Speeding and drink-driving are two of the key behavioral risk factors in road traffic safety alongside with non-use of motorcycle helmets, seat-belts and child restraints (Jackisch, 2015). Changing road user behavior on these five factors is a critical component in reducing road traffic injuries which are responsible for more than 1.2 million deaths and up to 50 million nonfatal injuries each year. Road traffic injuries are currently the ninth leading cause of death globally (WHO, 2015) and predicted to become the seventh leading cause of death by 2030 (WHO, 2011). In these circumstances, road safety more generally, and speed-related and drink-drive related road traffic injuries in particular, represent an important issue on international organizations’ agenda (WHO, 2016).

1. AIM
The aim of this study is to profile drivers in the UK who are more likely to be involved in collisions and assigned the ‘exceeding speed limit’ or ‘impaired by alcohol’ contributory factors. The two profiles are then compared, identifying the common and the distinctive characteristics. The findings are discussed for relevance in designing common and separate speeding and drink drive campaigns.

2. BACKGROUND
2.1. Speeding drivers
Characteristics of speeding drivers, the context of speeding and speed choices have been investigated over time, in numerous studies. Links between speeding and several demographic, psychological, and situational characteristics were found. Younger drivers were found to be more likely to speed or intend to speed, compared to other age categories (Watson, 2014; Turner, 2003); males were also found to be more likely to speed (Watson, 2014). Peer influence and peer pressure, job type/status, license type, type of vehicle, and car ownership are also variables that were found to significantly influence speeding and speed choices (Newnam, 2004; Gheorghiu, 2015).

In terms of interventions, Intelligent Speed Adaptation (ISA) systems and auditory speeding warnings, that bring feedback about speeding behavior into the vehicle, were found to be effective in reducing the speeding behavior or the speeding intentions (Lai, 2008). Interventions derived from psychological theory were found to be effective and to produce behavioral change: anti-speeding messages are shown to be effective (Cathcart, 2016), and more effective than roadside messages (Glendon, 2013); interventions addressing motivation, habit and intentions were also found to be effective when addressed in the appropriate manner (Ellison, 2015; Geber, 2015). Even when the right type of intervention is
identified, the most challenging task is to link the intervention to the targeted people and their location. Profiling the target audience, identifying their communication preferences, media use and other characteristics is essential for ensuring effectiveness and efficiency of the interventions and strategies.

2.2. Drink drivers

Drink driving is a major public health and policing issue; alcohol-related crashes result in substantial injuries, fatalities and property damage across the globe (Portman, 2013). Numerous studies have looked at the issue from different perspectives and characteristics of drink drivers and the context of drink driving behavior have been investigated. Men, aged 40 to 49 were found to be more likely to drink and drive; gender being found as a very powerful predictive variable. Men drink drivers are also more likely to participate in high-risk activities (speeding being one of them) and/or disregard rules and regulation. Other important predictors for drink driving are: high annual mileage, skilled or junior salaried and permanent employment, and being married or cohabitating (Portman, 2013).

Increased enforcement and linking enforcement to the drinking behavior and locations were found to be effective in reducing behavior and/or crashes. Behavioral interventions addressing motivations or intentions were also found effective (Armstrong, 2014). Exposure to others’ drink driving during adolescence was associated with an increased likelihood of DUI as a young adult. Strategies to reduce youth exposure to drink driving are warranted (Evans-Whipp, 2013). Similar to speeding, knowing the target audience characteristics, is essential for ensuring the effectiveness and efficiency of interventions and strategies.

3. METHOD

To profile drivers with the ‘exceeding speed limit’ and/or ‘impaired by alcohol’ contributory factors assigned in collisions, an extensive dataset was used, comprising all reported injury collisions between 2011 and 2015 in the UK (police records), where a police officer attended. This involved 612,221 collisions for which a contributory factor (CF) was assigned (e.g. following too close, failed to look properly, fatigue, exceeding speed limit etc.). Multi-level mixed logistic regression analyses are conducted, utilizing the hierarchical nature of the data, namely individuals/drivers within Mosaic Types. As a robustness check, a logistic regression clustered by Mosaic Type is then conducted. Lastly, the results for the two CFs are compared, and common and distinctive characteristics are discussed.

