

# Costs of drinking and driving in Brazil

## Abstract

This article presents certain important aspects of drinking and driving. We discuss the main issues regarding this subject, such as the consequences of drinking and driving and the economic implications of this behaviour. We also present how and where one should obtain reliable data for studies of Health Economics related to drinking and driving and the difficulties of this type of research. To highlight the main issues, articles on national and international health economics were used. In addition, this paper presents important consequences regarding the new regulations of the Brazilian Traffic Code.

**Keywords:** drinking, alcohol, driving, costs, health economics

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## Introduction

Alcohol is a psychoactive substance that alters sensory motor perception, reduces attention and concentration, and increases impulsiveness and aggressiveness, among other effects. The consumption of alcohol by drivers of automobiles and pedestrians considerably increases the number of traffic accidents.

The driving of automobiles after the consumption of alcoholic drinks—henceforth called “drinking and driving”—is the focus of significant concern worldwide. This concern is not limited to public authorities but is shared by society at large, which suffers countless tangible and intangible losses and damages inflicted by drinking and driving.

For this reason, the present article describes data resulting from national and international studies on drinking and driving, which, unfortunately, is part of our everyday life.

Approximately 25 to 50% of fatal traffic accidents worldwide are associated with the use of alcohol by at least one of the liable parties.<sup>1</sup> Overall, traffic accidents represent the tenth most frequent cause of mortality, and the ninth most frequent cause of morbidity worldwide. Annually, 1.2 million deaths and 20 to 50 million injuries are caused by traffic accidents.<sup>2</sup>

In Brazil, an average of 6.3 accidents occurs for every 10,000 registered vehicles. Most of these fatalities (78.6%) are men, and 27% are 18 to 29 years of age.<sup>3</sup>

A study performed in five Brazilian cities (Diadema, Belo Horizonte, Santos, Vitória, and São Paulo) found high rates (19.4%, 19.6%, 18.9%, 17.9%, and 20.0%, respectively) of drivers with blood alcohol concentrations higher than the legal permissible limit (0.6g/l).<sup>4</sup> Data from the World Health Organization indicate that 500,000 individuals are injured and 17,000 die every year in traffic accidents related to drinking and driving in the United States alone.<sup>5</sup>

A study performed at a trauma centre in the city of São Paulo showed that 28.9% of trauma victims had alcohol in their blood.<sup>6</sup> Another study conducted in four Brazilian cities (Brasília, Curitiba, Recife and Salvador) found similar results: 27.2% of the victims of traffic accidents exhibited blood alcohol concentrations above 0.6g/l.<sup>7</sup> Considering only the direct victims of traffic accidents, the estimated

social costs resulting from the sum of material damages, medical and hospital expenses, and loss of productivity is notably high and generates a heavy socioeconomic burden.<sup>8</sup> However, in addition to the direct victims, many other individuals are affected by the consequences of drinking and driving, such as the relatives of those victims.

In addition to material damage, medical and hospital expenses, and loss of productivity, society suffers many other losses that are often not taken into account in economic studies. The fact that human lives are involved cannot be overlooked. In particular, the lives of the direct and indirect victims are severely affected by traffic accidents. Therefore, it is important to include the reduction in the quality of life when quantifying the costs of drinking and driving.

In the United States, the total estimated expense incurred by victims of traffic accidents was US \$230.6 billion in 2000. Of that total, 22% (US \$51.1 billion) was directly related to drinking and driving.<sup>5</sup> In the European Union, the estimated annual (direct and indirect) expenses due to traffic accidents are greater than US \$207 billion.<sup>9</sup>

Although we are unable to perform direct comparisons of estimates, we know that the costs are also considerable in developing countries. Traffic accidents associated with drinking and driving comprise 31% of non-fatal accidents in South Africa with an estimated cost of US\$ 14 million to the healthcare system. In Thailand, the cost of traffic accidents is as high as US \$3 billion. Of that total, 30% (US \$1 billion) is associated with the consumption of alcohol.<sup>5</sup>

