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UPDATE ARTICLE

Bridging a historical gap: can changes in perceptions of law enforcement and social deterrence accelerate the prevention of drunk driving in low and middle-income countries?

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Objectives: The dangers of driving while under the influence of alcohol/drugs (DWI) have been well established. Many countries have successfully reduced the incidence of DWI through effective law enforcement. We aim to explore the links between how law enforcement is perceived in cultures with different socioeconomic indicators. Our hypothesis is that social norms around definitions of what constitutes ''right'' vs. ''deviant'' behavior related to DWI directly contribute to the mode and success of law enforcement.
Methods: Road safety professionals from six countries with different levels of DWI rates and enforcement strategies were interviewed regarding the expected local response to a case vignette. Sociodemographic, mortality, and economic indicators for each of these countries were extracted from different sources.
Results: The professionals interviewed described a continuum ranging from unequivocal enforcement and punishment (Australia and Norway) to inconsistent enforcement and punishment with the presence of many legal loopholes (Mexico and Brazil). For the six countries, no apparent correlation was identified purely between alcohol consumption and road traffic mortality. However, there seems to be a correlation between the time period of initial DWI legislation and current gross national income, perceptions of local safety, satisfaction with the local environment, and trust in the national government. Higher levels of these scores are seen in nations in which DWI laws were implemented prior to the 1960s.
Conclusion: Better performing countries seem to have achieved a level of societal agreement that DWI is deviant, generating social stigma against DWI that allows legislation to be enforced. Lessons learned from these countries could help developing countries reduce morbidity and mortality associated with DWI.

Keywords: Alcohol abuse; education; drug side effects; epidemiology; violence/aggression

Introduction

The dangers of driving while under the influence of alcohol/drugs (driving while intoxicated, DWI) have been well established, as have the successes in reducing DWI incidence achieved by many countries, in part through effective law enforcement.[1-4] In a previous paper, we addressed the gap between North and South American countries in the implementation and enforcement of DWI prevention strategies, using the United States/Canada vs. Brazil as case examples in relation to a specific vignette of a drunk driver who refused breathalyzer testing citing his constitutional right to avoid self-incrimination.[5] The focus of our discussion was on the need for objective changes in data collection and legislation/enforcement. We thus proposed a three-pronged strategy to close this North-South American gap, highlighting the following actions: a) systematic collection of road traffic crash/injury/death as well as risk factor data, b) passage of laws without loopholes requiring compliance with blood alcohol content (BAC) testing, and c) provision of appropriate training and equipment to the police concomitant with vigilant enforcement.

Critical to the effective enforcement of DWI laws and policies in any country is the perception of both the general public and the law enforcement community regarding the dangers of DWI and the importance of enforcement. Cultural norms and perceptions enable individuals to distinguish "right" from "wrong," and social harmony is preserved by enforcing laws that prevent behaviors that are considered "deviant."[6] As those boundaries change, with some developing countries – as in the case of Brazil – introducing new DWI laws, it is important to understand how societal views of right and deviance change accordingly. There are various deterrence theories that could be used to explain differences

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in societal perceptions of DWI behavior within the continuum between right and deviant. Here, we explore the associations between socioeconomic indicators and how enforcement and the role of an enforcement agent are perceived in different cultures. Therefore, in this paper we approach the subject of DWI and its differential enforcement from a complementary perspective, as opposed to our previous, more objective discussion; we explore the theme of social deterrence and how it affects local perception of enforcement, hoping to increase the debate on this topic. Our hypothesis is that social norms around definitions of what constitutes right vs. deviant behavior related to DWI are at different points along the continuum in different countries, and that these norms directly contribute to how enforcement of DWI laws is carried out.

As in our previous discussion, a case-based approach was used. Two key questions were proposed through a vignette to road safety professionals from six countries (Argentina, Australia, Brazil, Mexico, Norway, and the United States). We aimed to understand how the vignette scenario might play out given the current state of DWI enforcement in these countries. The choice of professionals was based on convenience. There was no attempt to include a representative sample; rather, this should be seen as an open experiment. We summarize the descriptions of enforcement actions and sanctions provided by each professional and correlate these descriptions to objective data (comparative road traffic mortality rates/100,000 inhabitants and social and economic development parameters for each country). We offer insight into different theories of social control, and finally suggest how countries might explore the idea of social change in order to promote the perception that DWI is a deviant behavior that should have appropriate repercussions.

