

STUDY TO DRIVING BEHAVIOR OF MOTORCYCLE SAFETY IN THE CITY OF RATCHABURI PROVINCE, THAILAND

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Abstract

This research aimed to study factors related to the behavior of motorcyclist safety of residents in the city of Ratchaburi Province. The samples in this research were people who ride a motorcycle in the city of Ratchaburi Province. The questionnaire was used to collect data. The statistics used for data analysis include the frequency, percentage, mean, standard deviation, independent sample -test and One-way ANOVA. The results showed that most of the samples were male, graduated from elementary /secondary education level, aged between 21-40 years old, were single, lived in the city of Ratchaburi Province. Most people concern on awareness of accident prevention behaviors, which consisted of enforcement and legal regulation, behavior for motorcycle riding and risky behavior, and perceived level. hypothesis testing found that difference in gender, education, and period of license or driving license affected different level of awareness of accident prevention behavior at the statistically significant level as of 0.05.

Keywords: Safety Drive, Motorcycle Riding, Ratchaburi Province

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Introduction

Accidents are the loss of Thailand that has increased rapidly and continuously. In particular, road traffic accidents are the number-one cause of death for all accidents. The statistics of road traffic cases in Thailand in 2014 have reported property damage caused by an accident in Thailand worth up to 1,241 million baht. In addition, the Medical Coordination Office, Department of Medical Affairs said that the loss of traffic accidents that often occur at a young age. Thailand Development Research Institute (TDRI) has calculated the loss of property, income and production of the deceased and disabled throughout life expenses for medical treatment and income lost during medical treatment and recuperation appears that Thailand has an economic loss of approximately 61,079 to 92,290 million baht per year or an average of 7-10 million baht per hour. Statistical data in various fields and from a preliminary study on motorcyclist behavior of people in Mueang District, Ratchaburi Province, Thailand, found interesting information that, in each year, there are 12 - 15 cases per year have accidental deaths from motorcycle; about 40 percent slightly injured from motorcycle and 90 percent received hospital treatment.

According to the aforementioned information, the researcher envisaged the importance study about the safe driving behavior to find the factors related to safe motorcycle driving behavior. The study was conducted in Mueang District, Ratchaburi. The result obtained from this study can help related persons to obtain the factors that finally can prevent and reduce the number of accidents derived from motorcycle riding.

Literature Review

Concept of Risk- Compensation Theory

This study uses two complementing theories to understand fatal road accident in relation to inter-group risk. Figure1 presents how sociocultural and socioeconomic factors are associated with road traffic accident and the resultant outcomes, and death/injury. Risk-compensation theory developed by a Canadian psychologist (Wilde, 1982). The acceptable risk was based on some predetermined cost and benefit of their action. Factors of impulsivity, sensation-seeking and attitudes toward dangerous driving but dissipates with age (Richer & Bergeron, 2012). The theory proposed that most minority groups tend to act unlawfully, and they develop everyday resistance practices that include various unhealthy behaviors. As it appears in Figure 1, some behaviors such as breaking traffic laws, abuse of drug and alcohol are common resistance practices among non-dominant minorities. Risk culture varies geographically among countries and within a country. Sociologist defined culture as the 'knowledge, beliefs, art, ethics, law, and all other abilities and habits necessary for a person to be a member of society' (Factor, Mahalel, & Yair, 2007). Cultural background influences how people behave in a society. Past studies affirmed that cultural differences among drivers have varying implications in terms of driving behavior and accident risk (Hayakawa, Fischbeck, & Fischhoff, 2000; Herrero-Fernández et al., 2016; Özkan, et al., 2006).

