

**Final Report**  
**Research Grant 2010**

**ATRANS**  
**ASIAN TRANSPORTATION RESEARCH SOCIETY**

**Networking Sub-district Administration  
Organization Management For Traffic Safety  
Prevention Activity Campaign.**

**Assoc. Professor Dr.Chulaporn Sota  
Pol. Col. Dr. Natipong Thadtumley  
Mrs. Amonrat pookabkao  
Miss Nawaporn Three –ost  
Mr.Chaiwut Kanchanasantisuk.  
Advisor: Dr.Tuenjai Fukuda**

## ACKNOWLEDGEMENTS

This research was successfully completed with the kind assistance from everyone who joined this research. The Author would like to thank ATRANS (Asia Transportation Research Society ) for financial and academic support including valuable encouragement.

I would like to express my deepest grateful to Dr. Tueinjai Fukuda for valuable advice and suggestion on this research.

I wish to thank the Director of Numoom Sub- District Administration Organization, Kohn Kaen province and Kua Suankuang Sub- District Administration Organization, KuasuanKaung district ,Khon Kaen Thailand for good cooperation and devote for people in communities to increasing concern and good practice for traffic accident prevention.

I wish to thank my sincere gratitude to my parents and my family, my colleague who gave me valuable guidance, consultation, mental support and help for this research.

Finally, Thank the people from both sub district administration communities for kindly spend time and made this research was going on smoothly.

Assoc. Prof. Dr. Chulaporn Sota

## CHAPTER 1

### INTRODUCTION

#### Background

Road safety is no accident. Over a million people are killed each year on the world's roadways: over 3,000 die each day, and tens of millions more are injured. Road traffic related crashes impose an enormous public health burden global. In 2000, road traffic injuries were the ninth leading cause of disability-adjusted –life years lost worldwide and are projected to become third by 2020. The World Health Organization (WHO) is taking a bold step forward by addressing road traffic injuries as a preventable global health problem. (Peden et al, 2001 and Holder, et al, 20

The first National Socio-Economic Development plan of Thailand was established in 1961. This caused Thailand to develop rapidly in all aspects, such as transportation, industry, agriculture, etc. The government however had no national accident prevention plan, so more development produced more traffic accidents and thus patients. Therefore we could say that the traffic accident is a disease that is caused by an increase in development from 1969 up to now. Traffic accidents are a major cause of death and the trend increases rapidly every year. Most deaths occur in youths with about 20,000 cases per year. (Vichit Booryahotara, 1993).

Traffic accidents are a serious problem in Thailand in every province. This leads to Public Health, economic and social problems. In the years 2003 and 2004 there were 65,932 and 86,528 accidents, with 46,035 and 80,305 injuries as well as 11,252 and 13,836 deaths. Traffic accidents have been the third cause of death since 1969 until now. The trend of traffic accidents is increasing rapidly. Although the Thai governor alert to implemented to tackle traffic problem.

Accident deaths are rapidly increasing. Thai deaths, in the year 2000 were 13,194 cases or 21.4 per 100,000. Injury and treatment in all government hospitals is 921,352 cases, 90 percent of injury patients, major cause of death below 50 years old and mostly males. For both injury patients and deaths more than 80 percent are drivers or passengers, and most were motorcycles. The most severe and most causes of death were from head and face (Shamaiporn Santikarn, 2002).

Accidents in developing countries are higher by 10 – 40 times than in developed countries. This is because developed countries can control and prevent the

increasing rate of traffic accident deaths. Developing countries however do not control this problem seriously, so people die prematurely (Vichit Booryahotara, 1993). Injury surveillance and traffic research has found that accidents are the main cause of death with males more than females at a ratio of 3.2 : 1, ages from 15 – 29 years, in the labor group, and having risk behaviors of not using helmets when riding, and being drunk while driving (Epidemiology Division, 2000).

Future Search Conference as a Vehicle for Educational Change: A Shared Vision for Will Rogers Middle School, action, the planning process, the conference design components (the past, the present, the future, and planning), successful outcomes, and lessons learned. (Bailey, 1992)

Hiyarii hatto (Fukuda, Atsushi Fukuda Tuenjai , Mokoto Okamura and Atit Tippichai, 2007) is a Japanese verbal of expression exclaimed when sudden unexpected incident is happened but not yet crashed as individual had perceived the risk and responded promptly to their self consciousness and witnessed the situation and then reacted to stop before the accident occurred so call potential accident or in other word similar to near miss Hiyari hatto concept is a psychological technique which is widely used in Japan for conducting safety issue in hospital, factory, and company and recently use in traffic Safety data collection like black spot identification by IATSS scholars in Japan.

Researchers are concerned about this serious problem so would like to study the potential development of traffic accident prevention among stakeholders in communities beside highway by applying Future Search Conference and Hiyari Hatto to strengthen development both in schools and communities as well as for traffic accident control and reducing the traffic accident rate , mortality and disability in addition to for good quality of life of the people and good society further.

## **2. Research Objective**

- 1. Lesson learn best practice of sub-district Administration organization for Traffic Accident Prevention.
- 2. Knowledge management among best practice and another sub-district Administration organizations for Traffic Accident Prevention.
- 3. Implementation for traffic accident prevention among network.

## **Chapter 2**

### **Review Literature**

This chapter is literature review about traffic accident prevention, AIC (Appreciate Influence Control), Knowledge management, Hiyari Hatto and previous research on traffic accident.

#### **1. Road traffic accident situation in Thailand**

Road traffic accident is an increasing to the major causes of global population injuries and deaths, and has been as a majority global health problem. Estimated almost 1.2 million killed on road crashes while the number injured were high as 50 million (WHO, 2004). The majority deaths are currently among vulnerable road users such as pedestrians, cyclists and motorcyclists. Every day almost 16,000 die from all type of injuries around the world, is the main cause of death among 1-40 year-olds (WHO, 2001), about 25% of all deaths from injuries (Peden et al, 2002), and 90% of global population disability-adjusted life years lost due to crashes, over 50% of deaths occurred among young adults in the age between 5-44 years and the second leading cause of deaths in age between 15-29 worldwide (WHO, 2002). Majority about 90% of problem occurred in low and middle income countries, only 10% occurred in developed or high income countries (WHO, 2002). In economics lost, the cost of road crash injuries is estimated about 1% of GNP in low income countries, about 1.5% in middle-income countries and about 2% of GNP in high-income countries (Jacobs et al, 2000). That due to global health problem which all global regions should be interesting and tackle.

The advances knowledge for solving road traffic accident problem started after WHO's world health report on road safety issued over 40 years ago that induced to the major change in perception, understanding and practice of road injury prevention and shift paradigms among traffic professionals around the world (WHO, 2004). The followed section shift as changed in new knowledge and perception in

road traffic accident can predictability and preventability because when professionals look about crashes, they must be looking about associated causes of crashes, focused on individual level, vehicles and environment. These topics need good data and scientific approach on epidemiology of crashes and data of evident bases support on causal risk analysis. Road traffic safety has been assumed to be responsibility by all of sectors of social, look on road traffic safety as a social equity issue, human error, and vulnerability in sub-groups of social population. Initially, the transport systems developed in high income countries or developed countries can transfer these succeeded technologies to developing countries. All part of the world have increased on motorization, there need to improve the safety of traffic system and need to quality interventions to reduce the risk of road crashes. The keys performance includes in the sections of enhances policy makers, decisions makers, safety professional and practitioners recognizing on traffic accident is an urgent one, which will integrating in strategies, setting the same goals and looking for appropriate environment and social participation in holistic way. These contexts are challenged to road traffic accident solving problem, all of following should to be developed as: increased potential and capacity for policy making supported by research and quality intervention by private and public sector, national strategies plans or incorporating targets where data allowed, formation on good data support system for identifying problems and evaluating responses, collaboration across all sectors or stakeholders on road traffic accident problem taking, include public and private sectors and accountability, adequate resource and strong political drive.

Death rates of mortality from road traffic accident in Africa region had highest rate in 2002 at 28.3 per 100000 populations, followed as all of developing countries in Eastern Mediterranean region at 26.4 per

100,000, South East Asia region at 18.6 per 100,000. But in Western Pacific region lower than 18.5 per 100,000 and region of Americas lower than 16.2 per 100,000, details in figure 1.

**Figure 1** Table of Road traffic injury mortality rates (per 100,000 population) WHO regions, 2000

Road traffic injury mortality rates (per 100,000 population) in WHO regions, 2002		
WHO region	Low-income and middle-income countries	High-income countries
African Region	28.3	—
Region of the Americas	16.2	14.8
South-East Asia Region	18.6	—
European Region	17.4	11.0
Eastern Mediterranean Region	26.4	19.0
Western Pacific Region	18.5	12.0

Source: WHO Global Burden of Disease project, 2002, Version 1 (see Statistical Annex).

In ASEAN Country Thailand is second highest severe while Malaysia is the first highest traffic accident prevention as Figure 2

**Figure 2** Comparison of Traffic accident in ASEAN

### Comparison of Traffic Accidents between Among ASEAN

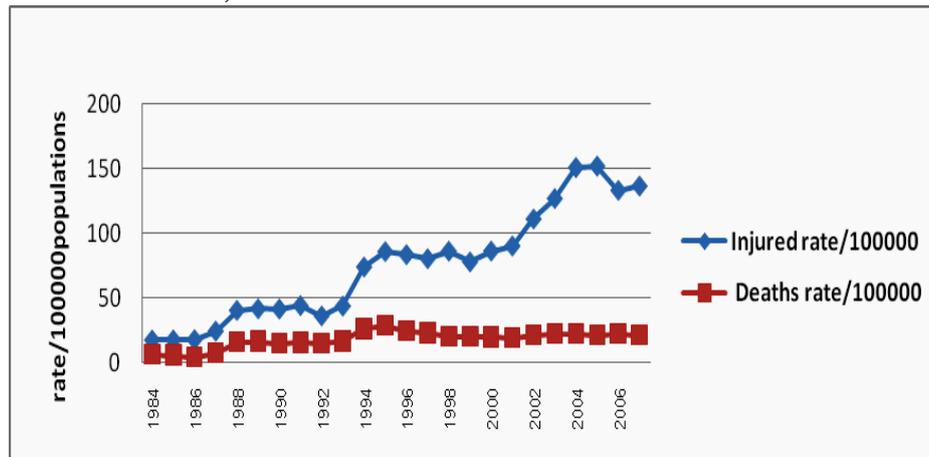
	No. of Death /00,000 people	No. of Death No. of Accident	No. of Death No. of injured
Japan	7.0	0.009	0.008
Cambodia	6.4	0.219	0.130
Indonesia	5.9		0.636
Lao PDR	8.1	0.082	0.060
Malaysia	<b>25.0</b>	<b>0.021</b>	<b>0.119</b>
Myanmar	2.5	0.243	0.123
Philippines	0.9	0.070	0.237
Singapore	5.0	0.033	0.026
Thailand	<b>22.9</b>	<b>0.138</b>	<b>0.178</b>
Vietnam	14.0	0.570	0.555

Atsushi Fukuda, 2006

The types of road traffic accident were mixed in each region. In low income and middle income countries were increased rapidly in motorization as the result of the proliferation of small and inexpensive motorcycles, the number of motorcycles and motorcyclists were high in these countries and often use for mainly of transport (Mohan, 2002). Road design and traffic management in these countries are generally poor and fail to provide adequate in such a mix of traffic, vulnerable road users such as older, children, pedestrians, cyclists and motorcyclists are vulnerability groups of road users in these countries, then two wheels vehicles have been a large proportion in road traffic collisions. Contrary, in high income or developed countries, the transport technologies advance. The road users increasingly have to share traffic space with four wheel vehicles, such as cars, buses and trucks.

