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# Motor vehicle driving after binge drinking, Brazil, 2006 to 2009

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## ABSTRACT

The present study aimed to analyze the proportion of adults who drive under the influence of alcohol in the Brazilian capitals and in the Federal District, after Law 11,705 was established. Data from the *Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico* System (VIGITEL – Surveillance System of Risk and Protective Factors for Chronic Diseases by Telephone Interview) were analyzed. In 2008, 1.5% of individuals interviewed reported having driven a motor vehicle after binge drinking in at least one occasion. The frequency of adults who drove after binge drinking remained between 1.8% and 2.2% in the eight months preceding the Law, decreased in the month following its establishment, and increased again two months later, reaching a maximum of 2.6% by the end of 2008 and returning to the initial levels in the first months of 2009.

**DESCRIPTORS:** Alcohol Drinking, legislation & jurisprudence. Automobile Driving, Accidents, Traffic, prevention & control. Risk Factors. Chronic Disease, prevention & control. Health Surveys.

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## INTRODUCTION

During the 60<sup>th</sup> World Health Assembly, held in 2007 and representing 193 WHO member countries, binge drinking was shown to be responsible for 3.7% of deaths and associated with 4.4% of diseases in the world. In the Americas, 8.7% of mortality in men is due to chronic alcoholism.<sup>a</sup>

The literature shows an association between binge drinking and occupational accidents, and between episodes of violence and traffic accidents.<sup>3</sup>

Studies show that different blood alcohol concentrations cause several neuro-motor changes: 0.3 dcg/l, which corresponds to one serving of alcoholic beverage with 14 g of alcohol, causes loss of attention, false perception of speed, euphoria and difficulty in discriminating lighting conditions in space. Concentrations of 0.6 dcg/l cause an increase in time of reaction and sleepiness and of 0.8 dcg/l may lead to loss of peripheral vision, decrease in discerning lighting conditions and worse performance of routine activities.<sup>4</sup>

These pieces of evidence influenced the Brazilian Congress to implement Law 11,705 in 2008, which reduces the blood alcohol level allowed to zero,

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Received: 6/13/2009  
Approved: 8/18/2009

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<sup>a</sup> World Health Organization. World Health Assembly closes: Agreement reached on influenza virus sharing, intellectual property. Geneva; 2007[citado 2009 abr 08]. Disponível em <http://www.who.int/mediacentre/news/releases/2007/wha02/en/>

increases the administrative penalty and criminalizes drivers who drive with 0.6 dcg of alcohol or more per liter of blood.<sup>a</sup>

Thus, binge drinking constitutes a public health problem and monitoring it is essential to find out consumption patterns and more vulnerable population segments, crucial aspects to subsidize public policies of health promotion and prevention of risk behavior. In 2006, the Brazilian Ministry of Health implemented the *Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico* System (VIGITEL – Surveillance System of Risk and Protective Factors for Chronic Diseases by Telephone Interview) in the 26 state capitals and in the Federal District. VIGITEL included binge drinking monitoring and the question of driving a motor vehicle after binge drinking was incorporated into this system in 2007.<sup>2</sup>

The present study aimed to analyze the proportion of adults who drive under the influence of alcohol in Brazilian capitals and in the Federal District after Law 11,705 was established.

## METHODS

Every year, a little over 54,000 individuals aged 18 years or older are interviewed by VIGITEL and a minimum of 2,000 interviews are conducted per city.<sup>2</sup> One of the interview questions was about alcohol consumption. Consumption above five servings of alcoholic beverages for men and above four for women, at the same time and in the last 30 days, was considered excessive. Those who reported excessive consumption were asked whether they had driven a motor vehicle after drinking.

In 2007, VIGITEL began data collection in July; in 2008, in April 2008; and in 2009, in January. In 2007 and 2008, collection ended in December. Overall, 54,251 individuals were interviewed in 2007; 54,353 in 2008; and 22,009 in 2009, until May of this year.

The frequency of binge drinking and driving, according to age and level of education, was analyzed in 2008 and compared every month in the periods assessed by VIGITEL between 2007 and March 2009, considering a 95% confidence interval and 5% significance level. Data were weighted, according to the 2000 census sociodemographic distribution, to represent each city's total adult population.<sup>2</sup>

## RESULTS

Data from 2008 for the entire adult population ( $\geq 18$  years of age) of the 27 cities studied showed that 1.5% ( $n=815$ ) of individuals reported having driven a motor vehicle after excessive alcohol consumption, in at least one occasion and in the last 30 days. This proportion was higher ( $p<0.05$ ) in men (3.0%) than in women (0.3%). The practice of driving after excessive alcohol consumption showed higher frequency in the 25-to-34-year age group (4.0% in men and 0.7% in women) and in the "more than 11 years of school" level of education (5.6% in men and 0.9% in women). In 2007, these frequencies were 2.0% in the general population, 4.0% in men and 0.3% in women.

The Figure shows the frequency of adults who drove after excessive alcohol consumption remained between 1.8% and 2.2% in the months preceding the establishment of Law 11,705, subsequently decreasing to 1.3% in July, the month following the establishment of this Law. The lowest frequency recorded was 0.9%, in August 2008, which subsequently increased in September and October, reached 2.6% in December, and finally decreased again in the beginning of 2009. However, in May of the following year, this frequency increased again, reaching a maximum of 2.8%.

