



Identifying psychological and socio-economic factors affecting motorcycle helmet use

Mahdi Quchaniyan Haqverdi^a, Seyedehsan Seyedabrishami^{a,*}, John A. Groeger^b

^a Faculty of Civil and Environmental Engineering, Tarbiat Modares University, Tehran, Iran

^b Department of Psychology, University of Hull, Cottingham Road, Hull HU6 7RX, United Kingdom

ARTICLE INFO

Article history:

Received 17 February 2015

Received in revised form 8 September 2015

Accepted 10 September 2015

Available online 26 September 2015

Keywords:

Motorcyclist
Helmet use
Enforcement
Factor analysis
Logit

ABSTRACT

Sixty percent of motorcyclist fatalities in traffic accidents of Iran are due to head injuries, but helmet use is low, despite it being a legal requirement. This study used face-to-face interviews to investigate the factors associated with helmet use among motorcycle riders in Mashhad city, the second largest city in Iran. Principal component analysis (PCA) and confirmatory factor analysis (CFA) were used for data reduction and identification of consistent features of the data. Ordered and multinomial logit analyses were used to quantify the influences on helmet use and non-use.

The data show that 47% of the sample used a helmet, but a substantial proportion of these did not wear their helmet properly. In addition, 5% of motorcyclists believed that helmets reduced their safety. Norms, attitudes toward helmet use, risky traffic behavior and awareness of traffic rules were found to be the key determinants of helmet use, but perceptions of enforcement lacked influence. Duration of daily motorcycle trips, riding experience and type of job also affected helmet use. Results indicate that motorcyclist training, safety courses for offending motorcyclists and social programs to improve social norms and attitudes regarding helmet use are warranted, as are more effective law enforcement techniques, in order to increase proper use of helmets in Iranian motorcyclists. In addition, special safety courses should be considered for motorcyclists who have committed traffic violations.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Motorized two wheelers (MTW) provide little protection for their riders. Despite this lack of safety, they allow economical and convenient travel for a large portion of population in cities with street traffic congestion and inadequate public transit services (Musso et al., 2010; Tuan, 2012). Motorcycling constitutes a considerable share of urban travel in Iran (8% in Mashhad), and is the main mode of transportation in some rural areas (Mashhad Traffic and Transportation Organization, 2012). The government of Iran is about to remove subsidies on gasoline and because of their comparatively lower gasoline consumption, the popularity of MTWs is expected to increase, especially in large cities.

In Iran a license is required for all types of MTWs. Thirty hours of training for theory and practice is necessary before the riding

test. While there is no gender restriction on licensing, for cultural reasons, female motorcyclists are very rare.

Twenty-four percent of traffic accident fatalities in Iran are motorcyclists. As almost a third (31%) of those who die are aged 18–24 years, this represents an enormous loss of potential years of life. Head injury is the main cause (61%) of motorcyclist fatality (Iranian Legal Medicine Organization, 2014).

Several studies have shown that motorcycle helmets reduce the severity of motorcyclists accidents and decrease the risk of death in crashes by as much as 40% (Keng, 2005; Savolainen and Mannering, 2007). Types of helmet worn and improper use of helmets also affect motorcyclists' protection considerably (Yu et al., 2011). Since 1970s, motivated by the proven or assumed benefits of motorcycle helmets, various projects involving comprehensive helmet legislation and regulations, have begun in different countries in order to promote the use of helmets (Kraus et al., 1995). Increased democracy, education level, per capita income, political stability, and more equitable income distribution within a country are associated with the enactment of road safety laws (Law et al., 2013). In Iran it has been illegal to ride a motorcycle without wearing a helmet since 2002. However, available observational statistics indicate a low rate of helmet use from zero in rural areas to 50% in the Central Business

* Corresponding author.

E-mail addresses: mahdi.quchaniyan@yahoo.com (M.Q. Haqverdi), seyedabrishami@modares.ac.ir (S. Seyedabrishami), j.groeger@hull.ac.uk (J.A. Groeger).

District (CBD) of Tehran (Zamani-Alavijeh et al., 2011; World Health Organization, 2011).

Promoting the use of helmets by motorcyclists has always been difficult. Perceived limitations on visual and auditory capacities (Papadakaki et al., 2013; Hung et al., 2008; Ranney et al., 2010), subjective reports of helmet weight, and increased temperature when wearing helmets are among the reasons motorcyclists refuse to wear helmets (Li et al., 2008; Orsi et al., 2012). The inconvenience of carrying the helmet when the motorcycle is parked is also seen as a deterrent to helmet use.

In societies where the importance of helmet use has not been publicized, modifying motorcyclists' routine behavior constitutes a real challenge, and in countries such as Iran, social norms for the desirable use of helmets have not been established, and many people see helmet use as an unusual and unnecessary action. Because of this we would argue that the absence of relevant social norms and perceptions about helmet use are the main obstacles to helmet use (Ranney et al., 2010; Li et al., 2008; Skalkidou et al., 1999).