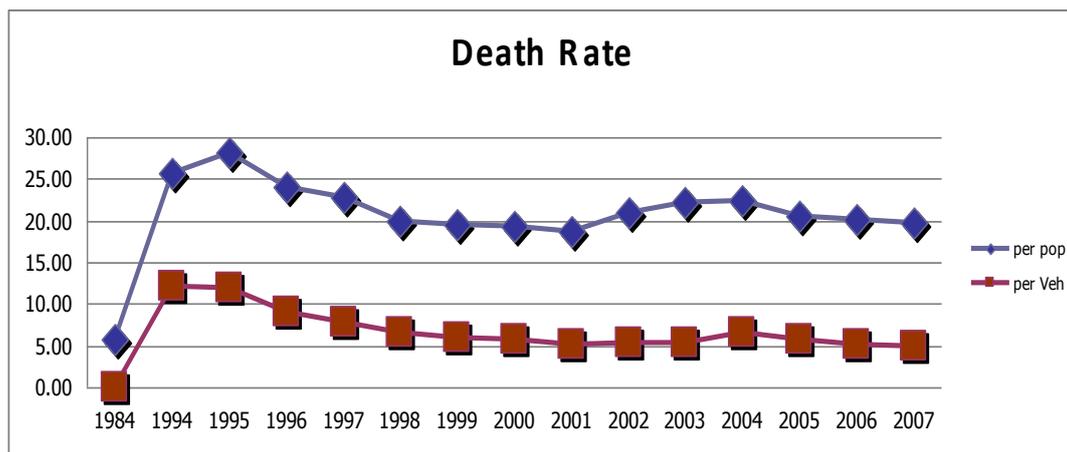
Road traffic accident is a serious problem in Thailand and worldwide. Since 1984 situation of road traffic accident is increased from 18,344 cases to 124,530 cases in 2007. Rate of fatalities from road traffic accident increased from 5.71/100,000 in 1984 to 22.27/ 100,000 in 2006, and injuries rate from 17.14/100,000 to 136.3/ 100,000 in 2007. Since 1994 each year, Thai people died from road traffic accident more than 12,000 cases, and injured more than 43,000 cases. The details as follow in figure 2,3

**Figure 3** Trend of fatality rate and mortality rate from road traffic accident in Thailand, 1984-2006



**Source:** Thailand Health profile, 2007

**Figure 4** Trend in the number of accident fatalities per 100,000 population and per 10,000 vehicle during 1994-2007



**Source:** Department of Highways 2007

**Ref. Pichai Taneeananon (2008)**

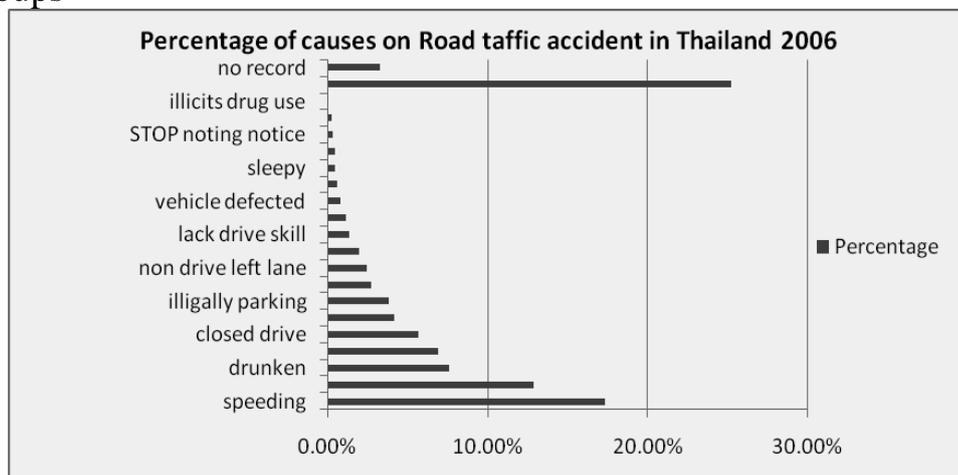
Statistical analyzed causes of road traffic accident by cumulative cases in Thailand, in 1984-2006. There occurred 1,755,624 cases, injured 1,094,933 cases, and died 241,077 cases. The causalities of occurrences related human error about 69.6%, environment error 0.6%, vehicle error 1.2%, others 25.3%, and unknown 3.3% (Minister of Public health, Thailand, 2007).

Analyzed factors related road traffic accidents in Thailand from 1984-2006, Speeding is majority caused of road traffic accident about

17.35%, sudden passed other vehicle 12.94%, drunk driving 7.64%, illegal interfered 6.93%, closed drive 5.73%, disregard traffic light 4.18%, illegally parking 3.82%, disregard stop sign 2.73%, non drove left 2.45%, drove wrong lane 1.99%, lacked driving skill 1.38%, aggressive drove 1.2%, unknown 25.27%, and others less than 1%.

About age groups analyzed, age group 15-29 years-old is the most impacted, between 1996- 2006 road traffic accident cases occurred in these groups were 38.9-47.9%, in age group 30-44 years-old were 24.8-29.4%, and more than 45 years-old were 18.3-27.6%, details in figure 5

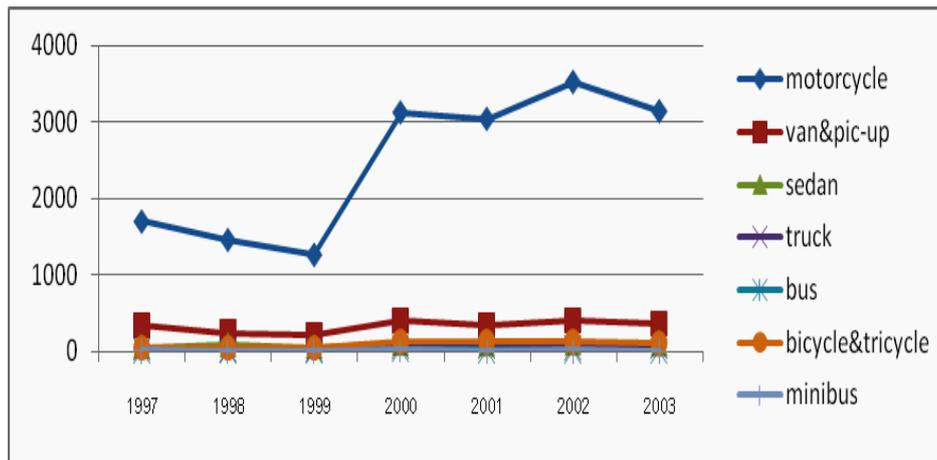
**Figure 5** Percentage of mortality rate from RTA, classified by years and age groups



**Source:** Thailand health profile, 2007

Road traffic accident, classified by types of vehicle, the motorcycle is the most occurred cases of road traffic accident about 44% ( Minister of Public health, Thailand, 2007), and about 76.2% of cases death and injured in record road traffic accident cases in 24 hospitals between 1997-2003 (Thanaboriboon, 2006), next, van and pickup about 18%, and lower distributed in others vehicle. And these situations are increased trend in 1997-2007 the details in figure 4.

**Figure 6** Trend of RTA cases classified by vehicle types which caused of RTA in Thailand, in 1997-2003



**Source:** Thanaboriboon, 2006

Therefore Traffic accident is still serious problem in Thailand both rural and urban area. All organization who relevance have to increasing concern to be concrete activities and make it agenda in fiscal year plan and make it sustainable development.

## 2.2 AIC

## 2.3 Knowledge management

## 2.4 Hiyari Hatto

Hiyari\_Hatto, initiated in Japan, is a traffic psychological method to encourage road users to anticipate / involve in the traffic safety program in order to elicit information through their expression of potential accident experiences that almost occurred/caused them dead or injured. This method was originally utilized for the sake of elderly peoples' traffic safety which currently becomes broader used to raise traffic safety awareness among school, NGOs, local communities, etc., in Japan. This public participation activity through Hiyari - Hatto marks a quantum leap towards the substantial reduction of road traffic accidents. Recently, there are Hiyari maps developed by local community available on the website indicates name of places where Hiyari- Hatto occurred respectively. This method provides opportunity to researchers to collect valuable data on road safety through a participation of public on the expression of their Hiyari – Hatto which helps significantly to identify the potential black spot location prior to traffic accident occurrence. Not that the remedial measures on road traffic accident causations can be derived from this technique as well. This Hiyari – Hatto method seems applicable to investigate road safety situation in Thailand.

## 2.5 Previous Study

**Lulu Rodriguez (2002)** Few topics in transportation are of greater significance, now and in the future, than making today's roads safe for those who use them. This study aims to assist the formulation of policy by examining the empirical evidence currently available on the ability of several forms of communication efforts and activities to increase knowledge about and affect attitudes and behavior toward highway safety practices. The objective of this effort is to provide a comparative synthesis of what works and what does not in highway safety campaigns across a large number of topical areas that have a mass media component. This was accomplished by conducting an extensive literature review to determine the current state of knowledge concerning what works and what has significant potential for wide use in future highway safety campaigns. An analytic framework for investigating highway safety campaigns was created. The framework includes (1) the types of media components, (2) the types of collaborations, (3) the context in which the campaign is intended to have impact, (4) the structure or procedural steps into which campaigns are organized, (5) the principles for what works in a campaign, and (6) the desired impact of a campaign on its target audience. The report reveals 25 characteristics of successful communication campaigns, strategies that stand a chance of achieving changes in knowledge, attitude, and behavior. The actual impact of mass communication remains unproven because of a perceived lag in the development of adequate evaluation techniques. Education by itself has not generally resulted in significant changes in the behaviors targeted, but education of the public and advocacy groups has often helped enact necessary legislation, transmit knowledge about the provisions and penalties of laws in ways that increase their deterrent effect, and generate public support for law enforcement programs. Even in such cases, however, when enforcement is inconsistent, public compliance frequently decreases with time. Approaches to traffic safety that emphasize the need for long-term individual- and community-based measures are found to be especially crucial for addressing complex problems like drinking and driving that are determined by a myriad of lifestyle and psychosocial factors.