Case vignette

Downtown, Saturday, 2 a.m. Two male friends, ages 27 and 28, were at an end-of-year gathering in a pub in a bohemian neighborhood. Both had several beers along with shots of liquor through the course of the evening. One of them decides to drive home instead of calling a taxi, and offers his friend a ride; they live just one block apart, and the streets are empty. Both are aware of the local DWI laws, but decide to risk it. However, they are surprised and pulled into a police roadblock. The driver's documents are in order, but the officer, after observing clear signs of intoxication, requests an alcohol breath test. The man refuses, invoking invasion of his individual rights based on the country's constitution.

Questions proposed to in-country professionals

In your country: A) what would be the officer's attitude and actions from this point forward? B) Which would be the repercussions/penalties as a result of the driver's behavior? The specialists provided responses based on their country's laws. They were also asked to speculate on the perceived role of the traffic agent (Table 1).

Table 1 Summary of narratives: perceived role of traffic officer and descriptive balance between individual and public constitutional rights

Country (in alphabetical order)	Individual vs. public, constitutional rights, and perceived role of traffic agent
Argentina	Constitutional rights are guaranteed, but the "self-incrimination" aspect is not accepted in this case. There is a tendency to penalize the individual when public health is an issue, but in some cases this is still a "fuzzy approach" - for example, although the law defines a sentence of 1-10 days in prison for a positive breath test, in practice it does not happen. There are marked differences between written law and practice, and officers sometimes are not supported in their enforcement practices.
Australia	There is no question about public vs. individual rights. Penalties are severe from the start, and refusal is a serious punishable offense, although there are variations in size of fine and length of sentencing across provinces. The role of the officer seems to be final.
Brazil	There seems to be a "legalistic approach" - individualities come first, public health comes later, since there are many loopholes and sequences of steps, which tend to bureaucratize the process. Sanctions do exist but are rarely enforced - only in the extremely severe cases (death with a blood alcohol concentration over 0.06 mg/dL). In most cases there is a tendency towards "community service" as the most typical sanction. The role of the officer may be questioned in different spheres of the process. Perception of enforcement varies, since subjective issues, such as the judge's or the officer's perception of intoxication will define sanctions when a breath test is not available.
Mexico	Breath tests are not always available, which would then privilege the individual vs. the public. A breath test refusal would generate a sanction but the driver can appeal to the court in a separate administrative process. There are increased sanctions that vary from state to state, including administrative detention of up to 36 hours, or prison in some states. Enforcement is extremely variable from region to region, and sanctions will vary accordingly.
Norway	Intoxicated drivers are seen as dangerous to public health, with no margin for interpretation or subjective measures. The driver may be taken by force if refusing to provide a sample. Since penalties are extremely severe (2 years for refusing a breath test) it is implied that the authority of the acting officer is unquestionable.
United States	Laws vary by state, but in general, public good is protected in most states - such as through implied consent. Even if not driving, a person may be penalized if it is understood s/he was in "actual physical control of the car" (for example, sitting inside the vehicles and holding the keys). Refusal to follow police instructions is considered punishable. A driver may be convicted even when refusing to provide a test - and the refusal may be an aggravation during the hearing.

Table 2 summarizes income level as defined by the World Bank,[7] gross national income (GNI) per capita,[8] human development index (HDI),[9] per capita alcohol consumption, and road traffic mortality rate per 100,000 inhabitants for the six countries in this study. The HDI emphasizes the contribution of people and their capabilities as the ultimate criteria for assessing development, rather than economic growth alone. The HDI thus covers dimensions like health status, education, and life standard.[9] Table 2 also shows the outcomes of three selected questions from the Gallup World Poll.[10] For these six countries, there is no apparent correlation purely between alcohol consumption and road traffic mortality. However, there does seem to be a correlation between the time period of initial DWI legislation and current GNI, perceptions of local safety, satisfaction with the local environment, and trust in the national government. Higher levels of each of these scores are seen in nations in which DWI laws were implemented prior to the 1960s.

