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Challenges associated with drink driving measurement: combining police and self-reported data to estimate an accurate prevalence in Brazil

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KEYWORDS

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ABSTRACT

Background: Drink driving is an important risk factor for road traffic crashes, injuries and deaths. After June 2008, all drivers in Brazil were subject to a "Zero Tolerance Law" with a set breath alcohol concentration of 0.1 mg/L of air. However, a loophole in this law enabled drivers to refuse breath or blood alcohol testing as it may self-incriminate. The reported prevalence of drink driving is therefore likely a gross underestimate in many cities.
Objective: To compare the prevalence of drink driving gathered from police reports to the prevalence gathered from self-reported questionnaires administered at police sobriety roadblocks in two Brazilian capital cities, and to estimate a more accurate prevalence of drink driving utilizing three correction techniques based upon information from those questionnaires.
Methods: In August 2011 and January-February 2012, researchers from the Centre for Drug and Alcohol Research at the Universidade Federal do Rio Grande do Sul administered a roadside interview on drink driving practices to 805 voluntary participants in the Brazilian capital cities of Palmas and Teresina. Three techniques which include measures such as the number of persons reporting alcohol consumption in the last six hours but who had refused breath testing were used to estimate the prevalence of drink driving.
Results: The prevalence of persons testing positive for alcohol on their breath was 8.8% and 5.0% in Palmas and Teresina respectively. Utilizing a correction technique we calculated that a more accurate prevalence in these sites may be as high as 28.2% and 28.7%. In both cities, about 60% of drivers who self-reported having drank within six hours of being stopped by the police either refused to perform breathalyser testing; fled the sobriety roadblock; or were not offered the test, compared to about 30% of drivers that said they had not been drinking.
Discussion: Despite the reduction of the legal limit for drink driving stipulated by the "Zero Tolerance Law," loopholes in the legislation permit many drivers under the influence of alcohol to act with impunity. In this context the police/traffic officers are often powerless to enforce the law and thus drink driving continues to go unchecked.
Conclusion: Strong legislation and effective enforcement are necessary to reduce the prevalence of this dangerous behaviour. Correction techniques allow calculation of a truer prevalence of drink driving, which can assist police and policymakers alike to redirect resources and align strategies.

Introduction

Road traffic crashes affect thousands of people every day, and are a growing problem in large cities, especially in low- and middle-income countries (LMICs) - where more than 90% of road traffic deaths occur. Road traffic injuries (RTIs) result in economic costs of around 1.0 to 1.5% of GDP in these countries. Additionally, social costs related to medical treatment, lost economic productivity, and intangible costs associated with the loss of lives are hugely detrimental to families and nations alike.[1,2] In 2011, approximately 43,000 people died as a result of crashes on Brazilian roads.[3] Of these deaths, as is the case in other LMICs, a high percentage was associated with alcohol. According to isolated studies from select state capitals, between 32.2 and 47% of fatal road traffic victims were under the influence of alcohol of any quantity at the time of the crash.[4-6]

Among the interventions to reduce mortality associated with alcohol consumption, the most effective are those that reduce the legal limit for drinking and driving, mandate random breath testing at sobriety checkpoints, or prescribe harsh penalties,

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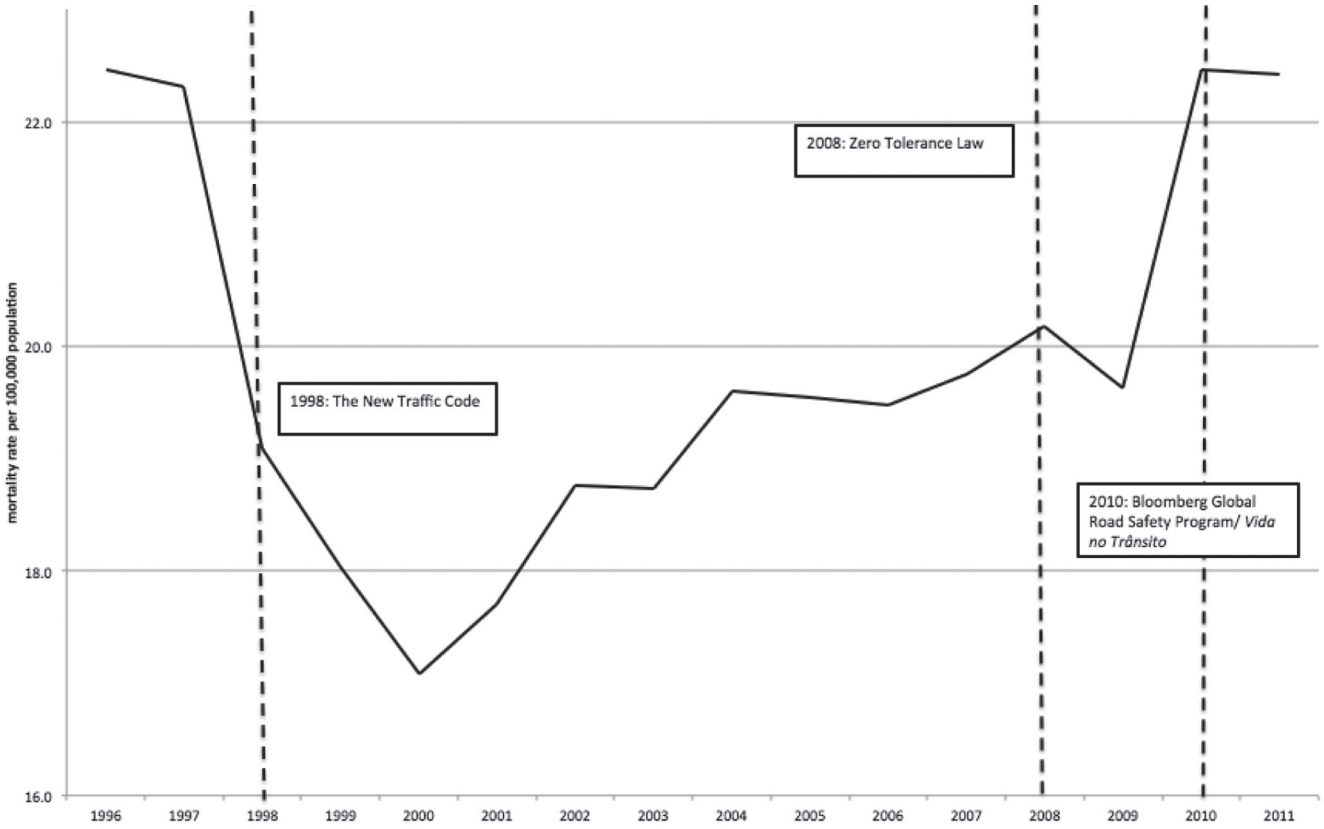