**Jack Stuster (2004)** this report presents the results of a study conducted for the National Highway Traffic Safety Administration (NHTSA) to assess the effects of two programs that were implemented to reduce the incidence of aggressive driving. The programs were conducted by the Marion County Traffic Safety Partnership (a consortium of

agencies in the vicinity of Indianapolis, Indiana), and The Tucson, Arizona, Police Department. The programs each received grants of \$200,000 from NHTSA to support the special enforcement and public information and education (PI&E) components. Program managers were required, as conditions of the grant, to 1) focus their enforcement efforts on key aggressive driving infractions in carefully-selected zones within their communities; 2) develop and implement PI&E campaigns to publicize the special enforcement efforts; and, 3) provide the data and other information necessary to prepare this evaluation. The programs shared additional features, but program managers were encouraged to consider innovative approaches to both special enforcement and publicity. Samples of vehicle speed, collected unobtrusively in the special enforcement zones, and crash incidence served as the primary measures of program effect. Average speeds slightly in Marion County and at a greater rate in Tucson. The total number of crashes in the Marion County special enforcement zones increased by 32 percent, compared to the same six-month period one year earlier; the number of those crashes with primary collision factors (PCFs) associated with aggressive driving increased by 41 percent. That is, the total number of crashes increased, but the crashes with aggressive driving PCFs increased at a greater rate. The change in proportion of crashes with the target PCFs provides a better measure than crash frequency because it eliminates the effects of changes in traffic volume and other factors that might have contributed to the overall increase in crash incidence. In this regard, the Marion County zones experienced a six percent increase in the proportion of all crashes with aggressive driving PCFs, despite the extensive publicity and special enforcement efforts. The number of crashes in Tucson's special enforcement zones increased by ten percent, but the number of crashes with aggressive driving PCFs increased by less than one percent. More important, the proportion of all crashes with target PCFs decreased by eight percent. That is, crash incidence increased overall in Tucson's zones, but the proportion of those crashes with aggressive driving PCFs declined. Study results suggest that limited resources might be better spent on officer labor than on publicity, and that focusing enforcement responsibility on a small team assigned full-time to the special enforcement patrols might be more effective than sharing the responsibility among a large number of officers as occasional overtime duty.

**Tuenjai Fukuda, Chamroon Tangpaisalkit, Tetsuhiro Ishizaka, Tusanee Sinlapabutra, Atsushi Fukuda (2005)** Study empirical study on identifying potential black spots through public participation approach: a case study of Bangkok :

Road traffic accidents are the tragic artificial disease which more than thousands of people injured and dead each year. The Thai government has alert and implemented 5-E strategy to tackle the problems. However, owing to the inaccurate road accident statistics and the inefficient data collection method on causation and collision particularly, on potential and existing black spots, these are major obstacles to improve road safety. This paper investigates the possibility to introduce Hiyari-Hatto method to identify and collect data on existing and potential black spot locations. 200 local peoples who live in Soi Chokchai 4 and Soi Ladprao 39 communities in Bangkok were participated in the interview survey. The findings indicated Hiyari-Hatto method is a significant alternative method for public participatory enhancement to develop black spot database nationwide.

This study confirms the adoption of Hiyari-Hatto concept with the use of cognitive map together with public participation approach is a significant alternative to identify the potential black spot locations. This is applicable to use as a fundamental step to develop the system to gather the information nationwide. These methods can contribute significantly to the policy implication in finding effective measures to prevent the traffic accidents prior to its occurrence which can save human lives and economy in long run.

Due to time limitation, this study could not perform the results on the Website. Therefore, the next step of the study will be demonstrating the results in a manner of tabular and graphical presentations on the Website so that this will allow public and transport research institutes as well as other concerned agencies to view the results anytime. Note that the development of mapping system on potential and existing black spot locations using GIS application will be taken into account and will be uploading on the website as well. Therefore, the homepage of “Hiyari-Hatto” or potential accident or potential black spot needs to be developed for the next step of the study.

**Tuenjai Fukuda, Atsushi Fukuda, Makoto Okamura, Atit Tippichai** Application of Hiyari-Hatto concept to Thai communities for public participatory enhancement on hazardous spot identification: a case study of Udon Thani city

This paper presents an application of Japanese Hiyari-Hatto approach aiming to identify the potential road traffic accident locations in Thailand where traffic accident is a serious epidemic issue. The Hiyari-Hatto approach was first introduced to Thailand in 2005 by IATSS scholars and was applied to Udon Thani City in Northeastern Thailand as a pilot case. The study team organized three series workshops for data collection processes. The Government officers were first target to disseminate the concept and methodology of Hiyari-Hatto approach. Secondly, community leaders were gathered to make understanding of the Hiyari-Hatto map creation process. Thirdly, the workshop was organized in the community hall to scope down the area of potential traffic accidents within the community boundary and vicinity areas.

Finally, the Hiyari-Hatto map which shows locations of traffic accident risk within community was developed. The developed Hiyari-Hatto maps were posted at the public areas such as community hall, police station and schools to raise local community awareness utilizing GIS application for hazardous spots management. In addition, the differences of Hiyari-Hatto and existing traffic accident locations are also discussed.

**Atsushi Fukuda, Tuenjai Fukuda, Makoto Okamura, Atit Tippichai.** Introduction of the : a complement to hazardous spot identification

This paper introduces a principal of Hiyari-Hatto approach, invented by IATSS scholars, Japan aiming to explore an alternative method for road traffic accident and potential road traffic accident locations data collection through road users' perception and experiences towards the risk of traffic accident occurrence at roadway locations and its traffic condition on road network. There are two types of hazardous road locations: a black spot (i.e., actual spots with high traffic accident rates) and a potential accident location (i.e., none or with low traffic accident rates). The black spots can be determined by collecting traffic accident data directly from its occurred spots or from police and hospital records and could be improved if their traffic accident rates are higher than an acceptable level. Such approach is known well as a post-accident prevention, while the Hiyari-Hatto concept is an aggressive approach to seek for the potential accident locations which could be caused traffic accidents to potentially happen. This paper clarifies the Hiyari-Hatto concept towards the identification of existing traffic accident and potential traffic accident locations. The application of Hiyari-Hatto concept to developing countries where traffic accident is a critical problem such as Thailand is also addressed in comparison with Japan. The study can be concluded that the Hiyari-Hatto approach can be a complement to hazardous road locations identification. This approach can fulfill needs of road safety issues.

The paper draws a conclusion as follow: This paper introduces the Hiyari-Hatto method as an alternative to road traffic accident data collection. Hiyari-Hatto method has been widely used in the whole nation of Japan for raising traffic safety awareness and for collecting road traffic accident data in the communities. Hiyari Hatto method had been adopted in Thailand just recently and may only be known in some certain areas like Udonthani and Khon Kaen Cities.

**Tuenjai Fukuda, Atsushi Fukuda, Makoto Okamura, Atit Tippichai,** Application of application of Hiyari-Hatto concept to Thai communities for public participatory enhancement on hazardous spot identification: a case study of Udon Thani city

This paper presents an application of Japanese Hiyari-Hatto approach aiming to identify the potential road traffic accident locations in Thailand where traffic accident is a serious epidemic issue. The Hiyari-Hatto approach was first introduced to Thailand in 2005 by IATSS scholars and was applied to Udon Thani City in Northeastern Thailand as a pilot case. The study team organized three series workshops for data collection processes. The Government officers were first target to

disseminate the concept and methodology of Hiyari-Hatto approach. Secondly, community leaders were gathered to make understanding of the Hiyari-Hatto map creation process. Thirdly, the workshop was organized in the community hall to scope down the area of potential traffic accidents within the community boundary and vicinity areas. Finally, the Hiyari-Hatto map which shows locations of traffic accident risk within community was developed. The developed Hiyari-Hatto maps were posted at the public areas such as community hall, police station and schools to raise local community awareness utilizing GIS application for hazardous spots management. In addition, the differences of Hiyari-Hatto and existing traffic accident locations are also discussed.

**Chulaporn Sota, Rujira Duangsong, Pornthip Kumpor, Amornrat Pookarbkaow, Pongsak Pookarbkaow, (2006)** study The Potential Development of Self Reliance and Social network Constructional Community beside Highway for traffic Accident Prevention

This research is participatory research was conducted to study 1). Traffic accident prevention guideline, 2) Potential development of Sub-district administration organization 3) Implementation for Traffic accident prevention. Participants were 64 subdistrict administrations organization members and head of villages and health volunteers at Hua na kum sub-district administration organization, yangtalad district, Kalasin province, Northeast of Thailand. Data were collected using questionnaire for quantitative data, and guideline questionnaire for qualitative data. Including using AIEC technique for situation study and planning including implementation. Data analyzed by SPSS program for quantitative data and content analysis for qualitative data

The results shown that firstly sub-district administration organization no traffic accident prevention, no net working. After implementation there were various activities for traffic accident prevention potential development of sub-district administration organization such as local broad casting, handbook distribution, traffic rule respect ,helmet use campaign, limit speed, no drink no drive. The Important activities among net working were meeting, discussion, including work together, increasing self of belonging as well as gather responsibility and contain fiscal year. Knowledge, intention and practice for traffic accident prevention were high level.

**Luchemos Por La Vida, and Mara Cristina Isoba, (2007)** study why traffic as a system is an important conceptual contribution to road safety teaching?

Everybody who goes out on the street, regardless of their destination, shares the common activity of being moving from one place to another. Each one depends on others to fulfill his or her goal. Individual conduct conditions and influences other people, and vice versa. Each road user is responsible for a part of traffic. Despite the fact that the safety of this system also depends on other

elements that are part of it: clear and effective rules; adequate maintenance of the road and good signs; and on the vehicles that run within it, it is people, road users (pedestrians and drivers) who, at each moment and each place, finally give shape to and define traffic characteristics with their behavior.

The purpose of this paper is to introduce a new content in the subject of road safety education in schools: To develop a systematic concept of traffic, as explicit, basic and introductory content, and as the main subject around which different approaches to teachings on safety and road safety will revolve, in order for these educational processes to be successful and result in safe and responsible **attitudes and behaviors on the part of students, in their behavior on the road** and the role they play in the creation of a healthier social and living environment.

**Kim Pagna, Matthew Ericson and Seang Monith (2007)** study road traffic accidents and Cambodian university students: a case study in Phnom Penh municipality.