Furthermore, road users' psychological characteristics and mood also influence traffic behavior (Papadakaki et al., 2013; Stephens and Groeger, 2011; Lund et al., 1991), and studies suggest that risky behaviors of different types are strongly inter-related. Thus, a single behavior such as helmet use should not be considered without considering other aspects of safe motorcycle riding behavior (Hung et al., 2008; Ranney et al., 2010) and the wider traffic system in which the behavior of interest occurs (Groeger and Rothengatter, 1998).

Thus far the effects of enforcement have been investigated less than other factors, and are mainly limited to roadside surveys before and after the start of the helmet law enforcement. Survey results from the US states of Texas, Arkansas and California have indicated an increase from approximately 50% helmet use before the law to 98% after the start of law enforcement (Kraus et al., 1995; Lund et al., 1991). Studying the impact of important factors such as level of police presence, size of penalties (e.g. cost of fines) and perception of enforcement strictness by motorcyclist, have been investigated in previous studies, but findings are inconsistent (Zamani-Alavijeh et al., 2011; Hung et al., 2008; Li et al., 2008).

Impact of travel characteristics, such as trip length, road type, and urban and suburban environments have been investigated in several previous studies (Hung et al., 2008; Li et al., 2008; Skalkidou et al., 1999; Ambak et al., 2010; Yannis et al., 2012). However, these studies have not yielded consistent findings. Inconsistency in these results may be due to influence of road type on whether motorcyclists considered helmet use necessary, as well as variation of enforcement across different road types. Observational roadside studies have shown that motorcyclists are more likely to use helmets in winter, weekdays and early morning hours (Zamani-Alavijeh et al., 2011; Li et al., 2008; Skalkidou et al., 1999; Conrad et al., 1996; Gkritza, 2009), but have not revealed why these factors affect helmet use, or whether these factors are causal.

Previous studies show that motorcyclists who are older, have higher levels of education and longer experience of motorcycling and those with a history of motorcycling injury, use helmets more than others (Papadakaki et al., 2013; Ranney et al., 2010; Ambak et al., 2010; Arosanyin, 2010; Hung et al., 2008; Kulanthayan et al., 2000). The consistency with which factors emerge in studies conducted in different countries is indicative of their importance.

This study aims to help decision makers to develop methods to increase helmet use by motorcyclists, by identifying which factors might influence future helmet use. We assumed that individual motorcyclists do not behave consistently with regard to helmet use in all circumstances, and for this reason we initially adopted discrete choice models in an attempt to characterize helmet use behavior. Discrete choice models are used to modeling

probabilities and using econometric tools to make probabilistic statements about the occurrence of individual choices (Greene, 2010). We used this approach to evaluate the influence of a broad range of factors on helmet use, including: beliefs associated with helmet use, the influence of individual attitudes and social norms on helmet use, as well as the effects of enforcement-real and implied, and perceived likelihood of detection or apprehension.

2. Methods

2.1. Participants

Of 222 potential respondents approached, all but 2 completed interviews. All respondents were male, as there are very few female motorcyclist in Iran. Respondents were aged at least 18 years, and the average age of sample was 31 years. 65% of respondents were married. The vast majority of participants were residents of Mashhad (86%), and 32% were employed as service workers. On average participants had 11 years of motorcycling experience.

2.2. Procedure

The data reported below were all collected in January 2012 from respondents interviewed at motorcycle repair shops, selected at random in zones of poor and middle income in Mashhad city, because upper income households almost use private cars. Mashhad is Iran's second largest city, with a population of 2.9 million (Mashhad Traffic and Transportation Organization, 2012). Interviews were performed for quantitative research and carried out between 15:00 and 20:00, the peak hours for repair shops. During January 2012, Weather Underground (<http://www.wunderground.com>) shows the weather at Mashhad Airport to have ranged in temperature from -4°C to 7°C (average 1°C), 0 mm average precipitation and wind between 0 km/h and 34 k/mh (average 6 k/mh).

Previously, pilot interviews were carried out on 24 respondents at gas stations, parking lots and a motorcycle repair shop. Participant recruitment was far more successful in the latter type of location. This pilot study determined the location and final structure of the questionnaire-led interviews in the main study. The first author and three volunteer university students, who were informed in advance about the interview purpose and research objectives, performed the interviews.

2.3. Interview design

As described above, the final form of the interviews was determined following a pilot study. It was decided to concentrate on five areas, each drawing on previous literature, while also reflecting the social features of Iran.

2.3.1. Demographics

This section focused on socioeconomic characteristics of respondents, including age, marital status, household size, employment, place of residence, and income.

2.3.2. Motorcycling experience and risk exposure

This section questioned respondents on their ownership of motorcycles, years of riding experience, purposes for which motorcycle is used (e.g. recreation, travel to work/education, etc.), use of highways, average trip duration (minutes) and trips frequency (number of days per week of motorcycle use).

Download English Version:

<https://daneshyari.com/en/article/572128>

Download Persian Version:

<https://daneshyari.com/article/572128>

[Daneshyari.com](https://daneshyari.com)