



Motorcycle fatalities in Malaysia

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ARTICLE INFO

Article history:

Received 29 June 2011

Received in revised form 8 February 2012

Accepted 10 February 2012

Keywords:

Motorcycle

Fatality

Malaysia

ABSTRACT

Malaysia has the highest road fatality risk (per 100,000 population) among the ASEAN countries and more than 50% of the road accident fatalities involve motorcyclists. This study has collected and analysed data from the police, government authorities, and national and international research institutes. Only fatality data are used due to the severe underreporting of severe injuries (up to 600%) and slight injuries (up to 1400%). The analysis reveals that the highest numbers of motorcycle fatalities occur in rural locations (61%), on primary roads (62%) and on straight road sections (66%). The majority are riders (89%), 16 to 20 years old (22.5%), and 90% of the motorcycles are privately owned. Of those involved in fatal accidents, 75% of the motorcyclists wear helmets, and 35% do not have proper licences. The highest number of fatalities by type of collision is 'angular or side' (27.5%). Although fatal motorcyclist crashes mostly involve 'passenger cars' (28%), motorcyclists are responsible for 50% of the collisions either by crashing singly (25%) or with other motorcyclists (25%). While male motorcyclists predominate (94% of fatalities), female motorcyclists aged 31 to 70, possessing 'no licence', not wearing helmets and travelling during the day, account for a higher percentage than male motorcyclists. Malaysia must acquire more motorcycle exposure data and establish an injury recording system and database based on hospital-records. To reduce motorcycle fatalities, it first has to understand why young male motorcyclists are prone to fatal crashes in the evenings and on weekends on rural primary roads, especially on straight road sections.

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1. Introduction

Road injuries and fatalities are a growing concern in Malaysia, with more than 6000 killed and over 25,000-recorded injuries yearly for the past 5 years [1]. Road fatalities have shown a steady increase of 4% per year in the last 7 years, rising to 6745 in 2009 [1]. More alarmingly, Malaysia has had the highest fatality risk, i.e. death per 100,000 population, in the world since 1996! [2]. Fig. 1 shows that the majority of road accident fatalities involve motorcyclists, constituting more than 50% of the total number of fatalities. In 2009 alone, motorcycle fatalities reached 4070, which is the highest for the last 10 years [1]. Fig. 1 also shows that motorcycle fatalities are 3 times higher than car fatalities, 6 times higher than pedestrian fatalities and nearly 50 times higher than bus passenger fatalities.

Road accident statistics based on police injury records are probably inadequate and insufficient due largely to underreporting [3–5]. Comparing Malaysian accident statistics to a highly developed motorised country like Sweden (see Table 1), it can be concluded

that there are 9 severe injuries for each fatality in the Swedish statistics, while there are only 1.4 severe injuries per fatality according to the Malaysian statistics. The rate of slight injuries per fatality in Sweden is 57 to one, while according to statistics in Malaysia it is 4 to one. Concerning motorcycle injuries and fatalities, the rate of underreporting of injuries in Malaysia is similar. Due to the unreliable injury statistics in Malaysia, further analysis of road safety problems can only be based on fatalities, and including injury data in the analyses would induce bias in inferences and the marginal impacts of a variety of factors could be overestimated [6].

As the total of motorcycle billion kilometres travelled in Malaysia increased from 1999 to 2008, motorcycle fatalities increased as well; see Fig. 2, which indicates that motorcycle casualties are affected by the increase in exposure.

Motorization in Asian countries is growing fast and the motorcycle is the dominating transport mode. The number of motorcycles per thousand people averaged over several major Asian cities is approximately 196, which is 7 times the average of the rest of the world [11]. For example, the number of registered motorcycles in Taiwan comprises 50% of the total number of registered vehicles; in Thailand it is 63%, in Cambodia 84%, in Vietnam 95%, in Lao 79% and in Indonesia 73% [12–14]. Malaysia, with a population of 27.6 million, is not an exception [15,16]. According to The Road Transport Department of Malaysia, the total number of motorcycles in 2009 was 8,940,230

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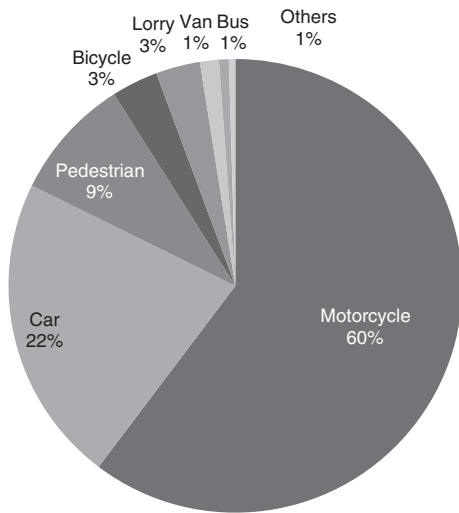


Fig. 1. Fatality distribution by mode of transport [1].