In 2008, a study was performed in the city of Porto Alegre in the Brazilian state of Rio Grande do Sul regarding the cost of traffic accidents associated with the use of alcohol. The cost of these accidents was BRL 31.4 million, which corresponds to 47.3% of the cost of all traffic accidents (BRL 66.4 million). To understand these data better, the authors distinguished between direct (23.8%) and indirect (76.2%) costs. The former included medical expenses (6.5%) and the costs of other services, such as tow trucks to remove the vehicles, property damage, and rescue services (17.2%). The indirect costs, which included the loss of productivity due to premature death and morbidity-related disabilities, corresponded to 76.2% of the total cost.<sup>10</sup>

The renowned Brazilian Institute of Applied Economic Research (Instituto de Pesquisa Econômica Aplicada-IPEA) performed a study on the cost of accidents in urban areas and found a total cost of BRL 5.3 billion, or 0.4% of the gross domestic product. Of this total, 13.3% was for medical expenses, 28.8% for repair of damaged vehicles, and 42.8% for the loss of productivity due to premature death or temporary disability of the victims.<sup>11</sup>

### Other factors related to drinking and driving

We believe that it is important to familiarise the readers with the main consequences of drinking and driving and the high costs associated with this behaviour.

The increasing supply and availability of alcoholic drinks, the wide reach of advertising, inexpensive prices for alcohol in Brazil, inefficient public policies, and the lack of control mechanisms are some of the factors that make society more vulnerable to traffic accidents caused by drinking and driving.

In this regard, one must consider that the involvement in traffic accidents is not restricted to the alcohol-dependent population. Even the recreational use of alcohol increases the odds of involvement in a traffic accident.<sup>4</sup> In fact, acute intoxication in occasional drinkers may be one of the major drivers behind the alarming numbers associated with drinking and driving.

The most common expenses—or those that are usually assessed in studies—are medical expenses, which include all of the resources needed for the treatment of the victims. These expenses include everything from fees for the healthcare provider to the costs of diagnostic equipment and medications.<sup>12</sup> In addition, the costs associated with death, loss of productivity, and material damages (of vehicles and public or private property) are usually assessed.<sup>12</sup>

Other consequences of drinking and driving include the mental suffering of the victims and their relatives. Known as intangible costs, these costs are less often included in economic studies, perhaps due to the inherent complexity of this type of assessment. However, researchers agree that intangible costs are an important issue that should be measured due to the significant effects of these socioeconomic losses.<sup>12</sup>

### Sources and methods of data collection regarding costs in Brazil

To illustrate an approach for the collection of data on the costs of drinking and driving in Brazil and to facilitate future research on this subject, we will describe a current study. This study is being performed by a partnership between the National Institute of Science and Technology for Public Policy on Alcohol and Other Drugs (Instituto Nacional de Ciência e Tecnologia para Políticas Públicas do Alcool e Outras Drogas-INPAD) and the Federal University of São Paulo (Universidade Federal de São Paulo-UNIFESP) and is supported by the São Paulo Research Foundation (Fundação de Amparo à Pesquisa do Estado de São Paulo-FAPESP).

- i. Medical and hospital costs: hospitalisations and medical treatment (including material and human resources). Sources of data: Information Department of the National Health System (Departamento de Informática do SUS [Sistema Único de Saúde]-DATASUS), Brazilian Association of Traffic Medicine (Associação Brasileira de Medicina de Tráfego-ABRAMET),

health maintenance organisations (HMOs), and reference hospitals in each Brazilian state.

- ii. Damage to vehicles caused by the collisions. Source of data: Syndicate of Insurance Brokers (Sindicato dos Corretores de Seguro - SINCOR).
- iii. Loss of productivity: economic losses resulting from temporary or permanent interruption of productive activities (by death or injury). Sources of data: Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística - IBGE), Institute of Legal Medicine (Instituto Médico Legal - IML), and state/municipal Secretaries of Public Security.
- iv. Other costs

### Social welfare

Costs associated with the temporary or permanent disability of traffic accident victims who are partially supported by the social welfare system. This cost includes pensions and benefits. Source of data: Ministry of Social Welfare.