Road traffic mortality rates were compared in the six countries from 1996 until 2014 (Figure 1), utilizing data from the Pan American Health Organization (Argentina, Brazil, Mexico, and the United States),[21] from the Norwegian Organisation for Economic Co-operation and Development (OECD),[22] and from the Australian Transport Safety Bureau.[23] There has been a notable and ongoing decline in road traffic mortality rates in Norway and Australia, as opposed to an apparent increase in recent years in Brazil.

Discussion

The narratives of how DWI regulations are enforced in the different countries indicate that the perceived role of the traffic authority as described in Table 1 is quite variable: it ranges from strict and unquestionable enforcement of law, as is the case in Australia and Norway, to an array of legal interpretations and loopholes within the legal system, as seen in the examples of Mexico and Brazil. Using local safety, community satisfaction, and trust in the national government as proxy measures of how the general public views the role of enforcement – in this case enforcement of DWI legislation by the traffic authority – may be useful to pinpoint where these countries stand within the continuum of acceptable vs. deviant behavior in regard to DWI. In our exercise, countries with more economic growth and higher income and HDI were also the ones with more favorable perceptions of safety and public trust. We also noted a connection between high HDI and low road traffic mortality vs. low HDI and high road traffic mortality. The HDI is a composite index encompassing life expectancy, education, and indicators of per capita income. The World Health Organization (WHO) has shown a similar correlation, with improving numbers of road traffic deaths in countries with higher HDI.[11]

Of note, findings of strict enforcement and the perception of DWI as a deviant behavior do not seem to correlate with the amount of alcohol consumed per capita. This suggests that alcohol consumption itself is

Table 2 Socioeconomic indicators, percentage of alcohol consumption, implementation of DWI laws, and selected Gallup World Poll questions in six countries, ranked by HDI*

Country	Classification by the World Bank	Gross national income per capita (current US$, 2014)	HDI rank 2013	% road traffic deaths involving alcohol[11]	Average per capita alcohol consumption (L of pure alcohol) 2008-2010[12]	First DWI/DWI – BAC law implementation	Gallup question on perception of safety (%)[10]	Gallup question on satisfaction with the community (%)[10]	Gallup question on trust in the national government (%)[10]
Brazil	Upper middle income	11,760	0.744 (79)	NA	8.7	1966-1997[13,14]	46	74	46
Mexico	Upper middle income	9,980	0.756 (71)	23%	7.2	Municipal laws	54	79	36
Argentina	High income non-OECD	14,560	0.808 (49)	33%	9.3	1995[15]	45	82	42
United States	High income OECD	55,200	0.914 (5)	32%	9.2	1910 (New York)-1939 (Indiana)[16,17]	74	85	35
Australia	High income OECD	64,680	0.933 (2)	30%	12.2	1909-1957[18]	65	90	42
Norway	High income OECD	103,050	0.944 (1)	15%	7.7	1926-1936[19,20]	87	92	66

BAC = blood alcohol content; DWI = driving while intoxicated; HDI = human development index; NA = not available; OECD = Organisation for Economic Co-operation and Development.
* Selected Gallup World Poll questions: a) perception of safety: "Do you feel safe walking alone at night in the city or area where you live?"; b) trust in other people: "Generally speaking, would you say that most people can be trusted or that you have to be careful in dealing with people?"; c) satisfaction with community: "Are you satisfied or dissatisfied with the city or area where you live?"; trust in national government: "In this country, do you have confidence in the national government?"