In early 2006, the Coalition for Road Safety (CRY) undertook a survey of five hundred Phnom Penh university students to ascertain their road safety attitudes and behaviour. At the time the survey was planned, it was recognised that more than ninety per cent of road traffic injuries (RTIs) were caused by human factors, particularly excessive speed, drink driving and not obeying traffic rules, with people aged between 15 and 24 being overly represented in RTI data. The survey of Phnom Penh university students was essentially undertaken because of the students' over-representation in RTI data. This survey was the first research to be conducted on the topic of road safety amongst Cambodia's students.

The terms of reference included generating recommendations and strategies on how to effectively reduce road accidents amongst the students. This paper reports the survey results and concludes with how these results were used to inform road safety policies. The results of this survey have found their way into practice by a variety of stakeholders' strategies and programs which have been informed by the survey results. While the results confirmed some perceptions and challenged others, they have been most useful in informing project planning amongst stakeholders.

**Mariela Hernández-Sánchez, Francisco Valdés-Lazo, and Ren García Roche, MSc** Preparation of specialists from different community sectors related to road traffic injuries prevention. Cuba, 2004-2006.

Road traffic injuries constitute a worldwide health problem because they are an important cause of mortality, morbidity, sequels, human suffering, years of potential life lost and economic costs. In Cuba, road traffic injuries comprise the fifth cause of general mortality and the first of mortality from 1 to 34 years of age. It is precisely the need to increase the preparation of specialists from different community sectors and disciplines that paved the way to this work, because their appropriate preparation is an important support to increase the knowledge in other

people for preventing injuries. The intervention study was carried out with 155 specialists from different community sectors and disciplines (health, education, jurists, mass organizations, traffic police and others), through 6 regional courses for the different provinces in the country. The knowledge that the participants had on road traffic injuries and the activities they had prepared to prevent them in the communities were measured with an initial questionnaire designed to this purpose. After that, a training plan was imparted and at the end, knowledge was measured again to observe its variation. The indicators were percentages, average and standard deviation. The participants referred that for road traffic injuries prevention they carried out bigger number of educational activities during meetings with the community, followed by patient's consultations and home visits. At the beginning, 76,1 % of the participants considered themselves ready to prevent road traffic injuries (78,6 % among medical doctors, 83,7 among nurses and 58,6 % among other professions). However,

**Huang Bin<sup>1</sup> Huang Meilian and He Yong (2007)** study introduction of highway safety enhancement project in plain areas in China

Analysis of crash data indicates that high speed, village activities, heavy traffic and mixed traffic are major reasons for road crashes on highways in plain areas in China. Most hazardous places are at-grade intersections and through-village segments, concluding from statistics of crash data. HSEP in plain areas specifically focuses on these two types of hazards with engineering measures. Engineering measures in at-grade intersections include guarantee of right of road, speed management, visibility improvement and channelization; Engineering measures in through-village segments include sign guidance, speed management and division facilities. Evaluation of demonstration projects is also putting forward.

**Jesper Mertner, Section (2007)** road safety auditing also on existing roads- an efficient tool for preventing accidents?

Every avoided accident killed or injured person counts in the effort to increase road safety. Many accidents happen at locations spread across the road network and it may therefore be difficult to identify particular dangerous location through traditional black spot analyses. Road safety auditing (RSA) has proven itself as an effective tool to prevent road accidents on new and reconstructed roads. The paper will present how road safety auditing/assessment of existing roads is also an important and cost-effective approach to improve road safety. This is suggested as an additional "stage 6" to the normal 5 stages in the road safety auditing system. A registration tool for such "stage 6 audits" developed by COWI for a pocket PC (PDA), where the GPS technology is combined with digital maps, will be presented as well. The paper will briefly present the background for introducing RSA, the different phases of design where RSA may be used and in particular how RSA may be used on existing roads in a new "stage 6". Typical examples will be presented showing the type of problems and improvements typically suggested by a road safety

auditor. The paper will also provide examples of expected impacts of road safety auditing. Finally, suggestions on how RSA in general can be used under different circumstances to improve road safety will be provided.

**Kasem Choocharukul, Wisanu Subsompon, and Wit Ratanachot (2007)** evaluating rural road safety conditions using road safety index: an application for rural roads in Thailand

Traffic accidents, especially those in rural areas, have been undeniably one of the critical issues in Thailand. Evaluation of road safety level should rely on a systematic approach so that project ranking and budgeting can be properly executed with valid supporting information. This paper focuses mainly on engineering components of rural road safety, with the key objective to demonstrate the development of the road safety index, a quantitative index representing the level of road safety on rural roads in Thailand. The developed index considers various roadway elements, for example, roadway geometry, traffic signs, road furniture, and pavement condition. These highway engineering components are under direct jurisdiction of the highway infrastructure development cluster of the Ministry of Transport. The road safety index will be of usefulness not only for identifying high-risk roads but also for selecting appropriate road safety improvement programs. The present paper also details the application of the developed index through a case study of applying the road safety index to rural roads in Thailand, which are maintained by the Department of Rural Roads, Ministry of Transport. In addition, the integration of the road safety index into a larger framework, the rural road safety management system, will be described.

**Salim Mahmud Chowdhury, Aminur Rahman , Saidur Rahman Mashreky and AKM Fazlur Rahman (2007)** involvement and impact of road traffic injuries among productive age groups (18-59 years) in Bangladesh: issue for priority setting

Introduction: Road traffic injuries are deadly, taking lives of over 1.18 million men, women and children around the world every year. In the developing countries of South-East Asian region road traffic injuries generally affects males in the productive age ranges from 15-44 years. Road traffic injuries affect individuals, families, communities and nations as a whole. Impact of road traffic injuries among productive age groups in Bangladesh is enormous. However, despite the extend of road traffic injuries, road safety has been neglected relative to other health concern. Objectives: To estimate the magnitude and impact of road traffic accidents in Bangladesh among productive age groups over 18 years of age. Methodology: A population-based household survey was conducted between January and December 2003 in Bangladesh. Multistage Cluster Sampling was used to choose a nationally representative sample of 171,366 households of the country comprising of a total surveyed

421,629 population of 18-59 years. Data collected from the households on death or morbidity in the year preceding the survey. Then the causes of deaths and morbidities were determined using verbal autopsy and verbal diagnosis forms respectively. Results: Road traffic injury was the leading cause of injury mortality as well as morbidity. It comprises 37.6% and 24.6% of total injury mortality and morbidity respectively. Most of the victim was the main income earner (57%) of the family and 15% family undergone major economic problem permanently due to injury. Conclusion: The result of the study could be use for priority setting and developing appropriate prevention strategies.

**Hawabibi Laher , Lu-Anne Swart , Mohamed Seedat And Safy Mendes Novelo** the identification of “ At-Risk” groups for transport relates fatalities across four South African cities

South Africa’s road traffic death rate of 11.7 per 100 000 per 100 million kilometres travelled is the fifth highest in the world. The paper accordingly attempted to identify ‘at-risk’ groups for transport related fatalities (2001-2004) across four South African cities, namely Johannesburg; Cape Town; Durban and Pretoria, cities where the National Injury Mortality Surveillance System (NIMSS) has full coverage. Using NIMSS data these at risk groups were analysed for sex, race, age, elevated blood alcohol levels, day of the week and time of day. Age standardised rates were also calculated for traffic-fatalities across the cities. Consistent with studies conducted elsewhere (Harruf, Averty and Alter-Pandy,1998)our results indicated that pedestrians were the group most‘at-risk’(45.94%),followedby unspecified, drivers, passengers, motorcyclists/bicyclists and train commuters. In most instances fatalities peaked over weekends across all road user types. Malesparticularly Black African males were at greater risk than females. With the exception of motorcyclists where 20-29 year olds were at the greatest risk, the 30-39 age group was most at risk across all road user types. Elevated blood alcohol levels were also noted for males between the ages of 30-39 across all road user types. Our results concur with international traffic fatality trends in that they point to the particular vulnerability of pedestrians and indicate the need for integrated road safety programming. Safety measures need to give particular consideration to the traffic fatality-alcohol abuse nexus.

Only 46,4 % passed the initial test (52,8 % among medical doctors, 40,5 % among nurses and 34,4 % among other professions). After the training plan, the amount of people who passed the final test increased to 94,8 %. The training plan was profitable because the knowledge on road traffic injuries prevention in specialists from different community sectors and disciplines was highly and rapidly increased, in order to spread the acquired knowledge in their action areas.

