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An assessment of the effects of alcohol consumption and prevention policies on traffic fatality rates in the enlarged EU. Time for zero alcohol tolerance?

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ABSTRACT

Some similarities can be seen in the drink driving policies of European Union (EU) countries but there are also some major differences. Although all member States are aware of the need to address the problem, there are considerable differences in aspects such as blood alcohol limits, alcohol prices and the enforcement of alcohol control laws. Considering that these policies are in place in specific economic and cultural contexts, we evaluate the effectiveness of the set of control policies implemented in the EU in terms of traffic fatality rates following the recent enlargement process. For this, we use a panel during the period 1999–2012 controlling for several explanatory economic, demographic and geographical attributes. We find that policies that may be effective for reducing alcohol consumption among young drivers may lead to improvements in road safety. Our results also show that zero approach maximum alcohol concentration rates do not seem to be a panacea for this problem, since the countries with the strictest limits do not achieve better road safety outcomes. Finally, the influence of alcohol consumption on traffic fatalities seems to be particularly relevant for the male population.

1. Introduction

The European region is well known for its traditional heavy alcohol consumption, especially in Central and Eastern countries (Popova, Rehm, Patra, & Zatonski, 2007), which attracts academic attention to the health implications of its abuse. Much of the research has focused on the association between alcohol consumption and driving (Driving Under the Influence, DUI) (Skog, 2001a, 2001b; Taylor & Rehm, 2012; Taylor et al., 2010), and the influence of alcohol consumption on individual risk perception of traffic accidents (Elias & Shiftan, 2012).

The harmful consequences of alcohol consumption constitute a global health problem, but all European Union (EU) countries apply national laws and policies to control DUI within a concrete framework that determines alcohol consumption patterns and leads to different degrees of effectiveness (Bloomfield, Stockwell, Gmel, & Rehn, 2003; Skog, 2001a). As Ruhm (1996) suggests, characteristics such as driver behavior and cultural drinking tolerance could explain this heterogeneity.

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Furthermore, Britton et al. (2003) point to differences in alcohol consumption levels that could in part explain variability in alcohol-associated mortality.

In this context, whereas previous studies focus on the individual case study of one specific country, we investigate the impact of alcohol consumption and drinking patterns on traffic mortality rates for a panel of EU countries during the 1999–2012 period, controlled by moderator variables relating to economic activity, mobility patterns, demography and geographical situation, and road safety strategies. Our goal is to assess the effectiveness of the different national alcohol control strategies (based on DUI consumption limit laws, economic mechanisms for deterrence determined by alcohol price, minimum age requirements for alcohol consumption) applied by each EU member. This is done taking into account the EU enlargement process including the accession of Baltic and Eastern countries, which are characterized by higher levels of alcohol drinking (see e.g., Popova et al., 2007) while also being well known for being "zero tolerance countries", due to their stricter alcohol control laws.

Our study is opportune and justified because, following Hughes et al. (2011), although a number of European studies have recently been conducted on this topic, further research is needed, as drinking behaviors, price contexts and actions to control alcohol may change over time and may significantly differ from one country to the next, all of which may affect road safety performance. All EU members have developed drink driving control policies (for example, Blood Alcohol Content –BAC- limits; minimum legal age limits for alcohol purchase and consumption; enforcement), but there is a lack of harmonization among members, and political, geographical, cultural, and economic factors may affect both alcohol consumption and health impacts. Furthermore, Vukina and Nestić (2015) find evidence that the enforcement of restrictions on alcohol use does not appear to be efficient at reducing accidents and traffic violations in several European countries.

One example that illustrates the great difference in regulations between States is the national policy on BAC limits, which ranges from zero in countries such as Sweden to 0.8 g/L in others, such as the United Kingdom, while most countries apply the 0.5 g/L rate in line with the European Commission (EC) Recommendation issued in 2003.

This recommendation has been reinforced by the 4th European Road Safety Programme (ERSAP), entitled "Towards a European road safety area: policy orientations on road safety 2011–2020", in which the EC stresses the need for the stronger enforcement of drink driving regulations and preventative measures such as the installation of alcohol interlock devices in vehicles, with mandatory adoption in professional transportation, for example.

Table 1 presents a comparison of the current legal BAC limit and other control alcohol actions in force in the 28 EU member States considered in this paper. As noted above, the applied BAC rates vary considerably, while MDLA (Minimum Legal Drinking Age) laws are predominantly in the range of 16 (Central European countries) to 18 (the majority of States). A tendency for lower BAC limits can be observed in the so-called Eastern EU countries. A mandatory zero tolerance approach for all road users has been in force in the Czech Republic, Hungary, Romania and Slovakia for decades. Meanwhile, the United

Table 1
Alcohol control in 2012.

EU COUNTRY	Minimum legal drinking age limit in years	Maximum permitted BAC rate in g/L (for standard drivers)	Harmonized price index for alcoholic beverages, spirits, wine, beer (annual average 2005 = 100)
Austria	16	0.5	85.99
Belgium	16	0.5	82.07
Bulgaria	18	0.5	119.76
Croatia	18	0.0	93.11
Cyprus	17	0.5	79.09
Czech Republic	18	0.0	86.78
Denmark	16	0.5	86.53
Estonia	18	0.2	105.87
Finland	18	0.5	97.99
France	18	0.5	86.54
Germany	16	0.5	84.25
Greece	18	0.5	103.45
Hungary	18	0.0	110.24
Ireland	18	0.5	68.00
Italy	16	0.5	87.28
Latvia	18	0.5	109.97
Lithuania	18	0.5	97.69
Luxembourg	16	0.5	86.31
Malta	17	0.8	78.72
Netherlands	16	0.5	80.34
Poland	18	0.2	83.43
Portugal	16	0.5	86.95
Romania	18	0.0	93.82
Slovakia	18	0.0	88.69
Slovenia	18	0.5	100.92
Spain	18	0.5	87.05
Sweden	18	0.2	78.60
United Kingdom	18	0.8	93.45