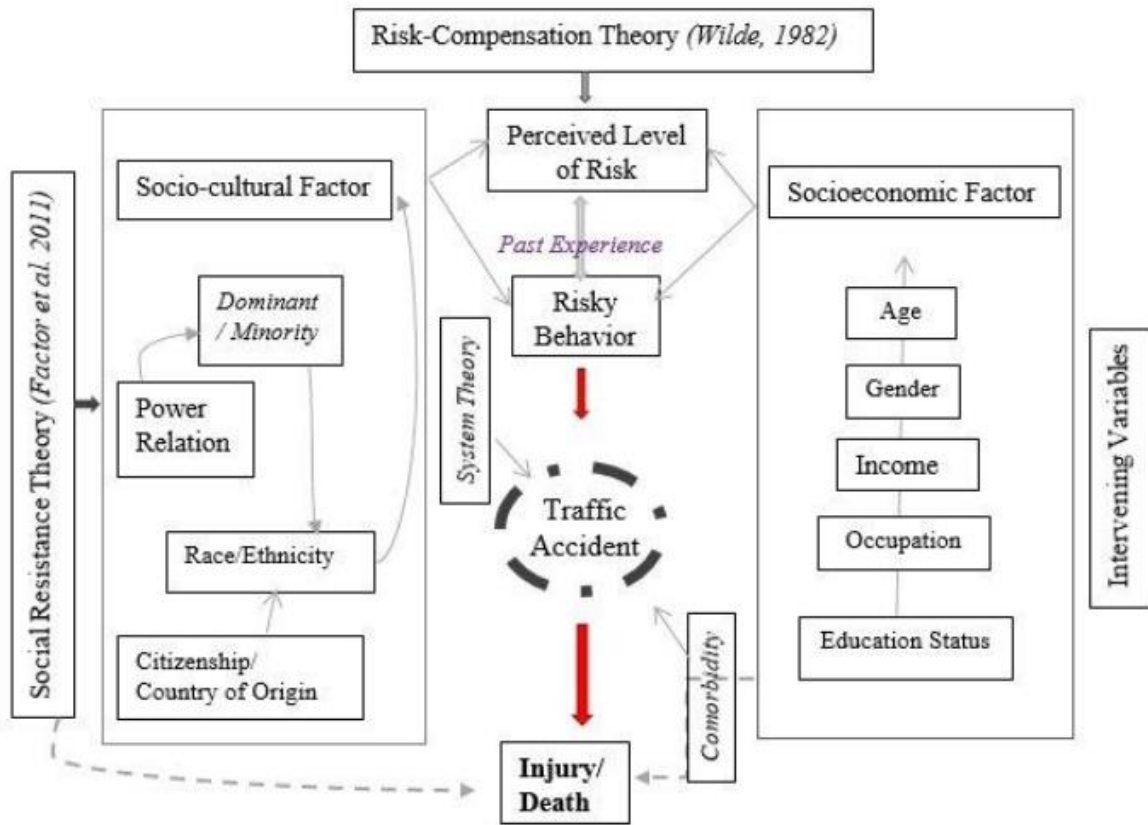


Figure 1 Road Traffic Accident Framework using Social Resistance Theory and Risk-compensation Theory.

Concept of Traffic Accidents

Traffic accidents are considered one of the most important problems in society today which has been causing impacts on economy, society and public health. From the study of the cause of the traffic accident analyzed and classified according to gender, date, time and location, as well as behavior of the injured persons, found that the accident is not a coincidence to has summarized the 2 causes of accidents; (1) Unsafe act is including various behaviors such as carelessness, teasing of inappropriate things and violation of regulations laid down. Especially, this cause has a resulted from the character or attitude each person who is awakened, buried, or taught in a different environment. The effected of accident is causing different levels of precaution for the safety of each person; (2) Unsafe Condition has environment for traffic that may cause accidents, such as slippery roads, insufficient lighting along of curves road, rough roads and broken rear light of car. These are for example Unsafe conditions are physical causes of an accident that can be resolved more easily than behavioral problems (Lukjunyabarn, 1995; Lin, & Kraus, 2009; Moskal, Martin, & Laumon, 2012; Chumpawadee et al., 2015). Accident prevention and control guidelines have 3E consist of; (1) Education is a process of behavior modification that leads to safety. By properly educating about

safety in order to create conceptual values attitude leads to safe behavior; (2) Engineering is an operation involving technicians, the use of technology and various modern devices becomes to safe; (3) Enforcement and Legal regulation effort to decrease accident (Downing, & Iskandar, 1997). Research Literature is studying behavior modification in order to prevent motorcycle accidents by volunteer friends. The results show that the operation of health education by training a group of volunteers to change behavior preventing accidents from motorcyclists by theory of patterns of health beliefs and competence to determine activities. They change perception of decline the risk of accidents due to motorcycle accidents and good recognition results for implementation of recommendations. Expectations of one's own ability act in order to better than prevent accidents from driving motorcycle (Juthaphonkun, 1995). Mental variables and driving situations related to safe driving behavior of private motorists in Bangkok (Ariyapinyo, 1996). The results found that whether the driver has knowledge about safe driving and get more flexibility from traffic conditions or the condition of convenient roads to be affected for good attitudes towards safe driving behavior. Those driving behavior will have more careful than who are less awareness for safe driving behavior. Risk behavior for motorcycle accidents in Phuket Province found that 97.70% had risky behavior from motorcycle accidents such as talking mobile phone between driving, having more than 1 person sitting behind the motorcycle, wearing black overcoat while to drive at night. The factors that were found to be related to risk behaviors are gender, age, marital status, occupation, motorcycle accident from closely family members. Factors risk behaviors such as order of arrests, the frequency of drinking while driving, knowledge about traffic rules affected to driving accidents. Factors that do not correlate with risk behavior such as monthly income, driving experience, severe motorcycle accident of the rider and personality (Nakra, 1996). There is other study about preventing accidents from motorcyclists in Chonburi Province, Thailand (Lukjunyabarn, 1995). The results of the study revealed that knowledge and attitudes regarding accident prevention were at a medium level. The operation was good. Knowledge and practice compared the preventing motorcycle accidents between people who have had an accident and people who have never had an accident to be found that no difference. Both groups had knowledge and attitude is not different.