**Esther Malini (2007)** pedrestrian safety requires planning

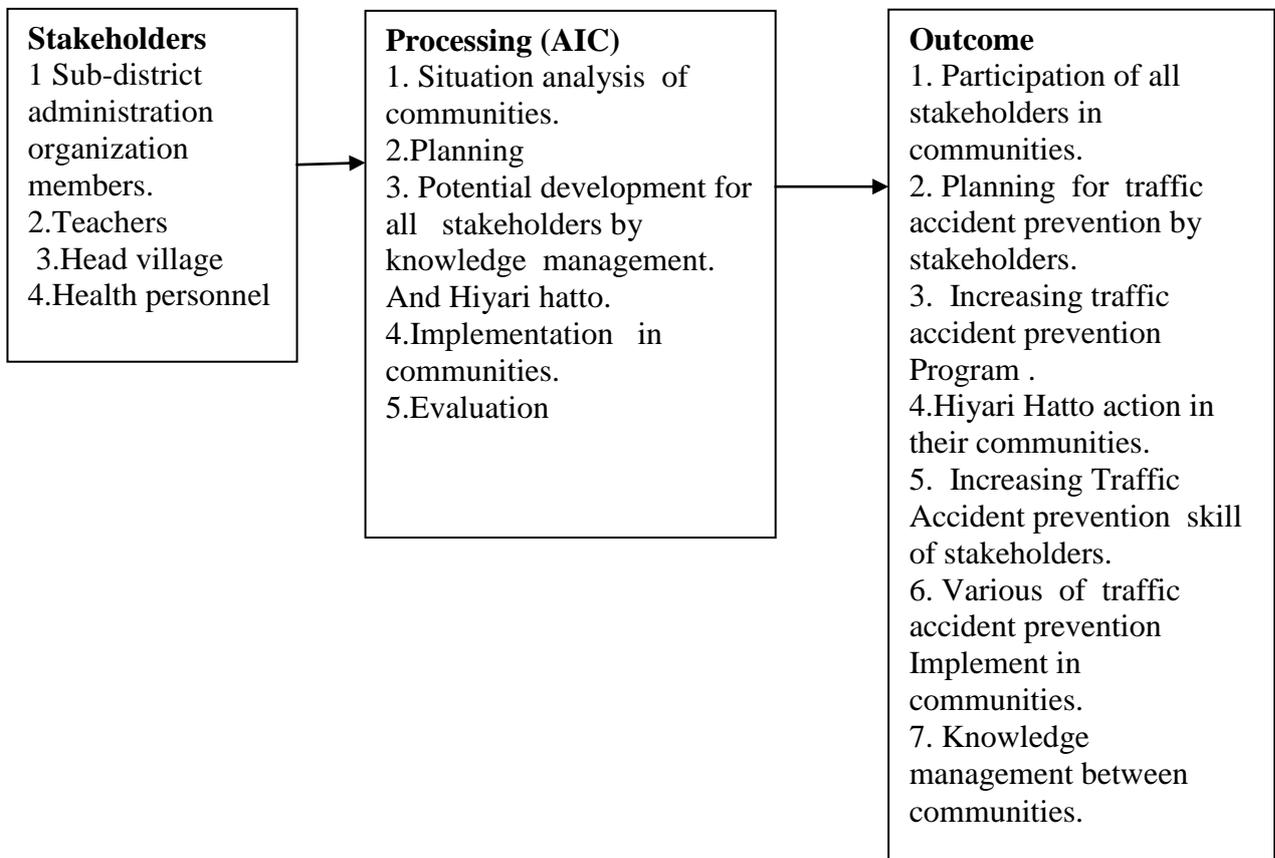
priority

Pedestrians are the largest category of road users in urban areas, especially in developing countries. Currently, their involvement in road traffic crashes is high. While pedestrian safety is a complex subject with no easy solution, the broad approach to a safe situation would be to avoid conflict between pedestrians and vehicles on the road. Facilities meant for pedestrian movement should be planned to achieve the above objective within reasonable cost but without unacceptable inconvenience to all the parties concerned. Pedestrian safety is no accident: it can only materialize when traffic planning is conditioned by suitable priority accorded to the specific needs of the pedestrian.

**Ccile Coquelet, Pierre-Alain Hoyau, and Sylvain Lassarre (2007)** mobility, attitudes, risk and behavior of young drivers

In order to understand better young drivers's mobility, attitudes, risk and behaviour, a multiaims panel sample, called MARC (Mobility, Attitudes, Risk and Behaviour, Comportement in French) has been performed in 2003. For this purpose, a questionnaire has been built to combine 3 road risk approaches: sociological, psychological and economical. Collected data analysis in 3 waves of survey, with an interval of one year and with 3051 young drivers for the first wave, 2085 for the second and 1212 for the last wave, will enable the study of behaviour and road risk evolutions, according to the driving training channels and the driving license duration.

## 2.7 Conceptual Framework



## **Chapter III**

### **Methodology**

The research aimed to study **networking sub-district administration organization management for traffic safety prevention activity campaign**. In this chapter will present including, the research design and methodology, the details as follow:

#### **3.1 The research design**

This research designed by participatory action research, the researcher will use complex methodology, both of quantitative and qualitative study. The research is separated in three phases, consists of Phase I for situation analysis , and Phase II was knowledge management and hiyari hatto on traffic accident prevention and the third phase was Traffic accident implementation and evaluation.

**3.2 Phase 1:** Situation analysis and need assessment for traffic accident prevention among stake holders by using Future search conference.

This phase, the researcher study situation analysis of traffic accident prevention both in stakeholder and primary school students in communities.

##### **3.2.1 Study design**

The study designed in this phase was descriptive **study** design,. In this phase will be study both quantitative method by questionnaire and qualitative method by future search conference and Hiyari - Hatto.

## 1) Quantitative study

### 1.1) Population and sample

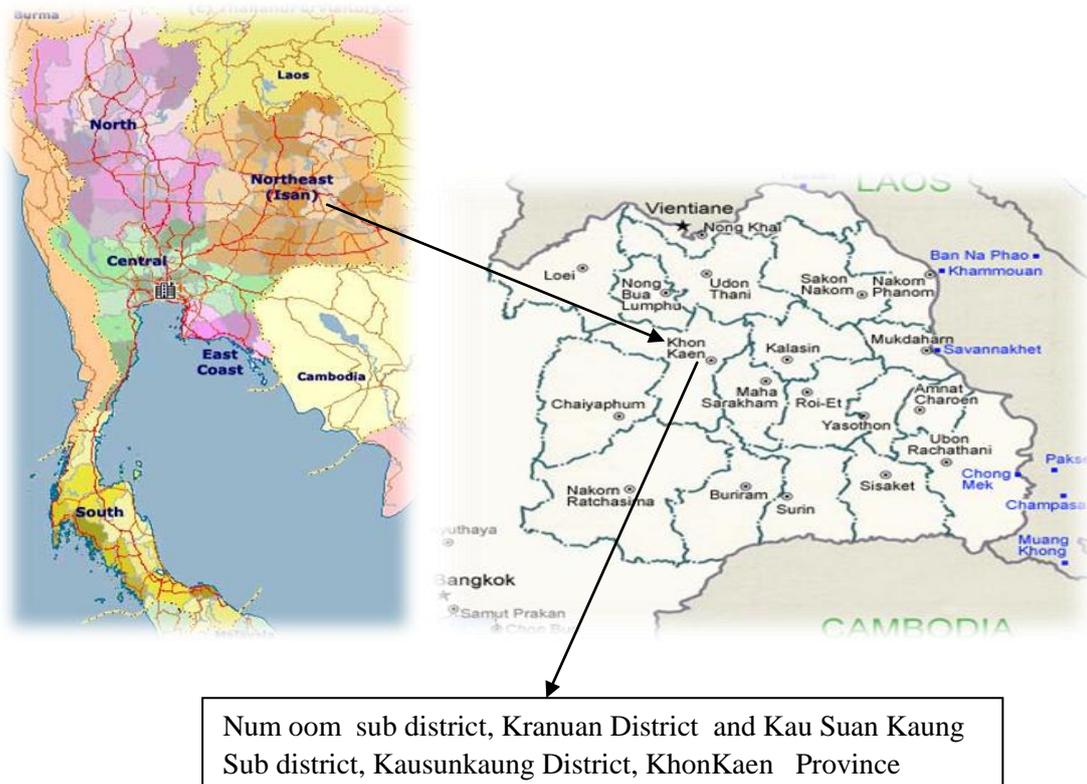
#### (1) Population

The population in this study were head village, sub district administration organization member, teachers, health personnel and health volunteer.

#### (2) Setting study area

Study in 1). Num oom sub -district, kranuan district, Khon Kaen province. **And 2).** khao suan kwang sub -district, khao suan kwang district, Khon Kaen province.

**Figure 8** Study setting areas.



### **(3) Sample and sampling size calculation**

#### **(3.2) Sampling setting and method**

The study samples were consist of 33 participants from community .

#### **(3.3) Data collection**

##### **(3.3.1) Instruments**

The variables of this study will collect by structural questionnaires which answer the aims of the study by literatures reviews. The questionnaires consist of 6 sections such as personal data, traffic accident prevention knowledge, attitude toward traffic accidents prevention, belief of traffic accident prevention, intention for traffic accident prevention and practice on traffic accident prevention. In additional guideline for AIC technique.

##### **(3.3.2) Standardize properties of questionnaires**

(a) Content validity; the content validity will check by sending questionnaires to unless than 3 road traffic accident experts to consideration in content validity, suggestion, and recommendation, after that the researcher will improve as followed suggestions for correctly and completely.

##### **(3.3.3) Data collection method**

(a) Coordinating with head of sub-district administration organization, chief of rural police station, teacher, Chief of head villagers, and chief of health station and then interviews and qualitative data collection.

(b) Data; will collect by researchers team, the initially processes by explaining the study purposes, research procedure, and opening opportunity for asking questions.

(c) The researcher team establishes a relationship with participants by introduction themselves, explaining about the study as following

(1) To protect the human rights of an individual participant, each participants were asked for consent and received an explanation about the purposes of the study, assurance to confident in anonymous, benefits, risks, future implications of the future research and could be right to withdraw from the study at every time, the time for completing the questionnaire about 30 minutes for each asked participant.

(2) After the participants agree to participate in this study, the research team asks the participants to sign in a consent form, then the researcher assistants interview by face-to-face on the structured questionnaire.

(g) After completing data collection, the research assistants' check all items in the questionnaire completely, if not, the participants will be asked to fulfill again.

(h) Checking a completely of questionnaires, compile and analysis the data by the author.

#### (3.3.4) Data management and analysis

##### **Quantitative data**

The data will be recorded into the computer base on double data entry procedure by researcher's assistants using program STATA. The analyses will be taken place in order, starting from descriptive statistic for

percentage, standard deviation, and arithmetic mean and different significant by pair t-test.

### **Tools for qualitative methods** Qualitative data.

2.1.1) In-depth interview target samples about traffic accident situation with head of sub-district administration, head of health station, head of village and teachers.

2.1.2) AIC (Appreciate Influence Control)

2.1.3) Researcher team will be used observation method for general context in community also.

### **2.3) Data analysis**

Qualitative data from target groups collected will be using content analysis,

## **3.2.2 Community feasibility study and setting area method**

### **3.2.3 Stakeholders in this study**

Stakeholders in target area will cooperate to causality identification of traffic accident prevention such as Health care workers in community health center. And sub-district administration organization member

**3.3 Phase 2:** The knowledge management and hiyari hatto for increasing knowledge and increasing concern and capacity of participants in order is conducted for traffic accident prevention by expert invitation for lecture and practice for traffic accident prevention emphasize human factor especially driver, pedestrian and passenger both car and motorcycle which involving their car and road using as well as their environment for traffic accident .

After participants were attended the program for increasing knowledge and capacity by using Knowledge management and hiyari hatto program for traffic accident prevention then they implemented for traffic accident prevention in their communities further to meet their problem and context.

**3.4 Phase 3:** All participants implement for traffic accident prevention in communities beside highway both sub district administration in communities particularly put in fiscal year plan of sub-district administration organization.

1. Traffic Accident prevention Training
2. Cutout Public relation
3. Traffic accident prevention Hand book distribution.
4. Traffic Volunteer training for communities
5. Campaign in the important festival both New year and Songkran festival
6. Warning cutout in the risk area the appropriate of Hiyari Hatto result.
7. Environment arranging for safety road in their communities.

**Limitation :** study in 2 Sub-district Administration organization in the Northeast of Thailand old and New area.

## CHAPTER 4

### Results

The results of this study were base on the response of 33 participants the result will be present as follow.

