Impact Of Alcohol Deregulation Policy On Traffic Crashes in Japan: A Natural Experiment Using Classical Time-Series Analysis

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Abstract
Laws and regulations governing alcohol availability need to be an essential part of an overall strategy to reduce alcohol-related morbidity and mortality. The removal of availability restrictions, pricing and taxation of alcoholic beverages, and its impact on alcohol-impaired driving related problems were the focus of this study, with particular reference to the Japanese society. Obviously the implementation of the deregulation policy has not increased drunk driving as hypothesized. The finding showed that compliance with alcohol-related driving legislations is high in the Japanese society, where alcohol is freely available.

Introduction
The Japanese economy has witnessed a radical process of liberalization since the mid-1990s. Many sectors, which had previously been under direct government control, are now regulated by the competitive market place. Due to WTO (World Trade Organization) ruling, Japan-US negotiation on deregulation in 1990 and growing international pressure on the Japanese government, deregulation of alcohol production and sale were introduced in April 1994. One key issue in the reform of Japan’s liquor legislation has been the extent to which alcohol should be freely available. The other is the globalization of alcohol brands and marketing designed to embed alcohol
products and consumption in the lifestyles of most Japanese.

The socio-religious heritage of the Asian region, which was for a long period a bulwark in preventing alcohol harm, has and continues to be eroded. Western drinking culture has become internationalized, spurred on in recent years by the market economy. Globally, efforts to promote alcohol use have increased in both prevalence and sophistication in the past 30 years. It is salutary to remind contemporary economists and politicians and their counterparts such as Cobden and Bright, two notable 19th century free traders and liberal politicians, would never have supported free trade in alcohol. Taken together, the results of various studies have clearly shown that control measures can influence drinking patterns, and in turn the rate of alcohol-related problems.

Importantly, effects of changes in alcohol prices and availability are also determined by the social, cultural, and economic circumstances characteristic to each country and period. The positive consequences for health and safety of reduced access to alcohol have been demonstrated in many jurisdictions in Europe and North America. This is one of the principal reasons why many governments have established policies and mechanisms to control and/or regulate the sale of alcohol. In Japan, minimum standards (ie. population density and distance between retail shops) required prior to granting retail license has been abolished in 1994. There are few, if any, constraints on locations of liquor sale outlets. Alcoholic beverages are freely available at 24-hour convenience stores throughout Japan (9). Following the deregulation policy in Japan in 1994, it is estimated that alcohol sale outlets increased by 8 percent.

The health implications of increasing alcohol availability

Research continues to show a correlation between a high density of alcohol outlets and a high rate of alcohol-related problems in a community (1,3,5). Experts predict that deregulation will increase outlet density, hours and days of sales, and will have significant impact on the retail price in Japan (11). Availability changes expected with deregulation, traffic safety related problems are almost inevitable and recent research (6) has focused on several public health and safety problems related to alcohol availability, including general public consumption, crime and safety issues, traffic crashes, and youth access to alcohol, such as sales to underage drinkers. Like cigarettes, alcohol is available from outdoors vending machines in Japan, that perform no age verification, so the legal barriers against under-age drinking are somewhat theoretical.
Alcohol Availability and Traffic Crashes

While contemporary reviews of the relationships between alcohol consumption and traffic-related problems generally concede a strong relationship between measures of alcohol sales and traffic crashes, reviewers have noted the inadequacies of correlational studies of these relationships (10) and the sometimes questionable empirical status of the surrogates used for both consumption and problem outcomes. It has been suggested that there may be no relation between overall alcohol consumption and drunken driving in Japan (2). While there are existing studies whose outcomes either deny or show ambivalence about the possibility of a link between availability and alcohol impaired driving, sufficient studies also exist which have indicated a positive relationship. Various links between alcohol availability and traffic crashes have been examined (4, 6, 12) including the relationships between alcohol-related crashes and minimum legal drinking age; density of licensed alcohol outlets; and place of last drink and the resulting incidence of DWI (driving while intoxicated) arrests.

Methods

The methodology of the time series analysis, which has been utilized in this study, has a great advantage in examining alcohol availability and its impact on alcohol impaired driving and further the issue of whether or not the impact is permanent or temporary. Some problems with evaluation studies have not changed during recent decades. One clear limitation of the current policy evaluation literature on changes of alcohol availability is its restriction to societies that historically have both drunk a lot and worried a lot about drinking. In other words, available evaluation studies mostly originated from northern Europe, North America, Australia and New Zealand. Even though the basis of relevant evidence has broadened geographically, we still know too little about the effects of alcohol policy changes in Japan. With regard to different control measures, it is easy to find studies with contradictory results. Many contradictions may and can be explained by complex statistical methods related problems, by problems in study design, or even by political objectives of the researcher.

Results

No change occurred for single vehicle nighttime accidents or police reported alcohol-related crashes and mortality in the period of 1994-1999. In general, these results lend no support to view that the manner in which alcoholic beverages are freely available for
public consumption can have an impact on alcohol related traffic crashes. The following observation also resulted by this analysis:

Figure 1- Time series trend of Single Vehicle Nighttime accidents and fatalities

Sources: Annual traffic data-Institute for Traffic Accident Research and Data Analysis
Household Expenditure on Alcohol-Statistics on National Accounts-2001
Organization for Economic Cooperation and Development- OECD

- There is no significant increase in the total amount of absolute alcohol consumed per adult in Japan after introduction of the deregulation policy. However since 1994 both wine and spirits consumption per capita increased by 166 and 23 percent respectively. Beer and sake consumption per capita decreased by 19 and 20 percent respectively, since the deregulation came in to effect in 1994. The modest decline in the much larger Beer and Sake markets offset the significant increase in the wine and spirits markets. Extant data are not adequate to address the beverage substitution hypothesis definitively in the Japanese context.
- The subsequent reduction in driving after drinking contributed to the significant reductions in traffic accident morbidity and mortality, while alcohol sales outlets had increased by 8 percent since 1994.
- The various changes discussed above facilitated the purchase of alcohol in Japan, and so enable people to consume alcohol without restrictions, or at least
unwanted way. Surprisingly, reduction in Nighttime single vehicle accidents, alcohol related accidents and related mortality were the apparent outcome.

**Discussion**

On the basis of the method used for the analyses, it is possible that the increased alcohol availability in various fronts and above changes in the number and type of outlets apparently not contributed to, rather than merely not correlated with, the changes in the alcohol impaired driving problems. These findings highlighted a potential conflict of interest, for they showed both positive and negative outcomes of the changing of the alcohol availability and type of outlets in Japan in 1994 and the after period. Irrespective of how many outlets are increased or permitted in total, for as many of them as possible to be for off-premise consumption in Japan, with the aim of minimizing traffic accidents. Past efforts to reduce alcohol-related problems by focusing solely on individual outlets or drinkers have proven inadequate to address the severity and persistence of these problems at the community level. The nature of the relationship between alcohol deregulation policy in 1994 and alcohol related traffic problem needs further research, although, there is no association appears to be positive in Japan. Therefore, it is recommended that the government proceed carefully in its review of the current system of alcohol sales and production, increased availability as the results of deregulation related initiatives and making public health and safety a pivotal issue.

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**References**