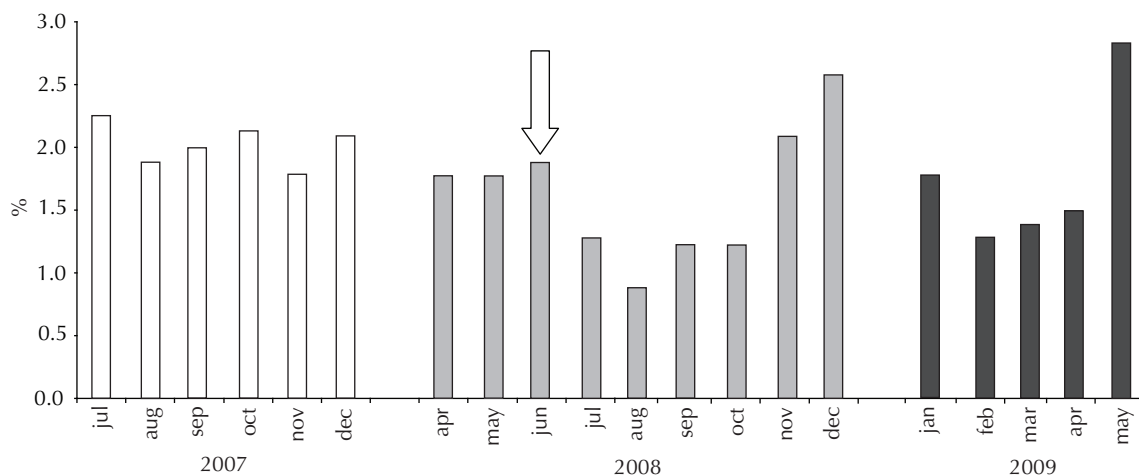
## DISCUSSION

This national population-based study,<sup>1</sup> performed in 2005/2006, shows that daily alcohol consumption reaches more than 7% of the population above 34 years of age and that 22% of young adults between 18 and 24 years of age drink alcohol one to four times a week, more frequently among men. Between 18 and 24 years of age, 40% report binge drinking in the last 12 months, 37% between 25 and 34 years of age, 28% between 35 and 44 years, 20% between 45 and 54 years, and finally decreasing to 10% among those aged 60 years or older. In addition, this study shows that 8.2% of men report frequently driving after alcohol consumption.

According to the WHO, daily alcohol consumption varies from 1.4% in India to 31.8% in Colombia, with riskier and more frequent consumption patterns found in low- and average-income countries, reaching between 4% and 69% of drivers, 18% to 90% of pedestrians, and 10% to 28% of motorcyclists involved in traffic accidents.<sup>4</sup>

Studies performed in several countries emphasize the evidence that the adoption of legal measures that

<sup>a</sup> Brazil. Law 11,705 from June 19th, 2008. It changes Law 9,503 from September 23rd, 1997, which establishes the Código de Trânsito Brasileiro (Brazilian Traffic Code) and Law 9,294 from July 15th, 1996, which deals with restrictions on the use and advertisement of smoking products, alcoholic beverages, medications, therapies and agrochemicals, following paragraph 4 of article 220 of the Federal Constitution, to reduce alcoholic beverage consumption among motor vehicle drivers, in addition to other measures. Diário Oficial Uniao. 20 jun 2008; Seção 1:1.



Note: The arrow shows the month when the Law was implemented.

**Figure.** Frequency of adults who reported driving after binge drinking, before and after the establishment of Law 11,705. Brazil, 2007-2009.

regulate blood alcohol level and driving is effective to reduce traffic accidents.<sup>4</sup> In Australia, there was a reduction of almost 50% in alcohol consumption as cause of accidents from 1981 to 2001. These data show the importance of establishing legal measures and policies to restrict alcohol consumption and motor vehicle driving, control of alcoholic beverage advertisements, prohibition of purchases by minors, restriction of hours when alcoholic beverages are sold, and continuous inspection measures, aiming to reduce the risk of exposure to accidents resulting from binge drinking.<sup>4</sup>

In Brazil, the extensive promotion of Law 11,705 in the media and the population's great adherence to the measure led to the immediate reduction in motor vehicle driving after excessive alcohol consumption in the first months following the establishment of this Law. In the present study, VIGITEL data show an initial decrease right after the implementation of this Law, followed by an increase in November and December 2008. This may have occurred because the population remembered more at first, once the promotion of the Law in the media emphasized that this act could result in punishment, or because they behaved as they had done before this Law.

Approximately 1,000 cities, including capitals, are responsible for local traffic management, including

inspection. However, there are no unified data on the inspection conducted by cities, which prevents assessment of inspection before and after the establishment of Law 11,705.

Once the present study was performed with people who have home landline telephones, weighting factors were used to extend the estimates of frequencies of factors studied to the adult population in the group of cities analyzed, thus compensating for possible bias. Yet, the possibility of sub-information must be considered for both the excessive consumption of alcoholic beverages (socially discriminated) and motor vehicle driving (legally prohibited), even with the guarantee of respondent confidentiality and anonymity.

Data show the importance of Law 11,705, in addition to the need for greater, continuous population awareness and systematic maintenance of inspection measures, once VIGITEL data are concerning. Moreover, VIGITEL was found to be an important instrument to follow the "drinking and driving" behavior, a monitoring system that enables the assessment of the impact of policies and interventions on public health.

Further studies are necessary to assess the impact of the Law on changing the behavior towards binge drinking and driving and on reducing traffic accidents.

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