1. General characteristics of stakeholders
2. Knowledge of traffic accident prevention.
3. Attitude of traffic accident prevention.
4. Intention of traffic accident prevention.
5. Practice of traffic accident prevention.
- 6.Hiyari - Hatto
- 7.Result from AIC
- 8.Discussion

#### 1. General characteristics of stakeholders

##### 1.1 General characteristics of stakeholders in communities

The total sample size consists of 33 participants. Most of them were 75.8% had age group of 41-50 (48.5%) occupation were Hired 30.3 % Education was bachelor degree 42.4 % The detail was shown in table 1

#### General Characteristics

General Characteristics	Number	Percent
<b>Age</b>		
Male	25	75.8
Female	8	24.2
<b>Age/ yr</b>		
31 - 40	8	24.2
41 - 50	16	48.5
51 - 60	9	27.3
<b>Occupation</b>		
Government	4	12.1
Hired	10	30.3
Commercial	1	3.0
Business	2	6.0
Etc	16	48.5

## Education

Primary school	14	42.4
Junior High school	11	33.3
Secondary school	6	18.2
Bachelor	2	6.1

---

2. The level of knowledge in traffic accident prevention was categorized as low (< 60) moderate and (60 -79) high (> 80 %). The results showed that most of them was in high level score was 9 items, subsequently was middle score 10 items and 1 item was low score was how to driving while raining. The detail was shown in table 2

**Table 2 Knowledge**

---

Knowledge	Number	Percent of correct
1. Risk car No look back mirror and no turn light	31	93.9 H
2. Decreasing of injury Helmet use	26	78.8 M
3. Reason of no amphetamine Alertness and unless	30	90.9 H
4. Good Pass anger Get on and get on when the car stopping	29	87.9 H
5. How to <b>cross</b> street in urban area <b>safely</b> Cross at zebra road	28	84.8 H
6. Most risk of traffic accident Age		

Adolescence	32	97.0 H
<b>7. Reason of use helmet during ride motorcycle</b>		
brain protection	20	60.6 M
<b>8. Color road rim for stopping</b>		
Black and white	22	66.7 M
<b>9. Color road rim for temporary stopping</b>		
White and yellow	23	69.7 M
<b>10. Color road rim don't stopping</b>		
White and Red	23	69.7 M
<b>11.Characteristic of safely driver</b>		
Health, good driving, courtesy and traffic law respect	28	84.8 H
<b>12. racing forbid traffic sign on the road character</b>		
Long Yellow bold sign in the middle road	20	60.6 M
<b>13. The most safety color shirt in the night time</b>		
White shirt	32	97 H
<b>14. Whom effect from traffic accident</b>		
Victim, Family, social and nation	20	60.6 M

15. How to driving while raining		
Lighting front of car	13	39.4 L
16. How to do before driving on the highway		
Driving skill	24	72.7 M
17. Most safety motorcycle characteristic		
Low speed engine	26	78.8 M
18. Most risk of the traffic accident patient		
Brain and head Injuries	31	93.9 H
19. Cause of paralyze and accident patient		
Back and Skeleton injury	23	69.7 M
20. Telephone number for referral system		
1669	28	84.8 H

---

3. The level of attitude toward traffic accident prevention was agree, disagree and not sure . The results showed that most of them was good attitude towards traffic accident prevention as the detail was shown in table 3

**Table 3** Attitude toward traffic accident prevention

<b>Attitude</b>	<b>Agree</b>	<b>Disagree</b>	<b>Not sure</b>
<b>1. Drink drive cause traffic accident</b>	(32) 97%	(1) 3%	0
<b>2. Car checking always made safety</b>	(33) 100%	0	0
<b>3. Light sign or hand sign made safety</b>	(3) 9.1%	(29) 87.9%	(1) 3%

4. A cross other driving suddenly cause traffic accident	(29) 87.9%	(3) 9.1%	0
5. Both helmet using or not cause traffic accident	(6) 18.2%	(26) 78.8%	(1) 3%
6. Use traffic light or hand sign when need faster than other car.	(21) 63.6%	(11) 33.3%	(1) 3%
7. Traffic accident prevention need all stakeholder collaborated such as police, teacher, local authority ,health personnel and villager.	(32) 97%	(1) 3%	0
8.Using safety belt decreasing severity of injury	(31) 94%	(1) 3%	(1) 3%
9.Not necessary to hold driving license	(4) 12.1%	(27) 81.8%	(1) 3%
10. Avoid driving when exhaustion or sleepy	(32) 97%	(1) 3%	0

4. The level of belief of traffic accident prevention was categorized was agree, disagree and not sure . The results showed that most of them was good belief of traffic accident prevention as the detail was shown in table 4

**Table 4 Belief of traffic Accident prevention**

Belief	Agree	Disagree	Not sure
1.You can control yourself for limit speed within law recommend	(31) 93.9%	(1) 3%	(1) 3%
2. You belief can No drink drive	(30) 90.9%	(2) 6.1%	(1) 3.0%
3. You can sleep enough before driving	(32) 97%	(1) 3%	0
4. You can prevent yourself from traffic accident	(26) 78.8%	(2) 6.1%	(4) 12.1%
5. You can drive in the suitable lane	(33) 100%	0	0
6. You control yourself to use helmet when riding	(12) 36.4%	(21) 63.6%	0
7. You can control for safety situation	(18) 54.5%	(7) 21.2%	(7) 21.2%
8. You confident to safety driving	(26) 78.8%	(1) 3.0%	(6) 18.2%

9. Your car was always well checking	(31) 93.9%	(1) 3%	(1) 3%
10. your can arouse youth in community to increasing concern about traffic accident prevention	(23) 69.7%	(1) 3%	(9) 27.3%

5. The level of intention for traffic accident prevention was yes, No and not sure . The results showed that most of them was good intention of traffic accident prevention as the detail was shown in table 5

**Table 5 Intention for traffic Accident prevention**

Intention	yes	No	Not sure
1. Intention to motivate neighbor to traffic accident prevention	(28) 84.8%	(1) 3%	(4) 12.1%
2. Intention to setting traffic accident prevention activities	(30) 90.9%	(1) 3%	(2) 6.1%
3. Intention to using helmet when ride motorcycle	(32) 97%	(1) 3%	0
4. Intention to using safety belt when driving	(33) 100%	0	0
5. Intention to setting traffic accident prevention regulation	(29) 87.9%	(4) 12.1%	0
6. Intention to be role model for traffic accident prevention	(33) 100%	0	0
7. Intention to campaign traffic accident prevention	(32) 97%	0	0
8. Intention to setting traffic accident prevention Plan	(31) 93.9%	(2) 6.1%	0
9. Intention to limit speed driving	(32) 97%	(1) 3%	0

6. The level of practice of traffic accident prevention was regular, sometime and never. The results showed that most of them was good practice of traffic accident prevention as the detail was shown in table 6

**Table 6 Practice of traffic Accident prevention**

Practice	Regularly	Sometime	Never
1. Helmet using when ride motorcycle	(25) 75.8%	(8) 24.2%	0
2. Encourage other people for traffic accident prevention	(23) 69.7%	(10) 30.3%	0
3. Regulate setting for traffic accident prevention	(27) 81.8%	(6) 18.2%	0
4. Care checking before driving	(30) 90.9%	(3) 9.1%	0
5. Campaign for traffic accident prevention	(25) 75.8%	(7) 21.2%	(1) 3%
6. Telephone for asking policeman help injured person	(18) 54.5%	(8) 24.2%	(6) 18.2%
7. Telephone to health staff help for helping injured person	(15) 45.5%	(8) 24.2%	(10) 30.3%
8. High speed driving	(3) 9.1%	(13) 39.4%	(17) 51.5%
9. Leader of traffic accident prevention	(23) 69.7%	(8) 24.2%	(2) 6.1%

**7. Situation and problem of traffic by using AIC** technique found that the traffic problem were young driver less than 15 year old ride motorcycle in community and high speed. While no using helmet, and sometime found they drink drive, unknown, traffic rule, when focus vehicle found that some car very old and a lot of animal on the road and cause of traffic accident.

**8. Guideline for traffic safety.** The participants suggest that should set the regulation and campaign by using various health education method for no drunk drive, limit speed riding motorcycle and driving car. Training for traffic rule and safety traffic for adolescents and working group. Set enough traffic light at intersection or curve road, increasing polite and safety driving. Set traffic sign for decreasing speed. Forbid selling alcohol for children sticky.

Driver should concern for car checking and more strict for child driving < 18 years including helmet using campaign.

9. Activities for traffic accident prevention both Sub district administration among communities.

- 1. Meeting and sharing and caring about idea and activities for increasing knowledge management on traffic accident prevention from each other
- 2. Hiyari hatto study. learn from specialist on traffic accident prevention . Dr, Tuenjai Fukuda gave a lecture on Hiyari hatto.
- 3. License training
- 4. Road safety campaign
- 5. Contribute road safety handbook which conduct by researcher.
- 6. Fiscal year plan setting for traffic accident prevention in their sub district administration organization
- 
- Conclusion
- Network of Sub-district administration organization management for traffic accident prevention among 3 communities need to be sharing and learning experiences together including would be training on AIC (Appreciate Influence Control) and Hyari hatto as well as implementation on traffic accident prevention in their communities related their problems and needs.

## Discussion

1. The level of knowledge in traffic accident prevention was categorized as low (< 60) moderate and (60 -79) high (> 80 %). The results showed that most of them was in high level score was 9 items, subsequently was middle score 10 items and 1 item was low score was how to driving while raining.

Therefore we should increasing concern for give more information or risk communication for them on traffic accident prevention particularly how to safety driving in special situation such as raining, including traffic law and using helmet.

3. The level of attitude toward traffic accident prevention was agree, disagree and not sure . The results showed that most of them was good attitude towards traffic accident prevention. They are mostly sub district administration organization who are very important person in community to convince people increasing concern about health management and development in their

community . Therefore cause of good information and positive opinion on traffic accident prevention.

4. The level of belief of traffic accident prevention was categorized was agree, disagree and not sure . The results showed that most of them was good belief of traffic accident prevention . They are the lead of community to convince people Increasing concern about traffic accident prevention, and need their community safety and some experience made them highly belief principle of safety by their behavior how to prevent and protect themselves not by chance.

5. The level of intention for traffic accident prevention was yes, No and not sure . The results showed that most of them was good intention of traffic accident prevention . More intention is more safety from traffic accident because accident is suddenly appear, therefore intention is the important factor should be concern,

6. The level of practice of traffic accident prevention was regular, sometime and never. The results showed that most of them was good practice of traffic accident prevention . The role model is very important and arouse the people more concern about traffic accident prevention made they have to modify their way of life safely from traffic accident prevention.

The community still lack of concern on traffic accident ,so the local government should to increasing concern about training or inform the people on traffic accident prevention regularly

## CHAPTER 5

### SUMMARY AND RECOMMEND

The participatory action research aimed to study **networking sub-district administration organization management for traffic safety prevention activity campaign**. The process was 3 phases the first was situation analysis ,secondly was knowledge management and hiyari hatto in addition third phase was developed traffic accident prevention in the community. The details as follow:

#### 1. General characteristics of stakeholders

##### 1. General characteristics of stakeholders in communities

The total sample size consists of 33 participants. Most of them were 75.8% had age group of 41-50 (48.5%) occupation were Hired 30.3 % Education was bachelor degree 42.4 % .