4. RESULT

The analysis is firstly reinforcing results from previous studies regarding the profile of speeding respectively drink drivers and is also revealing some new significant predictors. For the speeding behaviour, driver gender, driver age, journey purpose, and vehicle type are identified as powerful predictors for the behavior, from the vehicle and driver related variables, which is consistent with the literature. For the collision related variables and crash condition variables categories, light conditions, road surface conditions, speed limit, road type and road class are also powerful predictors for the speeding behavior, again consistent with the literature. For the drink drive behaviour, driver gender, driver age, and vehicle type are again found to be powerful predictors. For the collision related variables and crash condition variables categories, light conditions, road surface conditions, road type and rurality are also found to be powerful predictors for drink driving behaviour.

To determine whether significant variations between Mosaic Types exist in the propensity to speed (respectively drive while impaired by alcohol) and contribute to crashes, after controlling for road category variables, crash condition variables and vehicle and driver related variables, Figure 1 and
Figure 2 display the residual Mosaic-Type effects. A Mosaic-Type whose confidence interval does not overlap the line at zero differs significantly from the UK average at the 5% significance level.

Figure 1: Variations between Mosaic Types in the propensity to be assigned ‘exceeding speed limit’ CF when contributing to crashes in UK: residual Mosaic-Type effects within a 95% confidence interval (N = 612,221)

Figure 2: Variations between Mosaic Types in the propensity to be assigned ‘impaired by alcohol’ CF when contributing to crashes in UK: residual Mosaic-Type effects within a 95% confidence interval (N = 612,221)

The study identified several Mosaic Types significantly more likely to be assigned ‘exceeding speed limit’ CF when contributing to crashes. As can be observed in Figure 1, the first five are: Asian Heritage, Streetwise Singles, Local Focus, Outlying Seniors, and Low-Income Workers.
For drink drive behaviour (Figure 2), the first five identified Mosaic Types more likely to be assigned ‘impaired by alcohol’ CF when contributing to crashes are: **Pocket Pensions, Dependent Greys, Streetwise Singles, Make Do & Move On, and Local Focus.**

5. **CONCLUSION**

The study aimed to profile drivers in the UK who are more likely to be involved in collisions and assigned the ‘exceeding speed limit’ or the ‘impaired by alcohol’ CF, to compare the two profiles in order to identify the common and the distinctive characteristics, and discuss them for relevance in designing common and separate targeted speeding and drink drive campaigns. The study identified several common characteristics between the two groups, such as: age (younger drivers), gender (males), income (low individual or household income), education and work (high percentage of unskilled or low skilled jobs and a low level of education) and lack of trust in local police and in the justice system in general. There are two Mosaic Types present in the top five as more likely to accept and sustain both drink driving and speeding behaviors within their communities:

*Streetwise Singles* - hard-pressed single people renting very low value social flats and searching for opportunities. Most adults are between 26 and 55 years old with the predominant group around 26 to 30 years old. Education is limited, and many have no, or only very low qualifications, and work in low-paid routine and semi-routine jobs; and

*Local Focus* - families living in affordable village homes in rural communities. Most adults are aged between 18 and 50 years old, with the predominant group around 36 to 45 years old. Local Focus are often skilled tradespeople working locally across a range of sectors.

Some distinctive characteristics can maybe be derived from the Asian Heritage Mosaic Type whose drivers, although they are the most likely to speed, are significantly unlikely to drink and drive. That is perhaps a cultural aspect. On the other hand, Pocket Pensions are very likely to drink and drive but unlikely to speed.

*Asian Heritage* - extended young families with children, in neighborhoods with a strong South Asian origin, where cultural traditions and faith are important. Most adults are between 18 and 45 years old with the predominant group around 26 to 30 years old. They are generally working in low paid routine occupations in transport or food service. They are the least likely to drink and participate in sport.

*Pocket Pensions* – the majority of these communities have no, or only very low qualifications, and had worked in low-paid routine and semi-routine jobs. Most of them are retired and their incomes are often limited to state pension and other benefits. The alcohol consumption is moderate to high, with an average proportion of people from these communities being likely to drink alcohol once a day or more, when compared to the entire population proportions.

Therefore, depending on the situation and the composition of the targeted population, sometimes there are enough common characteristics to support joint intervention for drink drivers and for speeding drivers. Nevertheless, the situation must be analyzed since sometimes the offenders might come from totally different communities, cultural, social or in other ways, and finding a common ‘language’ might be a real challenge. A detailed description of the Mosaic Types and their characteristics, together with the description of the multilevel logistic regression models are provided in the extended version of the paper.
REFERENCES