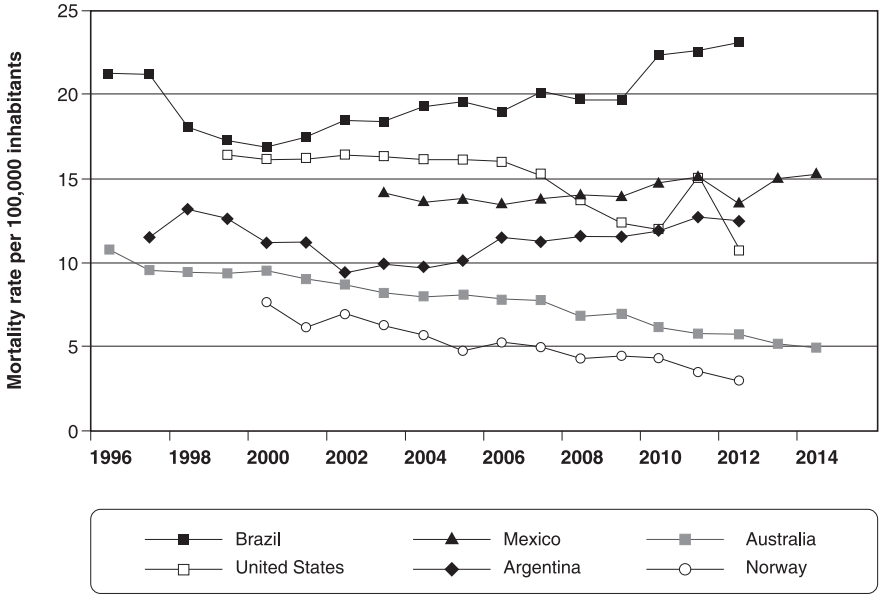

Figure 1 Comparative road traffic mortality rates/100,000 inhabitants in six countries (1996-2014)

not regarded as a deviant behavior in these countries, but rather the decision to drive while impaired. This finding corroborates the idea that successful DWI reductions are ultimately linked to the perceptions regarding enforcement and DWI as deviant, and to how these perceptions are constructed, developed, and emphasized in each country. It appears that the perceived legitimacy of a sanctioning traffic authority with regards to enforcing DWI – as well as the appropriate balance between the public good and individual rights – is not as strong in countries where DWI is not perceived as a deviant behavior. Also, there seems to be a relationship between this and social and economic development.

We do not intend to oversimplify the apparent correlations between the actual enforcement of DWI, measures of economic development and public trust, and rates of road traffic mortality in these six countries; obviously, correlations are murky. Instead, we have attempted to shed light on some of the dynamics involved in the perceptions of deterrence against impaired driving, and how these are represented in selected countries vis-è-vis their socioeconomic indicators, general economic status, and perceived safety, satisfaction and trust in their respective governments. The three countries which we identified as having higher perceptions of DWI as a deviant behavior (the United States, Australia, and Norway) are also the countries where DWI law enforcement has been implemented for a longer period of time, which supports the argument that public perception of enforcement has to do with a "culture" of public safety and importance of abiding by the law. There are various behavior theories that may help corroborate that perception.

Deterrence theory, when applied to alcohol and drug-impaired driving, implies that discouraging illegal driving behavior is based on perceived certainty, swiftness, and severity of punishment; its practical implications have been discussed in the literature for several decades.[24-28] A useful conceptualization is provided by Lapham & Todd,[29] quoting Gibbs,[30] who defined general deterrence as "the effect of law enforcement on the behavior of those in the general driving public who have not been punished for a crime, including those who have engaged in illegal behavior and those who have not." Arguably, there are specific circumstances preventing the application of this general concept to all drivers, because the implication that awareness results in changes in behavior may not operate in extreme cases. Social control theory, in turn, takes the original concept of deterrence and expands it into the social realm by considering potential variations in behaviors due to threat or punishment experiences.[29] When compared to deterrence theory, social control theory is drawn from a broader array of individual behaviors, thus including behaviors that are more extreme or deviant. It has been argued that deterrence theory lacks generalizability by solely relying on examples from the general population, instead of focusing on drivers that have been convicted of DWI. Thus, from a social control theory perspective, there would be "informal sanctions" associated with DWI, such as social stigma, which are potent mechanisms that impact an individual's behavior.

Other scholars use deviance theory to explain societal reactions to behaviors such as DWI.[31] Deviance theory relies on the construct of a moral grounding for social norms, thus criminalizing conditions or behaviors that are markedly different from the norm.[32] For example, perceptions that sanctions are fair would increase compliance with the law. The perception of fairness has two aspects: a) justice – the penalties fit the crime, and b) equality of treatment – all offenders receive the same sanctions. If individuals do not agree with the morals underlying the social norms, or if there is a sense of unjustness from associated penalties, this perception of formal sanctions as unfair may encourage further offending behaviors.