2. The level of knowledge in traffic accident prevention was categorized as low (< 60) moderate and (60 -79) high (> 80 %). The results showed that most of them was in high level score was 9 items, subsequently was middle score 10 items and 1 item was low score was how to driving while raining.

3. The level of attitude toward traffic accident prevention was agree, disagree and not sure . The results showed that most of them was good attitude towards traffic accident prevention .

4. The level of belief of traffic accident prevention was categorized was agree, disagree and not sure . The results showed that most of them was good belief of traffic accident prevention .

5. The level of intention for traffic accident prevention was yes, No and not sure . The results showed that most of them was good intention of traffic accident prevention.

6. The level of practice of traffic accident prevention was regular, sometime and never. The results showed that most of them was good practice of traffic accident prevention .

**7. Situation and problem of traffic by using AIC technique** found that the traffic problem were young driver less than 15 year old ride motorcycle in

community and high speed. While no using helmet, and sometime found they drink drive, unknown, traffic rule, when focus vehicle found that some car very old and a lot of animal on the road and cause of traffic accident.

8. **Guideline for traffic safety.** The participants suggest that should set the regulation and campaign by using various health education method for no drunk drive, limit speed riding motorcycle and driving car. Training for traffic rule and safety traffic for adolescents and working group. Set enough traffic light at intersection or curve road, increasing polite and safety driving. Set traffic sign for decreasing speed. Forbid selling alcohol for children sticky. Driver should concern for car checking and more strict for child driving < 18 years including helmet using campaign.

### **9. Activities for traffic accident prevention both Sub district administration among communities.**

- 1. Meeting and sharing and caring about idea and activities for increasing knowledge management on traffic accident prevention from each other
- 2. Hiyari hatto study. learn from specialist on traffic accident prevention . Dr, Tuenjai Fukuda gave a lecture on Hiyari hatto.
- 3. License training
- 4. Road safety campaign
- 5. Contribute road safety handbook which conduct by researcher.
- 6. Fiscal year plan setting for traffic accident prevention in their sub district administration organization
- 

### **10. Discussion**

1. The level of knowledge in traffic accident prevention was categorized as low (< 60) moderate and (60 -79) high (> 80 %). The results showed that most of them was in high level score was 9 items, subsequently was middle score 10 items and 1 item was low score was how to driving while raining.

Therefore we should increasing concern for give more information or risk communication for them on traffic accident prevention particularly how to safety driving in special situation such as raining, including traffic law and using helmet.

3. The level of attitude toward traffic accident prevention was agree, disagree and not sure . The results showed that most of them was good attitude towards traffic accident prevention. They are mostly sub district administration organization who are very important person in community to convince people increasing concern about health management and development in their

community . Therefore cause of good information and positive opinion on traffic accident prevention.

4. The level of belief of traffic accident prevention was categorized was agree, disagree and not sure . The results showed that most of them was good belief of traffic accident prevention . They are the lead of community to convince people Increasing concern about traffic accident prevention, and need their community safety and some experience made them highly belief principle of safety by their behavior how to prevent and protect themselves not by chance.

5. The level of intention for traffic accident prevention was yes, No and not sure . The results showed that most of them was good intention of traffic accident prevention . More intention is more safety from traffic accident because accident is suddenly appear, therefore intention is the important factor should be concern,

6. The level of practice of traffic accident prevention was regular, sometime and never. The results showed that most of them was good practice of traffic accident prevention . The role model is very important and arouse the people more concern about traffic accident prevention made they have to modify their way of life safely from traffic accident prevention.

The community still lack of concern on traffic accident ,so the local government should to increasing concern about training or inform the people on traffic accident prevention regularly

#### 11. Recommendation from research

- 1.AIC (Appreciate Influence Control) and Hyari hatto made the people strongly concern about traffic accident prevention in their communities.
2. Knowledge management for caring and sharing should be conducted for sharing and learning experiences together
3. The best practice community is the best leader to motivate the other communities need to improve traffic accident prevention implementation .

#### 12.Recommend for further research

1. It should conduct R&D (Research and Development) for sustainable and creative activities.
2. The effectiveness of best practice on traffic accident prevention motivate the other communities.
3. Cohort study for surveillance traffic accident prevention

4. The effectiveness of participation among stakeholders and all communities for traffic accident prevention.
5. Comparison study between urban and rural area.

# การพัฒนาศักยภาพการดำเนินงานป้องกันและแก้ไขปัญหาอุบัติเหตุจากการจราจรของ

## ชุมชนริมทางหลวง

### ตอนที่ 1 สำหรับประชาชน

#### แบบสอบถามข้อมูลส่วนบุคคล

คำชี้แจง โปรดใส่เครื่องหมาย / ในช่องที่ตรงกับความจริง หรือเติมข้อความให้สมบูรณ์

---

1. ชื่อ .....บ้านเลขที่.....ต. น้ำอ้อม อ.กระนวน จ.  
ขอนแก่น
2. เพศ  ชาย  หญิง
3. อายุ
4.  
 ต่ำกว่า 10 ปี       21- 30 ปี  
 10 – 15 ปี       31 – 40 ปี  
 16 – 20 ปี       41 – 50 ปี  
 51 – 60 ปี
4. อาชีพ/ตำแหน่ง  
 ข้าราชการ  
 รับจ้าง  
 ค้าขาย  
 พนักงานบริษัท/ห้างร้าน  
 อื่นๆ (โปรดระบุ).....
5. การศึกษา  
 ประถมศึกษา  
 มัธยมศึกษาตอนต้น  
 มัธยมศึกษาตอนปลาย  
 ปริญญาตรี  
 อื่นๆ (โปรดระบุ).....

ตอนที่ 2

ความรู้เรื่องการป้องกันอุบัติเหตุจากการจราจร

คำชี้แจง โปรดใส่เครื่องหมาย(×)ทับข้อที่ถูกต้องเพียงข้อเดียว

	สำหรับผู้วิจัย
1. สภาพรถในข้อใดที่อาจจะทำให้เกิดอุบัติเหตุได้	<input type="checkbox"/>
ก. ไม่มีกระจกมองหลังและไฟเลี้ยว	
ข. ไม่มีกันชน	
ค. ไม่มีเสียงดังจากท่อไอเสีย	
ง. ไม่มีตุกลม	
2. ผู้ขับขี่รถมอเตอร์ไซค์สามารถลดความรุนแรงจากอุบัติเหตุได้อย่างไร	<input type="checkbox"/>
ก. ขับรถที่สภาพดี	
ข. ขับรถต้องใช้เบรกให้คล่อง	
ค. ขับรถต้องสวมหมวกนิรภัย	
ง. ขับรถบนถนนที่สภาพดี	
3. ทำไมจึงไม่ควรรับประทานยาบ้าเมื่อขับรถ	<input type="checkbox"/>
ก. ทำให้เกิดอาการง่วงนอน	
ข. ทำให้เกิดความหงุดหงิด	
ค. ทำให้เกิดอารมณ์เศร้าซึม	
ง. ทำให้จิตใจก็กระตือรือร้นขาดความระมัดระวัง	
4. ผู้โดยสารที่ดีควรปฏิบัติอย่างไร	<input type="checkbox"/>
ก. ขึ้นหรือลงรถเมื่อรถจอดสนิทแล้วเท่านั้น	
ข. เขียบบันไดให้มั่นคงเมื่อห้อยโหน	
ค. ยื่นศีรษะออกนอกรถเพื่อรับอากาศเย็นๆ	
ง. นั่งโดยสารบนหลังคารถอย่างเป็นระเบียบ	
5. ข้อใดเป็นข้อควรปฏิบัติเมื่อข้ามถนนในเขตเมือง	<input type="checkbox"/>
ก. ข้ามถนนโดยออกจากหน้ารถ หรือหลังรถ	
ข. ข้ามถนนได้สะพานลอยให้คล่องแคล่ว	

- ค. ข้ามถนนตรงทางม้าลายเสมอ  
ง. ข้ามตรงไหนก็ได้
6. ภัยที่เกิดอุบัติเหตุจากการจราจรได้บ่อยที่สุด
- ก. ภัยเด็ก  
ข. ภัยรุ่น  
ค. ภัยผู้ใหญ่  
ง. ภัยชรา
7. ทำไมต้องสวมหมวกนิรภัยเวลาขับรถจักรยานยนต์
- ก. ป้องกันการเกิดอุบัติเหตุ  
ข. ป้องกันแสงแดดและความร้อน  
ค. ป้องกันลมและแมลงเข้าตา  
ง. ป้องกันอันตรายต่อสมอง ถ้าเกิดอุบัติเหตุ
8. ขอบทางสีอะไรที่จอดรถได้นานๆ
- ก. ขาว – แดง  
ข. ขาว – เหลือง  
ค. ขาว – ดำ  
ง. ได้ทุกข้อ
9. ขอบทางสีอะไรที่จอดรถได้ชั่วคราว
- ก. ขาว – แดง  
ข. ขาว – เหลือง  
ค. ขาว – ดำ  
ง. ได้ทุกข้อ
10. ขอบทางสีอะไรที่ห้ามจอดรถ
- ก. ขาว – แดง  
ข. ขาว – เหลือง  
ค. ขาว – ดำ  
ง. ได้ทุกข้อ
11. คนขับรถที่ปลอดภัยนั้น ต้องมีลักษณะอย่างไร
- ก. สุขภาพดี ขับรถดี มีน้ำใจ เคารพกฎจราจร