Research Framework

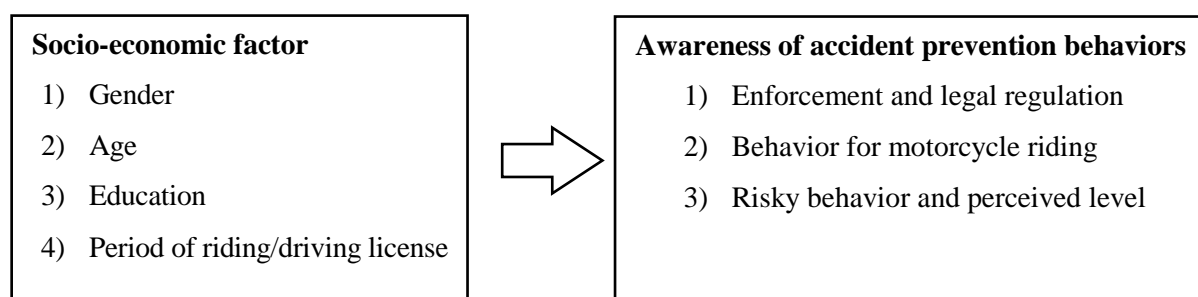


Figure 2 Using Theory adapt into Road Traffic Accident Framework at Ratchburi, Thailand

Methodology Research

The population used in this research is general people who live in the Mueang District Ratchaburi Province. There is a total of 199,603 people can drive motorcycles (the Bureau of Forecasting Statistics National Statistical Office, 2014). The sample size used in the study was based on the concept of Yamane (1990, cited in Apomakon, 1996) at a 95% confidence level. Herewith there were 150 samples selected to be used in the study since the limitation of time and spending.

The instrument used in this research was a questionnaire which the researcher created by dividing the questionnaire into 4 parts as follows; 1) general information about the people with check list items, 2) motorcycle safe driving behavior with a Likert scale in 4 levels : routine, frequent, infrequent, never having positive and negative actions, 3) attitude of riding a motorcycle safely with a Likert scale with 3 levels: agree, unsure, disagree, and 4) awareness of accident prevention behaviors for safe motorcyclists with a Likert s scale of 5 levels: the highest, high, moderate, less, the least.

The questionnaires were created as a research tool by following the steps: 1) study criteria and methods for creating questionnaires and test the relevant documents, researches and theories based on the study objectives, 2) set dependent and independent variables by adapting the framework from the Road Traffic framework at Ratchaburi, Thailand, 3) bring the questionnaires to experts who are involved and have experiences in researches about safe driving behavior in order to score the validity of the questionnaire which the score of index of congruence was 0.93, 4) make corrections according to the comments from the experts in order to clarify the question items in the questionnaires, and 5) test the reliability of the questionnaires by using Coefficient Cronbach's Alpha.

In order to analyze the collected data, the researcher employed independent sample t-test and One-way ANOVA to compare their opinions towards motorcycle riders' behavior in terms of enforcement and legal regulation, behavior for motorcycle riding, and risky behavior and perceived level categorized by the factors related to gender, age, education and period of driving license. The result will be displayed in descriptive and tabulated form.

Results

General information of respondents

There were 150 samples taken into the study. As a result, the information can be displayed that most of the samples were male, graduated from elementary /secondary education level, aged between 21-40 years old, were single, lived in the city of Ratchaburi Province.