### Hindrances to the collection of data

The following are some of the greatest challenges to overcome in the collection of data on the cost of traffic accidents associated with consumption of alcohol:

- i. Access to data: although data are “available” to civil society, access is hindered by bureaucratic procedures and other obstacles.
- ii. Lack of reliable data: certain institutions have developed forms and protocols to record data. These forms usually include general information concerning the victims, including the cause of the accident, diagnosis, prognosis, bone fractures and injuries, and treatments performed. However, these forms are not always accurately completed. In addition, certain protocols do not include an assessment of resources, which is essential for cost studies.
- iii. Low reproducibility of studies: the scarcity of this type of survey in Brazil is associated with the difficulty in collecting reliable data and the methodological complexity of economic assessment studies.
- iv. In addition to these challenges, it is impossible to perform comparisons of studies conducted in different countries, due to the different cultural and economic backgrounds, the lack of uniformity of the assessed resources, the different currencies, the collection of data over different time frames, and the collection of data from different agencies or departments, for example.<sup>12</sup>

However, it is worth emphasising that regardless of the many challenges of conducting economic studies of drinking and driving using reliable methodological parameters, we must continue to attempt this research. This important subject has a significant impact on society at large. With additional scientific studies, policy makers may be more receptive to authorising funding for prevention programmes.

### Final remarks

In this study, we refer to the losses associated with drinking and driving that are evident to the academic community, professionals, and society at large. Unfortunately, the availability of scientific data that demonstrate the true socioeconomic impacts of this risky

behaviour continues to be limited. This evidence is needed to enact efficient measures for the prevention of traffic accidents and to increase funding allocated for implementing these measures.

One example of a public policy related to alcohol is a change that was made to the Brazilian Traffic Code. According to a historical-scientific analysis of traffic legislation, this modification significantly reduced the index rates of automobile accidents.<sup>4</sup>

It is worth noting that after the new Brazilian Traffic Code (Law nº 11,705/08)-called the “Dry Law” by the media—was enacted on June 19<sup>th</sup>, 2008, positive changes were observed in the behaviour of drivers. The need for emergency care at hospitals decreased, as did the number of deaths on motorways and urban roads and the rates of assistance performed by the Emergency Assistance Mobile Services (Serviços de Atendimento Móvel de Urgência-SAMU). In financial terms, the newly enacted measures resulted in a direct reduction in the costs related to drinking and driving with a corresponding economic gain in health and public security.<sup>4</sup>

Within this context, it is worth emphasising data reported by the Secretary of Health of São Paulo. Endowed with an annual budget of BRL 9 billion after the Dry Law was enacted, local hospitals were able to save BRL 54 million per year, due to the reduction in traffic accidents involving drunk drivers. These estimates represent to the worst-case scenario and correspond to the most severe cases with an average cost of BRL 3,000 per victim, including medications, diagnostic tests, surgical procedures, and other expenses incurred during hospitalisation. The best-case scenario estimate, which corresponds to less-severe cases, was BRL 500 per victim.<sup>4</sup>

As a function of the economic parameters described in this study, it is important to stress the importance of the measures enacted by the new Brazilian Traffic Code. We emphasise the importance of subjecting the application of this law to continuous control such that the achieved clinical, economic, and social gains are not lost and instead continue to increase.

Along this same line of reasoning, we may hypothesise that the “power of persuasion” that directly affects the allocation of funding will weaken if studies of the incidence of and the economic losses related to drinking and driving are not regularly performed. Public resources that are already scarce may no longer be allocated to this important public health concern.

For these reasons, special attention should be given to the study of the costs of drinking and driving on society currently being performed in the city of São Paulo by a partnership between INPAD and UNIFESP and supported by FAPESP.

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## Conflict of interest

The author declares no conflicts of interest.

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