resulting from its initiatives. Moreover, our finding that 42% of the drink-driving actions had the potential to reach a national audience is disconcerting. These actions may appear to address drink driving, but most have not been evaluated by the industry or public health researchers, and they tend to lack scientific evidence of effectiveness for reducing drink driving. It is challenging for public health authorities to implement evidence-based strategies with such a large population reach.

We found that 27% of the sampled actions reported partnering with a government agency. The WHO has developed guidelines for protecting public health from the tobacco industry and vested interests that explicitly

state partnerships should be rejected.<sup>54</sup> These guidelines can be applied to the alcohol industry as well. In fact, hundreds of public health professionals have expressed concerns about partnering with the alcohol industry, suggesting that industry actions may cast doubt on interventions with a strong evidence base.<sup>20</sup>

The first principle of the WHO guidelines for protecting public health tobacco control policies from the tobacco industry and vested interests states, “There is a fundamental and irreconcilable conflict between the tobacco industry’s interests and public health policy interests.”<sup>54</sup> Applying this principle to the prevention of drink driving, it is clear that there is no role for the alcohol industry (including alcohol producers, SAPROs, and trade associations) in the development and implementation of drink-driving actions around the world.

Nonetheless, some of the leading global alcoholic beverage companies sponsor drink-driving initiatives, including Belgium-based Anheuser-Busch InBev (16.0% of the world share, by production of alcohol) and UK-based SABMiller (9.5% of the world share).<sup>37</sup> However, a greater proportion of actions in this analysis were sponsored by SAPROs and trade associations. Multinational alcohol companies are typically involved with multiple SAPROs and trade associations. For example, Diageo, the leading alcohol producer sponsor of drink-driving initiatives in our study, is a member of 16 SAPROs in 15 countries and 11 trade associations in Europe, Asia, and the United States.<sup>55</sup>

## Strengths and Limitations

This study has 3 main strengths with implications for practice and research. First, the study provides evidence that the global alcohol industry has been engaging in activities to reduce drink driving; however, these actions are largely at odds with the public health evidence base. Second, our findings can be used to support the development of guidelines for limiting the involvement of the alcohol industry and its vested interests in public health road safety initiatives. Third, our study also shows the feasibility of evaluating industry drink-driving actions using a systematic approach.

Nevertheless, this study has limitations. First, we evaluated one third of the drink-driving programs, but it is unknown how well this random sample represents the full 803 industry drink-driving actions as cataloged by the International Alliance for Responsible Drinking.<sup>5,33</sup> Second, we followed a coding framework to increase the reliability of our ratings, although the coding is subject to human misinterpretation of the data. Third, because internal documents from the alcohol industry are not publicly available, our findings reflect only the limited information available in the industry’s compendium of global actions.<sup>5</sup>

## Recommendations

To guard against industry interference in decreasing injuries and deaths from drink driving, an intersectoral approach is recommended.<sup>2,56</sup> Collaborations between health sectors and sectors such as transportation and social welfare can increase countries’ ability to curb drink driving<sup>2</sup> and strengthen their public health infrastructure. Public health professionals and policymakers should resist being distracted by industry partnership propositions or industry-funded programs. Instead, they should focus on implementing and enforcing evidence-based drink-driving countermeasures, such as a BAC limit of 0.05 grams per deciliter or lower for drivers and widespread use of random breath testing and sobriety checkpoints.<sup>23,31,41</sup>

More research is needed on multinational alcohol corporations’ intentions for implementing drink-driving actions, because there are apparent contradictions between their stated intention of reducing drink driving and public health evidence regarding effective strategies for achieving this. **AJPH**

## CONTRIBUTORS

M. B. Esser adapted the research methods, coded industry actions, conducted the analyses, and led in writing the article. J. Bao coded industry actions and contributed to drafting sections of the article. D. H. Jernigan and A. A. Hyder edited sections of the article and provided substantial intellectual contributions. A. A. Hyder supervised the study. All authors approved the final article.

## ACKNOWLEDGMENTS

This work was conducted during the Global Road Safety Program, which is funded by Bloomberg Philanthropies (grant 111882).

The authors thank Thomas Babor, PhD, and Kate Robaina, MPH, for providing their research protocol for rating industry actions.

## HUMAN PARTICIPANT PROTECTION

Approval of a study protocol was not necessary because this study did not involve human research participants.