Motorcycle safe driving behavior

From 150 questionnaires given to the sampled motorcycle riders, the result of the study related to riding motorcycle behavior can be given below. There are 79 persons or 52.70 percent having safe driving behavior by surveying the road condition before using the motorcycle. About 86 persons or 57.30 percent wear helmets and use straps while driving motorcycles regularly. About 59

persons or 39.30 percent rides motorcycle with more 1 billion person. About 74 persons or 49.30 percent stop the motorcycle to let people walk across the street. About 67 persons or 44.70 percent use horns to signalize for continuing riding on the road when there are more motorcycles and cars. There are 74 persons or 49.30 percent slowing down the car to stop seeing the signal lights at the intersection turning yellow. There are 76 persons or 50.70 percent regularly slowing the motorcycle down to let the waiting car leave before. About 67 persons or 44.70 percent lowering the lights while driving motorcycles at nighttime. There are 79 persons or 52.70 percent giving light signals or hand signals when turning. About 83 persons or 55.30 percent riding slower when there is heavy rain. Before parking or stopping on the side of the road, there are 79 respondents or 52.70 percent giving a warning signal the cars which follow on the way. There are 62 respondents or 54.70 percent slowing down when arriving at separate way. About the 51 persons or 34.00 percent wear white shirts if they had to drive motorcycles at night.

Opinion towards awareness of accident prevention behaviors

From the study associated with opinion towards awareness of accident prevention behaviors in terms of enforcement and legal regulation, behavior for motorcycle riding and risky behavior and perceived level, the study result indicated that the motorcycle riders agree on the mentioned dimension in the moderate level. When considering into significant point, motorcycle riders in Mueang District Ratchaburi had the highest score to agree with the safety motorcycle driving by correctly wearing a helmet when riding motorcycle to be reduce accident on the road average of 2.95 and the lowest score to agree with requesting a motorcycle driver's license may not be necessary for skilled riders with average of 2.37.

Result of Hypothesis Testing

In order to oversee the comparison study about the motorcycle riders' behavior in terms of enforcement and legal regulation, behavior for motorcycle riding, and risky behavior and perceived level categorized by the factors related to gender, age, education and period of driving license, the researcher then employed independent sample t-test and One-way ANOVA. These two statistics can display the variables compared by each other's. The detail of the study can be displayed below.

Table 1 Shows test results comparing T-test and F –test statistics.

Awareness of accident prevention behaviors	T-test		F-Test (One – way ANOVA)	
	Gender	Age	Education	Period of license or driving license
Enforcement and legal regulation				
1. Riding a motorcycle with more than 1 person is more likely to result in an accident than riding alone.	✓			
2. Driving a motorcycle by passing and crossing other vehicles immediately may cause an accident easily.	✓			
3. Riding monocycle with dressing sloppily or wearing long pants can lead to the accident easily because the cloth can easily get into the wheels of the vehicle.				
4. Motorcycle rider who ride the motorcycle through the red light can cause fatal accidents.			✓	
5. To prevent accidents from riding a motorcycle, the rider should follow the traffic rules.				
Behavior for motorcycle riding				
6. The fact that motorcycle riders can remove some of their motorcycle equipment, such as turn signals, rear-view mirrors, may be at risk of accidents.			✓	✓
7. Driving without pushing other vehicles can reduce the accidents.			✓	
8. Accident from driving a motorcycle can lead to the brain injury if the head get attack.	✓		✓	
9. Riding a motorcycle closely behind a truck may cause a serious accident.			✓	
10. Riding a motorcycle with higher speed can lead to accident than riding a motorcycle with lower speed.				

Table 1 Shows test results comparing T-test and F –test statistics. (Cont.)

Awareness of accident prevention behaviors	T-test		F-Test (One – way ANOVA)	
	Gender	Age	Education	Period of license or driving license
Risky behavior and perceived level				
11. The accident related to motorcycle can affect the mental injury and family’s sadness.			✓	
12. To prevent accidents, motorcycle rider should not ride when feeling of tired or drowsy.				
13. Riding a motorcycle should have only 1 ride pillion person because it makes the rider more stable and safer to drive than many pillion people.			✓	
14. To prevent accidents, alcohol should be avoided before driving a motorcycle.			✓	
15. While driving a motorcycle, the rider should not use a mobile phone because of the risk of accidents.			✓	✓
Total			✓	

From Table 1 showed that female had awareness of enforcement and legal regulation and behavior for motorcycle riding more than male. Motorcycle rider with higher education level had awareness all of enforcement, legal regulation and behavior for motorcycle and risky behavior and perceived level more than motorcycle rider with lower education levels. Motorcycle rider with highly experienced driving license had awareness behavior for motorcycle riding and risky behavior and perceived level more than the one with less experienced driving license. Lastly, motorcycle rider with difference in age had awareness behavior for enforcement and legal regulation, behavior for motorcycle riding and risky behavior and perceived level indifferently.