Figure 1. Road traffic mortality rate per 100,000 population, Brazil, 1996-2011. Source: Brazil, Ministry of Health, 2012. Note: deaths considering ICD-10: V01-V89.

such as fines and or suspension of driving licence, along with treatment for recidivist drinking while intoxicated (DWI) offenders.[7-12] In 1998, Brazilian law ("the New Traffic Code") reduced the legal blood alcohol concentration (BAC) limit to 0.06% (0.6 g of alcohol/L of blood) and established a penal system for drink driving offenses among other things.[13] After the law went into effect, the road traffic mortality rate declined, from approximately 21 to 17 per 100,000 population in the period 1998 to 2000 (Figure 1). Although this downward trend appears to precede the "New Traffic Code;" but as Kume et al (2007) observed, there was a 5% reduction in deaths from traffic crashes after the law.[14] Moreover, the legal impact was not formally evaluated. From 2001 onwards the trend inverted and the road traffic mortality rate rose from 17 to 20 per 100,000 population before additional legislative measures were put into place.

In 2008 a new "Zero Tolerance Law" was approved by the Brazilian legislature which reduced the alcohol limit to a BAC of 0.02% (or a breath alcohol concentration (BrAC) to 0.1 mg/L of air) and authorized more severe penalties for drink driving offenders including the arrest of a driver found with a BAC of 0.06% or higher.[15] Implementation of the "Zero Tolerance Law" had no observable effect on the rate of fatal road traffic injuries: the rate rose from 20 to 22 per 100,000 population in the period 2008 to 2011. This result may have been partially due to a loophole in this law, caused by a controversial interpretation of an unrelated pact: the Pacto de São Jose (American Convention on Human Rights). The driver may invoke the pact to refuse to perform a breathalyser test or be subject to a blood test so as not to self-incriminate. Thus police and traffic officers could not uniformly enforce existing legislation, such that the reported prevalence drink driving may be grossly underestimated. Studies have shown that even experienced police officers do not always correctly identify those under the influence of alcohol.[16] In addition to the issue regarding the comprehensiveness of the legislation, local police do not routinely report drink driving related statistics and there are often delays in national- and state-level injury surveillance systems, especially as regards alcohol involvement.

Drink driving is a risk factor targeted by the *Vida No Trânsito* project, an initiative financed by Bloomberg Philanthropies as part of their Global Road Safety Programme (formerly known as the "Road Safety in 10 Countries Project" or "RS-10," and hereafter referred to as "The Global Road Safety Programme" or "the programme"), to reduce road traffic injuries and fatalities in LMICs.[17] In Brazil, since 2010, a consortium of partners including World Health Organization/Pan American Health Organization, the Global Road Safety Partnership, and Brazilian ministries, including Health and Transport, have been implementing intervention activities such as social marketing, data linkage, infrastructure improvements and police training in five Brazilian state capitals: Belo Horizonte, Minas Gerais; Campo Grande, Mato Grosso do Sul; Curitiba, Paraná; Palmas, Tocantins; and Teresina, Piauí.

This study aimed to: 1) compare the police-reported prevalence of drink driving with self-reported drink driving practices gathered from questionnaires administered at police sobriety roadblocks in two Brazilian capital cities (Palmas, Tocantins and Teresina, Piauí) during 2011 and 2012; and 2) estimate a truer prevalence of drink driving utilizing three corrections. This is the first study which quantifies the prevalence of drink driving in Palmas and Teresina.

Methods

During the periods of August 2011 and January-February 2012, the Center for Drug and Alcohol Research at the Universidade