## REFERENCES

1. *Global Status Report on Alcohol and Health*. Geneva, Switzerland: World Health Organization; 2014.
2. *Global Strategy to Reduce the Harmful Use of Alcohol*. Geneva, Switzerland: World Health Organization; 2010.
3. International Alliance for Responsible Drinking. Reducing harmful use of alcohol: beer, wine and spirits producers’ commitments. 2015. Available at: <http://www.producerscommitments.org>. Accessed November 6, 2015.
4. Babor TF, Robaina K. Public health, academic medicine, and the alcohol industry’s corporate social responsibility activities. *Am J Public Health*. 2013;103(2):206–214.
5. International Alliance for Responsible Drinking. Initiatives reporting: industry actions to reduce harmful drinking. 2015. Available at: <http://initiatives.producerscommitments.org>. Accessed August 12, 2015.
6. Diageo. Diageo annual report 2014. 2014. Available at: <http://www.diageo.com/en-row/newsmedia/Pages/reports.aspx>. Accessed September 11, 2014.
7. Fooks GJ, Gilmore AB, Smith KE, Collin J, Holden C, Lee K. Corporate social responsibility and access to policy elites: an analysis of tobacco industry documents. *PLoS Med*. 2011;8(8):e1001076.
8. Shelley D, Ogedegbe G, Elbel B. Same strategy different industry: corporate influence on public policy. *Am J Public Health*. 2014;104(4):e9–e11.
9. Dorfman L, Cheyne A, Friedman LC, Wadud A, Gottlieb M. Soda and tobacco industry corporate social responsibility campaigns: how do they compare? *PLoS Med*. 2012;9(6):e1001241.
10. Jernigan DH. Global alcohol producers, science, and policy: the case of the International Center for Alcohol Policies. *Am J Public Health*. 2012;102(1):80–89.
11. Babor TF, Robaina K, Jernigan D. The influence of industry actions on the availability of alcoholic beverages in the African region. *Addiction*. 2015;110(4):561–571.
12. Bakke Ø, Endal D. Vested interests in addiction research and policy. Alcohol policies out of context: drinks industry supplanting government role in alcohol policies in sub-Saharan Africa. *Addiction*. 2010;105(1):22–28.
13. McCambridge J, Hawkins B, Holden C. Industry use of evidence to influence alcohol policy: a case study of submissions to the 2008 Scottish government consultation. *PLoS Med*. 2013;10(4):e1001431.
14. Hawkins B, McCambridge J. Industry actors, think tanks, and alcohol policy in the United Kingdom. *Am J Public Health*. 2014;104(8):1363–1369.
15. Anderson P. Global alcohol policy and the alcohol industry. *Curr Opin Psychiatry*. 2009;22(3):253–257.
16. Anderson P. The beverage alcohol industry’s social aspects organizations: a public health warning. *Addiction*. 2004;99(11):1376–1377; discussion 1380–1381.
17. Miller PG, de Groot F, McKenzie S, Droste N. Vested interests in addiction research and policy. Alcohol industry use of social aspect public relations organizations against preventative health measures. *Addiction*. 2011;106(9):1560–1567.
18. McCambridge J, Kypri K, Miller P, Hawkins B, Hastings G. Be aware of Drinkaware. *Addiction*. 2014;109(4):519–524.