Table 1 Road accident severity in Sweden and Malaysia in 2008 [7,8].

	Fatalities	Severely injured	Slightly Injured	Severe: Fatal	Slight: Fatal
<i>Sweden</i>					
All types of accidents	397	3657	22,591	9:1	57:1
Motorcycle accidents (rider and passenger)	51	341	898	7:1	17:1
<i>Malaysia</i>					
All types of accidents	6527	8868	25,747	1.4:1	4:1
Motorcycle accidents (rider and passenger)	3898	5472	10,326	1.4:1	2.6:1

(47% of all motorised vehicles), which was 5% more than passenger cars [16,17].

The proportion of the motorcycle population on Malaysian roads varies from state to state. In less developed states such as Perlis and Kelantan (northern part of Malaysia), the motorcycle population is more than three-quarters of the total motor vehicle population [18,19]. In more developed states such as Selangor (Western part of

Malaysia), motorcycles constitute one-third of the total motor vehicle population. The motorcycle is the major mode of personal transport for the low-income urban community [20].

In general, motorcycles are the major contributor to road fatalities in the country, with no sign of declining in the near future [19–24]. Moreover, motorcyclists have a higher fatality rate per distance travelled than other vehicles; for example, in 2004, there were 32.2 fatalities per billion kilometres travelled whereas for passenger cars it was 8.39 fatalities per billion [9].

2. Aim

The aim of this paper is to analyse the causality risk of motorcyclists, including both riders and passengers, in order to find the factors contributing to motorcycle crashes and subsequently build a base for further research on how to improve the situation of motorcyclists.

3. Method

The motorcycle fatal accident data is analysed in terms of frequency and pattern by type of location, area, road, time, crash type, gender, age, ownership and type of licence. The data comes from various sources, such as the Malaysian Royal Police Department, Malaysian Institute of Road Safety Research (MIROS), Department of Statistics [15], Highway Planning Unit [16], Road Transport Department (JPJ), Department of Road Safety (JKR), Public Works Department (JKR) and World Health Organization (WHO) reports. The main core of the fatal motorcycle accident data, however, comes from the Malaysian Royal Police Department.

4. Analyses

4.1. Malaysian motorcycle fatalities in comparison to ASEAN countries

Malaysia’s motorcycle fatalities are not among the worst in the Association of South East Asian Nations, ASEAN. Motorcycles constitute approximately 58% of the vehicles in ASEAN countries, and over the last decade the motorcycle has been the major contributor, with 52%, to road traffic fatalities [14]. If we compare motorcycle fatalities per 10,000-registered motorcycles in each country, Malaysia ranks seventh as seen in Table 2. The three highest are Cambodia (75.1),

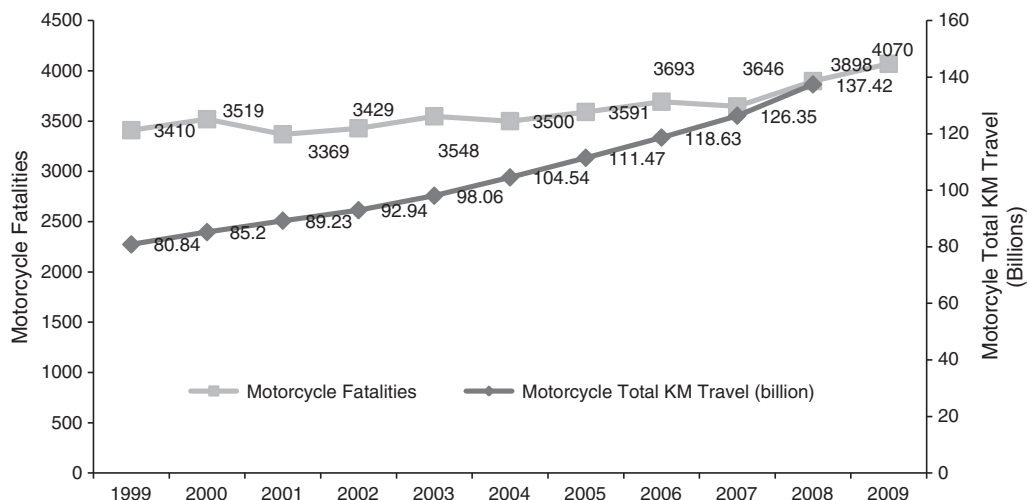


Fig. 2. Total motorcycle kilometres travelled and motorcycle fatalities between 1998 and 2009 [8–10].

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