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Traffic safety violations in relation to drivers' educational attainment, training and experience in Kumasi, Ghana

Millicent Awialie Akaateba [a,*], Richard Amoh-Gyimah [b], Owusu Amponsah [c]

[a] Department of Planning and Management, FPLM, University for Development Studies, Wa, Ghana
[b] CSIR-Building and Road Research Institute, Kumasi, Ghana
[c] Department of Planning, KNUST, Kumasi, Ghana

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ABSTRACT

This paper investigated the influence of three distinct variables; driver educational attainment, driving experience, and form of driver training on drivers' self-reported attitudes towards the frequency of commission of traffic safety violations in Kumasi, Ghana. A total of 285 participants were sampled from public transport terminals, work places, market places and other social centres within the Kumasi Metropolis using both interviewer-administered and self-administered questionnaires. The results of the study showed that there were small but yet significant associations between driver education, driver training and driving experience on the one hand, and the frequency of violation of traffic safety laws on the other hand. The mean frequency of commission of traffic violations increased with increasing driver experience whilst the frequency of violation of traffic regulations on speeding and overtaking when prohibited decreased with increasing education in Kumasi. Drivers trained from driving schools reported an overall higher mean frequency of commission of traffic violations compared to other drivers interviewed. Plausible explanations and implications of the study's results on traffic safety campaigns in Ghana as well as methodological issues have been discussed. Based on the results of the study, this paper strongly recommends targeted and more tailored traffic safety behaviour change campaigns combined with a strict enforcement of traffic safety regulations in the country.

1. Introduction

Road traffic crashes are a major public health concern particularly in developing countries in sub-Sahara Africa. Overall, developing countries bear a large share of the burden of road traffic crashes, accounting for 85% of annual deaths and 90% of the disability-adjusted life years lost from road traffic injury (Peden et al., 2004). In Ghana, road traffic crashes are a major cause of worry as they are among the leading cause of deaths and injuries. An average of 1800 people die from road traffic crashes annually in Ghana with pedestrians being the most vulnerable road user group. In 2011, a total of 2199 lives were lost as a result of road traffic crashes. The figure represents a 10.7% and a 32.7% increase in fatalities over the 2010 and 2001 figures respectively. Males and young adults within the age range of 26–35 years continue to be over-represented in the fatality statistics (NRSC, 2012).

The contribution of human factors in road traffic crashes has been widely acknowledged in road safety research globally (Huguenin, 2005; Gras et al., 2004; Sullman et al., 2002). Various lines of research within the field of traffic psychology have attempted to relate individual differences to risky driving behaviour and traffic crash involvement in developed countries using the Theory of Planned Behaviour (TPB). These research traditions have demonstrated that different social groups and personality types have different levels of risk taking behaviour whilst driving. The different social groups also have distinct attitudes towards traffic safety violations and consequently, different levels of involvement in road traffic crashes (Tseng, 2013; Elliott and Thomson, 2010; Lenguerrand et al., 2008; Factor et al., 2008). Forward (2009) revealed that attitudes constitute the largest contributor to driving violations. Trantera and Warnb (2008) also identified a significant relationship between attitudes towards speeding and speeding violations. Attitudes towards traffic safety have also been found in several studies to correlate with aggressive driving behaviour, driving too fast and self-reported crash involvement (Nordfjærn et al., 2011; Eiksund, 2009; Nabi et al., 2007; Iversen and Rundmo, 2004).

Traffic violations constitute priorities of road safety education and enforcement programmes globally. Traffic violations which refer to intentional or unintentional behaviours that deviate from

* Corresponding author. Tel.: +233 203591857.
E-mail addresses: makateba@yahoo.com, makaateba@uds.edu.gh (M.A. Akaateba).

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accepted procedures, standards, and rules are a common cause of road traffic crashes (Javadieh et al., 2014; Stanton and Salmon, 2009; Salmon et al., 2005). This means that many lives lost through road crashes could have been avoided if drivers obeyed traffic regulations. Various studies in both developed and developing countries have found drivers' socio-demographic and economic characteristics to have significant relationships with self-reported traffic violations and crash involvement. These studies have robustly and consistently demonstrated that in terms of age, younger drivers are more likely to commit traffic violations and at a greater risk of crash involvement than older drivers (Akaateba and Amoh-Gyimah, 2013; Elvik, 2010; Forward, 2009; Willemsen et al., 2008; Yan et al., 2007; Afukaar et al., 2003; Shinar et al., 2001; Norris et al., 2000; Deery, 1999; Yagil, 1998; Parker et al., 1995). Nordfjærn et al. (2010) found young adolescents to have less sensitivity to risk and unfavourable attitudes towards traffic safety regulations. Shinar et al. (2001) found that the observance of speed limits increased with age whilst the tendency to speed decreases with increasing age. Similarly, Tseng (2013) identified that younger drivers reported more speeding violations than older drivers and that speeding violations decrease as the driver's age increases. Akaateba and Amoh-Gyimah (2013) also found younger drivers to have a significant higher frequency of committing traffic violations on mobile phone use, seat belt use, 'getting off the road to bypass a traffic jam' and 'stopping at undesignated areas to pick passengers' than older drivers.