19. Holden C, Hawkins B, McCambridge J. Cleavages and co-operation in the UK alcohol industry: a qualitative study. *BMC Public Health*. 2012;12:483.
20. Babor T, Hall W, Humphreys K, Miller P, Petry N, West R. Who is responsible for the public's health? The role of the alcohol industry in the WHO global strategy to reduce the harmful use of alcohol. *Addiction*. 2013;108(12):2045–2047.
21. Casswell S. Alcohol industry and alcohol policy—the challenge ahead. *Addiction*. 2009;104(suppl 1):3–5.
22. Caetano R. About smoke and mirrors: the alcohol industry and the promotion of science. *Addiction*. 2008;103(2):175–178.
23. Babor TF, Caetano R, Casswell S, et al. *Alcohol: No Ordinary Commodity: Research and Public Policy*. 2nd ed. New York, NY: Oxford University Press; 2010.
24. Aresi G, Fomari L, Repetto C, Scolari M. Evaluation of a designated driver intervention to prevent alcohol-related road accidents in the clubs of Milan, Italy. *Adicciones*. 2009;21(4):279–288.
25. Barry AE, Chaney BH, Stellefson ML. Breath alcohol concentrations of designated drivers. *J Stud Alcohol Drugs*. 2013;74(4):509–513.
26. Dermody SS, Cheong J, Walther CA. A study of alcohol use by designated drivers among college students. *J Am Coll Health*. 2012;60(4):310–315.
27. Ditter SM, Elder RW, Shults RA, et al. Effectiveness of designated driver programs for reducing alcohol-impaired driving: a systematic review. *Am J Prev Med*. 2005;28(5 suppl):280–287.
28. Rivara FP, Relyea-Chew A, Wang J, Riley S, Boisvert D, Gomez T. Drinking behaviors in young adults: the potential role of designated driver and safe ride home programs. *Inj Prev*. 2007;13(3):168–172.
29. Harding WM, Caudill BD, Moore BA. Do companions of designated drivers drink excessively? *J Subst Abuse*. 2001;13(4):505–514.
30. Elder RW, Shults RA, Sleet DA, et al. Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: a systematic review. *Am J Prev Med*. 2004;27(1):57–65.
31. Nelson TF, Xuan Z, Babor TF, et al. Efficacy and the strength of evidence of US alcohol control policies. *Am J Prev Med*. 2013;45(1):19–28.
32. International Center for Alcohol Policies. Welcome to ICAP. 2014. Available at: <http://www.icap.org>. Accessed June 17, 2015.
33. Bernard HR. *Social Research Methods: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage; 2000.
34. World Health Organization. About WHO: WHO regional offices. 2015. Available at: <http://www.who.int/about/regions/en>. Accessed May 8, 2015.
35. World Bank. Country and lending groups. 2015. Available at: <http://data.worldbank.org/about/country-and-lending-groups>. Accessed May 8, 2015.
36. *Stata Statistical Software: Release 12.1*. [computer software]. College Station, TX: StataCorp LP; 2011.
37. Jernigan DH, Babor TF. The concentration of the global alcohol industry and its penetration in the African region. *Addiction*. 2015;110(4):551–560.
38. Esser MB, Jernigan DH. Multinational alcohol market development and public health: Diageo in India. *Am J Public Health*. 2015;105(11):2220–2227.
39. Caetano R, Laranjeira RA. A 'perfect storm' in developing countries: economic growth and the alcohol industry. *Addiction*. 2006;101(2):149–152.
40. Babor TF. The gathering storm: alcohol abuse among the Chinese in Asia, and the public health response. *Malaysian J Chinese Stud*. 2014;3(1):1–20.
41. *Global Status Report on Road Safety, 2013: Supporting a Decade of Action*. Geneva, Switzerland: World Health Organization; 2013.
42. Elder RW, Voas R, Beirness D, et al. Effectiveness of ignition interlocks for preventing alcohol-impaired driving and alcohol-related crashes: a Community Guide systematic review. *Am J Prev Med*. 2011;40(3):362–376.
43. Carter PM, Flannagan CA, Bingham CR, Cunningham RM, Rupp JD. Modeling the injury prevention impact of mandatory alcohol ignition interlock installation in all new US vehicles. *Am J Public Health*. 2015;105(5):1028–1035.
44. Bergen G, Pitan A, Qu S, et al. Publicized sobriety checkpoint programs: a community guide systematic review. *Am J Prev Med*. 2014;46(5):529–539.
45. Elder RW, Shults RA, Sleet DA, Nichols JL, Zaza S, Thompson RS. Effectiveness of sobriety checkpoints for reducing alcohol-involved crashes. *Traffic Inj Prev*. 2002;3(4):266–274.
46. Timmerman MA, Geller ES, Glindemann KE, Fournier AK. Do the designated drivers of college students stay sober? *J Safety Res*. 2003;34(2):127–133.
47. *Drink Responsibly (But Please Keep Drinking)*. London, UK: Alcohol Concern; 2015.
48. Pantani D, Sparks R, Sanchez ZM, Pinsky I. "Responsible drinking" programs and the alcohol industry in Brazil: killing two birds with one stone? *Soc Sci Med*. 2012;75(8):1387–1391.
49. Barry AE, Howell SM, Dennis M. Evaluating impaired drivers confidence and intention to "(Please) drink responsibly." *J Safety Res*. 2011;42(2):137–142.
50. Smith KC, Cukier S, Jernigan DH. Defining strategies for promoting product through "drink responsibly" messages in magazine ads for beer, spirits and alcopops. *Drug Alcohol Depend*. 2014;142:168–173.
51. Smith SW, Atkin CK, Roznowski J. Are "drink responsibly" alcohol campaigns strategically ambiguous? *Health Commun*. 2006;20(1):1–11.
52. Pinsky I. The alcohol industry and the World Cup in Brazil. *Addiction*. 2014;109(7):1213–1214.
53. Rosen L, Manor O, Engelhard D, Zucker D. In defense of the randomized controlled trial for health promotion research. *Am J Public Health*. 2006;96(7):1181–1186.
54. World Health Organization. Guidelines for implementation of Article 5.3 of the WHO Framework Convention on Tobacco Control. 2008. Available at: [http://www.WHO.int/fctc/guidelines/article\\_5\\_3.pdf](http://www.WHO.int/fctc/guidelines/article_5_3.pdf). Accessed June 15, 2015.
55. Diageo. Alcohol policy. 2014. Available at: <http://www.diageo.com/en-row/csr/alcoholindustry/Pages/alcohol-policy.aspx>. Accessed June 16, 2015.
56. Matzopoulos R, Myers JE, Butchart A, Corrigan J, Peden M, Naledi T. Reducing the burden of injury: an intersectoral preventive approach is needed. *S Afr Med J*. 2008;98(9):703–705.