



Impact of alcohol checks and social norm on driving under the influence of alcohol (DUI)



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ABSTRACT

This study investigated the influence of alcohol checks and social norm on self-reported driving under the influence of alcohol above the legal limit (DUI). The analysis was based on the responses of 12,507 car drivers from 19 European countries to the SARTRE-4 survey (2010). The data were analysed by means of a multiple logistic regression-model on two levels: (1) individual and (2) national level.

On the individual level the results revealed that driving under the influence (DUI) was positively associated with male gender, young age (17–34), personal experience with alcohol checks, the perceived likelihood of being checked for alcohol, perceived drunk driving behaviour of friends (social norm) and was negatively associated with higher age (55+). On a national level, the results showed a negative association with a lower legal alcohol limit (BAC 0.2 g/l compared with BAC 0.5 g/l) and the percentage of drivers checked for alcohol. DUI was positively associated with the percentage of respondents in the country that reported that their friends drink and drive (social norm). The comparison of the results obtained on national and individual levels shows a paradoxical effect of alcohol checks: Countries with more alcohol checks show lower DUI (negative association) but respondents who have been personally checked for alcohol show a higher chance of DUI (positive association). Possible explanations of this paradox are discussed. The effects of the social norm variable (perceived drunk driving behaviour of friends) are positively associated with DUI on both levels.

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1. Introduction

This study focuses on driving under the influence of alcohol above the legal limit (subsequently DUI) and is motivated by the observation that the prevalence of drunk driving is higher in Belgium than in most other European countries (Schulze et al., 2012; Meesmann et al., 2011). Within the DRUID roadside survey, 2.2% of the Belgium car/van drivers tested positive for alcohol (BAC \geq 0.5 g/l). Based on the results of all 13 participating countries within this survey, the European average of alcohol positive car/van drivers was estimated to be 1.5% (Houwing et al., 2011). Belgium also showed the highest alcohol prevalence among seriously injured drivers of all six participating countries (38.2%; Isalberti et al., 2011). Furthermore, no improvement has been observed on the basis of the Belgian national roadside surveys which have been monitoring the DUI situation since 2003. The DUI prevalence (BAC \geq 0.5 g/l) has fluctuated since the beginning of this

measurement between 2 and 3% without any statistically significant changes (Riguelle, 2014). Two factors are often discussed as having potential influence on DUI: alcohol checks and social norm (the extent to which drunk driving is perceived as being a “normal” and frequent behaviour). However, the literature reviewed below shows that the influence of alcohol checks and social norm on DUI is not as clear as expected.

1.1. Alcohol checks

Alcohol checks play an important role within the chain of alcohol enforcement road safety policy (SWOV, 2013). To ensure that drivers are not under the influence of alcohol, the police in general regularly stop drivers and test their alcohol level. The general deterrence theory predicts that the actual and perceived likelihood (fear) of getting caught are important motivators for people to comply with the law (e.g. see Ross, 1994; Homel, 1988). Vanlaar (2008) differentiates two alcohol check strategies: (1) The preventive approach, attempting to affect the subjective (perceived) likelihood of getting caught, and thus to increase the belief in the driver population that police officers are enforcing drinking and driving laws and that drinking drivers will most likely be

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caught. Targeting highly visible road sites with important traffic flow, the priority of these road checks is to increase awareness of the enforcement activity among drivers. An important aspect of this approach is consequently that it maximizes the chance that any driver is arrested, not only those who present signs of intoxication or other characteristics considered relevant to it, and that drivers are arrested in an “a-selective” way. (2) The repressive approach aims at maximizing the objective likelihood of getting caught and therefore involves targeting times and places where the highest number of drinking drivers is to be expected. These controls are thus conducted in a more selective way. The aim is to apprehend as many drinking drivers as possible. In the remainder of this paper we will investigate alcohol checks reported by the driver population and their effect on drunk driving. While selective and a-selective checks cannot be differentiated in these reported checks, this feature is nevertheless likely to have an effect on the characteristics of the group that was checked for alcohol. For example, drivers checked in selective tests are younger, more likely to be male, more likely to drive at night, and – if the police’s selection strategy is effective, – more likely to be alcohol offenders. The main goal of the present study is to investigate the effect of alcohol checks. The differentiation between different types of police controls (e.g. stationary checkpoints vs. patrols dedicated to identifying and apprehending impaired drivers) is beyond the scope of this study. For the interpretation of the results however, the difference between selective and a-selective checks is important and we will come back to this differentiation in the discussion (Section 3.5) and the recommendations for further research (Section 4.2).

Earlier research findings have indicated that the number of alcohol checks is negatively associated with the occurrence of alcohol-related crashes. For example, [Fell et al. \(2014\)](#) concluded from the data of the US National Roadside Survey that a 10% increase in the DUI arrest rate is associated with a 1% reduction in the drinking driver crash rate. In their meta-analysis on the effect on crashes of DUI checkpoints, [Erke et al. \(2009\)](#) found that crashes involving alcohol are reduced by minimum 17% and that all crashes, independently of alcohol involvement, are reduced by about 10–15%. In Italy, the number of drivers tested with a BAC over the limit dropped from 15% to 6% after controls on roads increased from 250,000 to 800,000 per year ([Taggi and Macchia \(2009\)](#)). [Ferris et al. \(2013\)](#) have shown that in two Australian states a higher coverage of random breath testing is associated with a lower rate of alcohol-related crashes.

