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The factors of female taxi drivers' speeding offenses in Taiwan

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ABSTRACT

Females choosing taxi driving as a career is rare, therefore, investigating such samples is often difficult. Speeding is one of the most common driving violations, however, there has been no research looking into female taxi drivers' speeding issue. This study explores the factors of female taxi drivers' speeding offenses in Taiwan. Data is based on a national survey and includes 235 professional female taxi drivers. The results indicate that female taxi drivers work approximately 27.37 days per month, at a mean of 9.76 h per day. Of the female taxi drivers represented in this study, 22.8% reported at least one speeding offense over a one-year period. The results of a logistic regression model reveal that the determinant factors associated with female taxi drivers' speeding offenses are significantly related to age, educational level and mileage driven. However, job experience, business operating style, and vehicle engine size are not associated with committing speeding offenses. Practical implications for traffic safety of female taxi drivers are also discussed.

1. Introduction

Taxi driving is considered to be one of the most hazardous occupations because of the high occupational exposure to hazardous environmental conditions on the road and the risks involved (Baker, Wong, & Baron, 1976; Haines, 1997; Johnson, Sorlie, & Backlund, 1999; Mayhew, 2000). Some studies have demonstrated that a taxi driver's time-on-the-road is often considerable (Dalziel & Job, 1997; Tseng, 2013). In addition, driving a taxi involves a constantly changing and often stressful array of disparate stimuli. Taxi drivers sometimes travel long distances in an unfamiliar areas without intimate knowledge of the local geography and traffic conditions, even though they might have some general knowledge of the overall road systems and directions (Lam, 2004). Moreover, Dalziel and Job (1997) found that taxi drivers who were assessed as being higher risk takers also continued to work when tired, even with the knowledge that fatigue may increase the chances of being involved in an accident.

Previous research on taxi driving mostly focuses on the causes of accidents. Generally, there have been many studies conducted in examining the risk of accidents involving taxi drivers (Alakija, 1981; Attewell, 1998; Baker et al., 1976; Dalziel & Job, 1997; Johnson et al., 1999; Koh, Ong, & Phoon, 1986; La, Lee, Meuleners, & Duong, 2013; Lam, 2004; Leick, 1997; Maag,

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Vanasse, Dionne, & Laberge-Nadeau, 1997). However, taxi driver offense rates have not been studied as often as accident rates. Some studies have concluded that taxi drivers commonly fail to look in the relevant direction for the type of maneuvering that they employ on a daily basis, i.e., U-turns and reversing (Clarke, Ward, & Wendy, 2009; Rosenbloom & Shahar, 2007). Moreover, because taxi drivers tend to swerve toward prospective passengers, risks may occur (Lam, 2004; Rosenbloom & Shahar, 2007). Studying taxi drivers' risk behaviors is important in road safety because taxi drivers spend much time on the road than normal drivers, which therefore leads to a higher probability for road accidents to occur.

Among risky behaviors, speeding is one of the most common traffic offenses attracting much road safety research (Nallet, Bernard, & Chiron, 2010; Nilsson, 2004). At high speeds the time to react to changes in the environment is shorter, the stopping distance is larger, and manoeuvrability is reduced (Aarts & van Schagen, 2006). Therefore, speed not only affects the severity of an accident, but also increases the risk of being involved in an accident (Charbotel, Martin, & Chiron, 2010; Elvik, Christensen, & Amundsen, 2004; Laapotti, Keskinen, Hatakka, & Kat, 2001). Öz, Özkan, and Lajunen (2010) concluded that taxi drivers usually drive at lower speeds as the nature of their job requires them to make frequent stops while driving. Moreover, some taxi drivers tend to rush to pick up waiting passengers. Speeding, in turn, increases the risk of crashes among these drivers (Lam, 2004). The variation in speed between drivers contributes to collision rates, as speeding behavior is known to be associated with collision involvement and the severity of collisions (Burns & Wilde, 1995; Lam, 2004). Burns and Wilde (1995) reported that taxi drivers with high-risk personalities are characterized by their excessive speeds. However, few studies have been conducted on the issue of taxi drivers' speeding offenses.

Professional driving is an occupation that traditionally has attracted more males than females (Tse, Flin, & Mearns, 2006), and females choosing taxi driving as a career is rare (Tseng, 2013). Previous literature indicates that there are very few female professional drivers; therefore, female participants are usually kept out of the analyses (e.g. Öz, Özkan, & Lajunen, 2013). It seems only Clarke et al. (2009) pointed the female taxi drivers are at a higher risk of mortality/injury than their male counterparts. Generally, the findings in the literature of normal drivers at speeding tend to be males rather than females (Elander, West, & French, 1993; Simon & Corbett, 1996). Yagil (1998) particularly looked for gender difference in car drivers' motives for obeying traffic laws and in cost benefit considerations related to driving, and found that female drivers expressed more motivation in complying with traffic regulations than male drivers. However, in taxi driving, there is no literature focused on female drivers' speeding issues.

The present study investigates female taxi drivers' speeding offenses in Taiwan, and explores the factors that lead to speeding offenses. There is a lack of speeding literature of female taxi drivers. The study hypotheses in the present study are mainly based on the previous taxi driving literature on traffic accidents and/or risk behavior (Table 1). We expected that the factors related to accidents and/or risk behaviors may also be related to speeding offenses. We assume in this study that the factors in previous literature including age, education, job experience, mileage driven, and business operation styles, may be associated with speeding offenses in female taxi drivers.

In particular, this study first focused on investigating the differences in the speeding offenses of female taxi drivers across the age groups and level of education. Previous literature has pointed out that among the different risk factors that have been proposed and studied; the most potential risk factors are related to the characteristics of drivers (Lam, 2004; Newnama, Mamob, & Tulu, 2014). Some studies have demonstrated that young taxi drivers are associated with more road accidents than their older counterparts (La et al., 2013; Lam, 2004; Maag et al., 1997). Therefore, we expect drivers' age will affect speeding offenses, which is suggested in the following hypothesis:

H1. Young female taxi drivers are more likely to commit speeding offenses than older female taxi drivers.

Some literature demonstrated that taxi drivers' education level is not associated with accident involvement (Koh et al., 1986; La et al., 2013; Lam, 2004; Peltzer & Renner, 2003). However, for driving behaviors, Newnama et al. (2014) found less educated taxi drivers engaged unsafe driving behaviors than more educated taxi drivers. This research suggests that less educated drivers are problematic in road traffic safety and that they are more likely to engage in speeding offenses, compared to more educated drivers. Thus, we expect female taxi drivers' education levels to affect speeding offenses, which suggests the following hypothesis:

H2. Female taxi drivers with less years of education will commit more speeding offenses than drivers with more education.

La et al. (2013) found that taxi driving experience is not associated with road traffic accidents. However, Peltzer and Renner (2003) stated that taxi drivers' risk-taking behavior is inversely correlated with their driving experience. Tseng (2013) also pointed out that new taxi drivers are more likely to commit speeding offenses than experienced taxi drivers. We expect that female taxi drivers' driving experience will affect speeding offenses. Thus, it is hypothesized that:

H3. Female taxi drivers with less driving experience will commit more speeding offenses than drivers with more driving experience.

In car driving, many previous studies concluded that driving mileage is the most important predictor of driver violations and accident involvement (Elvik et al., 2004; Gebers & Peck, 1992; Kaneko & Jovanis, 1992; Lourens, Vissers, & Jessurun,