Discussion

From the study, the researcher can discuss as following. Firstly, motorcycle riders with different gender had different awareness of accident prevention behaviors in term of behavior related to enforcement and legal regulation and behavior for motorcycle riding. This is because the characteristics and risk perception of male and female are different. Female is more likely to perceive the risk and avoid the risk, meanwhile the male is more likely to accept the risk and thriving for the

risk. This can be seen from various accidents that occur in Thailand which the number of getting accidents involved with male (Office of Transport and Traffic Policy and Planning, 2018). In fact, getting into risk sometime is good. For example, doing business and demanding to be successful requires people with risk perception and risk acceptance (Baird, & Thomas, 1985). However, it is not good when using with riding the motorcycle because it can create the death occurrence for themselves (Hayakawa, Fischbeck, & Fischhoff, 2000).

Secondly, motorcycle riders with different education level had different awareness of accident prevention behaviors in terms of enforcement and legal regulation, behavior for motorcycle riding and risky behavior and perceived level. The study also indicated that motorcycle rider with higher education level had awareness all of enforcement, legal regulation and behavior for motorcycle and risky behavior and perceived level more than motorcycle rider with lower education levels. This is because education can provide crucial information and knowledge related to the motorcycle accidents. Every school and educational institute always pinpoints the accidents and severity of the accidents which finally can create the motorcycle rider's mindset to be aware of the accident. In fact, not only school and educational institute, but also the other associated agencies of motorcycle accidents also play import roles in preventing and reducing the accidents from the motorcycle riding (Juthaphonkun, 1995; Lukjunyabarn, 1995; Lin, & Kraus, 2009; Moskal, Martin, & Laumon, 2012; Chumpawadee et al., 2015).

Thirdly, the motorcycle riders with different period of license or driving license had had awareness towards the behavior for motorcycle and risky behavior and perceived level. This is because the period of driving license can reflect the skills of riding as well as the experience in riding the motorcycle. They may know about how the accidents look like and they are more be aware of being such a person in that accidents. Therefore, the person with higher period of driving license perhaps aware of removing some of their motorcycle equipment, such as turn signals, rear-view mirrors or using a mobile phone during the time of riding the motorcycle because it can create the risk and accidents.

Fourthly, motorcycle rider with difference in age had awareness behavior for enforcement and legal regulation, behavior for motorcycle riding and risky behavior and perceived level indifferently. This is because the age may not be the variables that can frankly inform the behavior of the riding since it is needed to consider together with the other variables such as gender, education or period of riding license. For example, people with higher age, but they do not have any knowledge about how to ride the motorcycle or experience in seeing getting closer to the accidents, may not be as aware as the person who had more information or experiences with getting into the accidents. However, the older person will understand about their values and generally spend their lives with health care consciousness (Lukjunyabarn, 1995).

Recommendations

Recommendation from the research

From the study, the researcher can recommend the ways to reduce and prevent the accidents from motorcycle riding. The first is that there should be a focus on giving the more information and knowledge related to the motorcycle rider. This is because the more the motorcycle rider know about the law and regulation, they would behavior more awareness when riding the motorcycle. Secondly, there should be a focus on providing knowledge and information as well as approaching the motorcycle rider by considering their gender. The campaigns or events, especially related to enforcement and legal regulation and behavior for motorcycle riding, should be prioritized and designed base on the gender of the rider because different rider's gender had different awareness of accident prevention behaviors. Thirdly, in order to create the mindset to prevent the motorcycle accidents, there should be a consideration in creating activities related to issuing driving license such as driving training, brochure giving information about driving and others. This is because motorcycle rider with different period of driving license is more aware of accident prevention behaviors in terms of accident prevention behavior and accident perception.

Recommendation for the future study

The researcher can recommend for further study in the following points. The first that the study is mainly based on the quantitative research which lacks in-depth information on how truly the motorcycle riders are aware of motorcycle accidents. Therefore, there should be a study that employs the qualitative method by interviewing or focused group in order to obtain the insight. Secondly, the study primary aimed at studying in single city in one province, which the behavior of the motorcycle rider is differed from the other area. Therefore, the study should be extended to other areas such as in Bangkok, outskirt provinces of Bangkok and remote area so that the study can compare and generalize the contents from the study. Thirdly, this study limited to only general personal factors including gender, age, education, and period of license or driving license. The other variables such as riding behavior, frequency of riding, purpose of riding, heath conscious and others should be also taken into account so that the study result can cover related variables affecting accident prevention behaviors in terms of riding motorcycle.

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