All the studies described above relied on aggregated data and investigated the effects of alcohol checks in a particular country or region. Other studies have investigated this relation on the level of the individual driver. The aim in this case is to determine whether the fact that a driver has personally experienced one or several alcohol check(s) makes him/her less likely to drink and drive. Curiously, these studies yielded results that are less coherent with deterrence theory, if not simply contradictory. [Bimpeh \(2012\)](#), for example, has observed that drivers who have been checked for alcohol within the last years are more likely to report DUI than those who have not been checked. In the framework of the Belgian national drink-driving survey organized since 2005 (and subsequently in 2007, 2009, 2012), the drivers stopped and controlled for alcohol were asked to report previous experiences with alcohol checks and the perceived probability of alcohol checks. [Riguelle and Dupont \(2012\)](#) observed a positive relation between the personal experiences of alcohol checks and observed drunk driving based on the survey results of 2009, while no correlation between experienced alcohol checks and DUI was observed for 2005, 2007 or 2012 ([Riguelle, 2014](#)). On the other hand, a positive correlation was observed between the perceived likelihood of getting caught and DUI (i.e. drivers who drive with an alcohol concentration above

the legal limit also found it more likely that they would be tested for alcohol; [Vanlaar, 2005](#); [Dupont, 2009](#)). Moreover, [Dewil et al. \(2011\)](#) confirm these findings based on the self-reported information within the Belgian national attitude measurement conducted in 2009: Drivers who reported that they had been checked for alcohol within the last year were more likely to report DUI than those who had not been checked. Furthermore, e.g. [Dionne et al. \(2004\)](#) found that people who have already been sanctioned for drunk driving report more drinking and drunk driving compared to people who have not been sanctioned for drunk driving. They are also better informed of the drunk driving legislation and sanctions. Finally, [Papadimitriou et al. \(2014\)](#) found that drinking and riding a motorcycle was positively associated with alcohol ticket experiences. These results seem, at first sight, counterintuitive and indicate, at best, that alcohol checks have little or no effect on the drunk driving behaviour of individual drivers. Moreover, they seem to contradict the (albeit weak) negative correlation between number of alcohol checks and DUI level from studies conducted at aggregated national or regional levels reported earlier.

1.2. Social norm

A complementary factor influencing drunk driving (DUI) is the social norm ([Moan and Rise, 2011](#); [Vereeck and Vrolix, 2007](#); [Cestac et al., 2012](#)). The concept of social norm is very well established in many social cognitive behaviour models (e.g. Theory of Reasoned Action, Theory of Planned Behaviour, Social Learning Theory, Social Comparison Theory, Spiral of Silence Theory or the Social Network Theory, Social Norm Theory, etc.), although the terminology within these models is used inconsistently (e.g. see [Kenny, 2011](#)). In traffic psychology, the term “social norm” is closely linked to normative items within the Theory of Planned Behaviour (TPB, [Ajzen, 1991](#)). The original TPB model defines the behavioural intention (the intention to perform a given behaviour) as being determined by the subjective norm (perceived expectations of others), attitudes toward behaviour (expectation that behaviour will lead to desired outcomes) and perceived behavioural control (expectation that one can perform/execute the (new) behaviour). The intention is directly related to the actual behaviour. The TPB model is already widely used in traffic research and specifically in studies investigating drunk driving (e.g. see [Moan and Rise, 2011](#); [Chan et al., 2010](#); [Marcil et al., 2001](#); [Aberg, 1993](#); [Parker et al., 1992a,b](#)). The original model has been elaborated over the years (e.g. [Conner and Armitage, 1998](#); [Parker et al., 1995](#)). [Cialdini et al. \(1990\)](#) suggested distinguishing between the following three normative factors, as normative influences may stem from a variety of sources ([Moan and Rise, 2011](#) p. 1379):

- The “Injunctive norm” (akin to subjective norms): The social (dis)approval of others; refers to an individual’s perception that important others in his or her social environment wish or expect him/her to behave in a certain way.
- The “Descriptive norm”: “What others are doing”; it reflects what is perceived as common or normal, i.e., “what most people do”.
- The “Moral norm”: “What is perceived as right or wrong”; it represents the conviction that some forms of behaviour are inherently right or wrong, regardless of their personal or social consequences.

[Moan and Rise \(2011\)](#) investigated to what extent the intention not to drink and drive can be predicted on the basis of the TPB model, extended with the moral norm and descriptive norm. The results showed that perceived behavioural control was the strongest predictor of intentions, followed by descriptive norm, attitude and moral norm. These results are in line with earlier findings of the

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