Literature has also consistently identified gender as a significant factor associated with traffic violations and road traffic crashes. Male gender has been identified to commit more traffic violations and have a higher risk of crash involvement than females (Akaateba and Amoh-Gyimah, 2013; Tseng, 2013; Nordfjærn et al., 2012; Factor et al., 2008; Evans, 2004; Taubman Ben-Ari et al., 2004; Afukaar et al., 2003; Ferguson et al., 2001; Waller et al., 2001; Yagil, 1998). Besides age and gender, others studies have examined the effects of other socio-economic variables such as driver's educational attainments, driving experience and income, among others on traffic violations and crash involvement. Shinar et al. (2001) in a study on the observance of speed limits found that the rate of observing speed limit decreased with increasing education. Dobson et al. (1999) reported that women with tertiary education recorded higher traffic violations, lapses and errors than their counterparts with lower educational attainments. Lancaster and Ward (2002) concluded that the majority of aggressive drivers were poorly educated.

Mohammed Najeeb (2012) found that moderately and highly educated drivers have higher traffic violation behaviour than those with lower education. He also found driving experience to have significant effect on traffic violations. Higher traffic violation behaviour was associated with more driving experience. Similarly, Tseng (2013) found highly educated drivers (college and higher) to report higher speeding violations than drivers with low education (elementary school). More income has also been reported to be associated with more speeding violations (Tseng, 2013; Hemenway and Solnick, 1993). The effect of driver training on crash involvement remains unclear as there is no sound evidence that formal driver training courses reduce traffic violations or the crash involvement of drivers who attend them (Ker et al., 2005; Woolley, 2000). Literature has revealed that beyond imparting basic knowledge of road traffic regulations and car control skills, formal pre-license driver training contributes little to post-license reductions in traffic violations or crash involvement as the training does not necessarily always lead to a change in behaviour among drivers (Mayhew and Simpson, 2002, 1996).

In recent time in Ghana, considerable attention has been paid in local media to the increasing numbers of road traffic crashes and on the widespread aggressive driving behaviour among the driving populace. Traffic violations are frequent in Ghana and often include very dangerous actions that significantly contribute to increasing traffic crashes, severe injuries, and fatalities. Traffic violations and driver errors were associated with 89% of traffic fatalities and 80% of injuries in 2011 (NRSC, 2012). Despite this significant contribution of traffic violations to road crashes in Ghana, few studies (Akaateba and Amoh-Gyimah, 2013; Afukaar et al., 2003) have attempted to show any relationship between the socio-economic characteristics of drivers and traffic violations, attitudes and behaviours and crash involvement in Ghana. Therefore how economic, social and demographic attributes of drivers influence traffic violations remain unclear in the country. The objective of this paper therefore is to examine these issues to highlight the effect of driver characteristics (covering educational attainments, form of driver training and driving experience) on traffic violations. A greater understanding of these issues will assist in the formulation of more targeted, appropriate and effective road safety policy measures to improve compliance with road traffic regulations and consequently contribute to the reduction in road traffic crashes.

2. Study methodology

2.1. Data

The study was carried out in Kumasi, Ghana. Kumasi is the capital of the Ashanti Region of Ghana and the second largest city in the country after Accra, Ghana's capital. Data for the study were collected through a week-long field survey by Research Assistants from the Building and Road Research Institute, Kumasi. The population for the study were drivers in the central part of Kumasi who were sampled from local bus terminals and taxi stations, work places, universities and other gatherings within the Kumasi Metropolis. The Research Assistants visited each of these survey locations daily within the survey period and randomly approached drivers of cars parked in these locations. This was to ensure that various categories of drivers from different social strata were included in the sample. Both interviewer-administered and self-administered questionnaire approaches were used for the study. In instances where respondents were literate, the questionnaires were self-administered but where the respondents were illiterate; they were interviewed over the questionnaire by the research assistants. Prior to administering the questionnaire, drivers were briefed on the purpose of the study and their consent obtained. At the end of the survey, a total of 285 completed questionnaires with complete data sets were accepted for analysis.

The questionnaire was structured in two parts. The first part gathered data on drivers' demographic (age and gender) and social characteristics (educational attainment, driving experience and form of driver training). The second part contained 10 statements measuring driver attitudes towards traffic violations through their frequency of involvement in such violations. These 10 statements were adapted from traffic regulations contained in the Ghana Highway Code and from relevant validated variables from previous studies (Iversen, 2004; Iversen and Rundmo, 2004). Respondents were asked to indicate how frequently they carried out each of the violations during the previous year and their responses to the 10 statements were scored on a four-point Likert-scale. The response options ranged from 'Never', 'Occasionally', 'Frequently', to 'Always'. A pre-test of the questionnaire was done with 20 drivers in the Central Business District (Adum area) of the Kumasi Metropolis for reliability evaluation using Cronbach's alpha. The questionnaire passed the reliability criteria with a Cronbach's alpha of 0.757 indicating a high internal consistency.