From our perspective, countries that have been more successful in reducing DWI behavior and have moved further along the continuum of a general cultural consensus that DWI is deviant might have employed measures drawing on all three of these theories. Deterrence, as explained by deviance theory, requires unequivocal overarching laws penalizing DWI behavior without opportunities for loopholes. Deterrence theory would then posit that in the presence of sufficient trust in the enforcement system, there would be a belief that drunk drivers would always be caught and punished, thus deterring individuals from engaging in this behavior. As this belief became more pervasive, social control theory would suggest that a cultural shift would occur in which there would be a social stigma attached to DWI. It is thus possible that the "culture" of absolute measures, as in countries where DWI deterrence has been disseminated for many decades, plays an important role. These theoretical approaches can in fact be complementary in countries with a potent history of deterrence in contrast with countries where the culture of deterrence related to DWI is newer and the behavior does not have a strong social stigma attached to it. One might in fact speculate about which approaches would be most useful for developing an anti-DWI agenda in countries where this is not occurring effectively.

Figure 1 shows clear reductions in road traffic mortality rates in the United States, Norway, and Australia when compared to Argentina, Brazil, and Mexico. All six countries are considered upper middle income or high income by the latest World Bank classification. Argentina is considered a country of high income by these cutoffs, although its per capita GNI is closer to that of countries such as Brazil and Mexico. It is important to note however, that these are not alcohol-related deaths statistics; we chose to use overall road traffic mortality instead, because alcohol-associated traffic mortality statistics are not entirely reliable in all of these countries. Again, limiting the interpretation of these mortality reductions to a single approach would be naïve – but these findings do support the theoretical stance we are trying to convey.

Can we use country profiles as a model to promote reduction in DWI in developing countries?

Our exercise suggests there are "better performing" countries among the six that we chose. Of course one could argue that this was a "convenience sample," and that a broader set of countries, with robust analyses of these and other sources of data, might generate a different perspective. However, as is the case of Brazil, Argentina, and Mexico, many developing countries may not afford or have the capability to produce that amount of information, so there should be ways in which they could capitalize on information that is already available. In our exercise, these better performing countries seem to have achieved a level of societal agreement regarding DWI as deviant, generating social stigma against DWI, along with a sense of fairness associated with DWI laws that allows these laws to be unequivocally and emphatically enforced. How can other countries benefit from this assessment? We offer the following to do list for countries that are closer to the other end of the continuum, where DWI is not seen as completely deviant and enforcement is not necessarily perceived as enhancement of the public good:

- **Have a robust set of rules and legislation that is simple, focused, and straightforward.** Countries which allow for too many loopholes or an excessive number of steps in the processing of DWI sanctions may create a sense of mistrust in government actions as well as a perception of weakness in their enforcement structure. It seems that the countries that have more satisfactory actions (and perceived authority) in enforcing the law are the ones that have made it easier for the general public to understand the concepts of safety, fairness, justice, and ultimately, deviance.
- **Align federal, regional, and local legislation** so that sanctions and fines are perceived as fair, equal and symmetrical across the country. Countries with strong state or municipal authorities need to ensure that local laws are consistent with national and state legislation. This conveys a straightforward message to the general public, without creating differences in the perceptions of deviance in DWI behavior or in the rules of enforcement across geographic boundaries.
- **Develop interventions grounded in social control or deterrence theory to promote social stigma associated with DWI** and help discriminate deviant from safe driving behaviors. As shown in Table 2, laws have been in place for almost a century in some countries, whereas other countries such as Brazil and Argentina have only recently implemented their first regulations. However, it is hoped that establishing a culture around DWI as deviant behavior should not take a century to achieve. Countries may be able to shape interventions according to social behavior theory and lessons learned from better-performing countries in order to accelerate the process toward reducing DWI-associated morbidity and mortality.
- **Ensure the translation of written law to practical, systematic implementation of measures.** The authority afforded to a law enforcement official or court judge needs to be strong in order to achieve effective social control. The officials tasked with enforcing DWI laws in some countries are members of a separate traffic authority, not necessarily equivalent to other police officials. In order to achieve effective enforcement and a subsequent cultural shift regarding DWI control, the individuals responsible for enforcing DWI legislation must be given the authority and eventually the respect necessary to carry out their tasks.

Clearly, there are examples of societies in which alcohol is widely available and used that have achieved a cultural perception that driving while intoxicated is deviant behavior punishable through clear and unequivocal laws. We believe that such a change is possible in most societies, with enormous impact on this preventable cause of morbidity and mortality. Exercises such as the one we have described in the present article may help bridge this gap.

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Disclosure

The authors report no conflicts of interest.

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