ข. มีใบขับขี่ ขับรถถึงจุดหมายอย่างรวดเร็วและรีบร้อนเป็นสำคัญ

ค. ขับรถได้ทนทานแม้จะง่วงนอนหรืออ่อนเพลีย

ง. เคารพกฎจราจรเมื่อพบตำรวจ

12. เครื่องหมายห้ามแซงบนถนนมีลักษณะอย่างไร

ก. เส้นปะสีเหลืองตามถนน

ข. เส้นปะสีขาวตามถนน

ค. เส้นทึบสีเหลืองตามถนน

ง. เส้นทึบสีขาวตามถนน

13. ในเวลากลางคืนเพื่อความปลอดภัยในการข้ามถนนควรสวมเสื้อสีอะไร

ก. ดำ

ข. ม่วง

ค. เทา

ง. ขาว

14. ในการเกิดอุบัติเหตุจราจร ทุกครั้งก่อให้เกิดความสูญเสียแก่ใครบ้าง

ก. ผู้ประสบอุบัติเหตุ

ข. ครอบครัว

ค. สังคมและประเทศชาติ

ง. ถูกทุกข้อ

15. ขณะฝนตกผู้ขับขี่ควรปฏิบัติอย่างไร

ก. เปิดไฟหรี

ข. เปิดไฟหน้ารถ

ค. เปิดไฟกระพริบด้านซ้ายตลอดเวลา

ง. เปิดไฟกระพริบด้านขวาตลอดเวลา

16. ก่อนขับขี่รถบนถนนหลวง ควรปฏิบัติอย่างไร

ก. บรรณัติภาวะก่อน

ข. ฝึกหัดขับขี่รถให้ชำนาญและมีใบขับขี่

ค. มีใบขับขี่และพอขับรถได้

ง. สามารถขับขี่รถได้โดยใช้มือข้างเดียว

17. รถจักรยานยนต์ที่จะทำให้มีความปลอดภัยสูง คือข้อใด

ก. มีเสียงท่อไอเสียดังเป็นพิเศษ

ข. ถอดกระจกมองหลังออกให้รถเบา

ค. ถอดไฟเลี้ยวออก

ง. กำลังม้าหรือความเร็วต่ำ

18. ผู้ป่วยที่ได้รับอุบัติเหตุอย่างไรที่อาจทำให้เสียชีวิตได้

ก. สมอง / กระโหลกศีรษะ      ค. แขน

ข. ขา      ง. หลัง

19. ผู้ป่วยอุบัติเหตุที่เป็นอัมพาต มักเกิดจากอะไร

ก. ศีรษะแตก

ข. กระดูกสันหลังหัก

ค. ขาหัก

ง. หน้าตาได้รับการกระทบกระเทือน

20. การส่งต่อผู้ป่วยอุบัติเหตุไปโรงพยาบาลที่รวดเร็ว ควร โทรแจ้งหมายเลขใด

ก. 191

ข. 1559

ค. 1669

ง. 1569

ตอนที่ 3

ทัศนคติต่อการป้องกันอุบัติเหตุจากการจราจร

คำชี้แจง โปรดใส่เครื่องหมาย / ในช่องที่ตรงกับความรู้สึกของท่าน

ทัศนคติ	เห็นด้วย	ไม่เห็นด้วย	ไม่แน่ใจ	สำหรับ ผู้วิจัย
1. . ท่านเห็นว่าคนดื่มสุรามีโอกาสเสี่ยงต่อการเกิดอุบัติเหตุได้				<input type="checkbox"/>
2. การตรวจเช็คสภาพรถเป็นประจำจะช่วยลดการเกิดอุบัติเหตุ				<input type="checkbox"/>
3. การให้สัญญาณไฟหรือสัญญาณมือทุกครั้งเมื่อเลี้ยวรถจะช่วยป้องกันอุบัติเหตุ				<input type="checkbox"/>
4. ท่านเห็นว่าการขับซัดหน้าคันอื่นจะก่อให้เกิดอันตรายได้				<input type="checkbox"/>
5. เมื่อเกิดอุบัติเหตุการสวมหมวกนิรภัยหรือไม่สวมหมวกนิรภัยก็มีโอกาสเจ็บเท่ากัน				<input type="checkbox"/>
6. ควรใช้สัญญาณไฟและสัญญาณแตรเมื่อแซงรถคันอื่นเสมอ				<input type="checkbox"/>
7. การป้องกันอุบัติเหตุจากการจราจรเป็นเรื่องที่หลายๆฝ่ายต้องร่วมมือกัน เช่น ตำรวจ ทต. ครู เจ้าหน้าที่สาธารณสุขและชาวบ้าน				<input type="checkbox"/>
8. ท่านเห็นว่าการคาดเข็มขัดนิรภัย ขณะขับหรือนั่งรถช่วยป้องกันอุบัติเหตุที่ร้ายแรงได้				<input type="checkbox"/>
9. ท่านเห็นว่าการมีใบขับขี่ไม่เป็นสิ่งจำเป็นในการขับรถ				<input type="checkbox"/>
10. ถ้าง่วงนอนอ่อนเพลีย เหนื่อยล้า ควรหลีกเลี่ยงการขับรถ				<input type="checkbox"/>

#### ตอนที่ 4

#### การควบคุมตนเองเพื่อป้องกันอุบัติเหตุจากการจราจร

คำชี้แจง โปรดใส่เครื่องหมาย / ในช่องที่ตรงกับความรู้สึกของท่าน

ความเชื่อ	เห็นด้วย	ไม่เห็นด้วย	ไม่แน่ใจ	สำหรับ ผู้วิจัย
1. ท่านสามารถควบคุมตนเองให้ขับขี่ไม่เร็วเกิน กฎหมายกำหนด				<input type="checkbox"/>
2. ทุกครั้งที่ขับขี่ท่านไม่ดื่มแอลกอฮอล์				<input type="checkbox"/>
3. ทุกครั้งที่ท่านขับขี่จะต้องนอนพักผ่อนให้เพียงพอ ก่อนเสมอ				<input type="checkbox"/>
4. ท่านควบคุมตนเองไม่ให้เกิดอุบัติเหตุได้				<input type="checkbox"/>
5. ท่านควบคุมตนเองให้ขับขี่อยู่ในเลนหรือช่องทาง การจราจรที่ถูกต้อง				<input type="checkbox"/>
6. ท่านต้องสวมหมวกนิรภัยเสมอเมื่อขับขี่รถยนต์				<input type="checkbox"/>
7. ท่านสามารถแก้ไขสถานการณ์ให้ปลอดภัยได้ เสมอ				<input type="checkbox"/>
8. ท่านจะไม่ทำให้ผู้ใช้รถใช้ถนนร่วมกันเกิดอุบัติเหตุ				<input type="checkbox"/>
9. ท่านตรวจเช็คสภาพรถให้ดีอยู่เสมอ				<input type="checkbox"/>
10. ท่านสามารถเชิญชวนให้วัยรุ่นนมนชุมชนเชื่อฟัง เพื่อลดการเกิดอุบัติเหตุได้				<input type="checkbox"/>

ตอนที่ 5

ความตั้งใจในการดำเนินงานป้องกันอุบัติเหตุจราจร

ความตั้งใจ	ใช่	ไม่ใช่	ไม่แน่ใจ	สำหรับ ผู้วิจัย
1. ท่านตั้งใจว่าจะเป็นผู้กระตุ้นเพื่อนบ้านในการป้องกันอุบัติเหตุจากการจราจร				<input type="checkbox"/>
2. ท่านตั้งใจจะร่วมจัดกิจกรรมป้องกันอุบัติเหตุจากการจราจร				<input type="checkbox"/>
3. ท่านตั้งใจจะสวมหมวกนิรภัยทุกครั้งที่มีการขับขี่รถจักรยานยนต์				<input type="checkbox"/>
4. ท่านตั้งใจจะคาดเข็มขัดนิรภัยขณะเดินทางโดยรถยนต์				<input type="checkbox"/>
5. ท่านตั้งใจจะร่วมสร้างมาตรการเพื่อความปลอดภัยในชุมชนหรือโรงเรียนของท่าน				<input type="checkbox"/>
6. ท่านตั้งใจว่าจะเป็นแบบอย่างที่ดีในการป้องกันอุบัติเหตุจากการ				<input type="checkbox"/>
7. ท่านตั้งใจว่าจะร่วมณรงค์ป้องกันอุบัติเหตุจากการจราจร				<input type="checkbox"/>
8. ท่านตั้งใจว่าจะร่วมจัดทำแผนการป้องกันอุบัติเหตุจากการจราจรขององค์การบริหารส่วนตำบลของท่าน				<input type="checkbox"/>
9. ท่านตั้งใจว่าจะไม่ใช้ความเร็วสูงในการขับรถ				<input type="checkbox"/>

ตอนที่ 6

การปฏิบัติตัวในการป้องกันอุบัติเหตุจากการจราจร

การปฏิบัติตัวในการป้องกันอุบัติเหตุจากการจราจร	ปฏิบัติ ประจำ	ปฏิบัติ บางครั้ง	ไม่เคย ปฏิบัติ	สำหรับ ผู้วิจัย
1. ท่านสวมหมวกนิรภัยเมื่อขับขี่รถจักรยานยนต์				<input type="checkbox"/>
2. ท่านกระตุ้นเตือนเพื่อนบ้านในการป้องกันอุบัติเหตุจากการจราจรเสมอ				<input type="checkbox"/>
3. ท่านร่วมสร้างมาตรการป้องกันอุบัติเหตุจากการจราจรในชุมชนของท่าน				<input type="checkbox"/>
4. ท่านตรวจเช็คสภาพรถทุกครั้งก่อนออกเดินทาง				<input type="checkbox"/>
5. ท่านร่วมรณรงค์ป้องกันอุบัติเหตุจากการจราจรในโรงเรียนหรือในชุมชน				<input type="checkbox"/>
6. ท่านเคยโทรศัพท์ถึงตำรวจเพื่อมาช่วยผู้ป่วยอุบัติเหตุ				<input type="checkbox"/>
7. ท่านเคยโทรศัพท์เพื่อขอรับการช่วยเหลือด้านการรักษาแก่คนที่ได้รับอุบัติเหตุ				<input type="checkbox"/>
8. ท่านใช้ความเร็วสูงในการขับรถ				<input type="checkbox"/>
9. ท่านเป็นตั้งใจเป็นผู้นำในการป้องกันอุบัติเหตุจราจร				<input type="checkbox"/>

## Reference

Atsushi Fukuda, Tuenjai Fukuda, Makoto Okamura and Atit Tippicai (2007) Introduction of the Hiyari- Hatto Concept : A Complement to Hazardous Spots Identification. Civil Engineer Meeting at Amarin lagoon, Pissnulok Province, Thailand 2-4 May, 2007

Bener A et al. Strategy to improve road safety in developing countries. *Saudi Medical Journal*, 2003, 24:447–452.

Bonnie RJ, Fulco CE, Liverman CT. Reducing the burden of injury: advancing prevention and treatment. Washington, DC:National Academy Press, 1999.

Chulaporn Sota et al (2005) **The Potential Development of Communities beside Highways for Traffic Accident prevention and Alleviation** Department of Health Education, Faculty of Public Health, Khon Kaen University, Thailand.

Chulaporn, Sota 1998. **A Comparison of Traffic Accident Prevention Behavior of Adolescents between, Within and Outside Education System**, Department of Health Education, Faculty of Public Health, Khon Kaen University, Thailand.

Chulaporn Sota et al, (2002). **Self Reliance Value Clarification of Sub – District Administration Organization for Health Promotion in Rural Area** Department of Health Education, Faculty of Public Health, Khon Kaen University, Thailand.

Conditions for Success of Future search Conference

<http://www.futuresearch.net/method/success/index.cfm>

[25 November 2007]

Epidemiology Division, 2000. **Injuries Surveillance Report in**

**Thailand, Ministry of Public Health**, Nonthaburee Province, Future Search conference

<http://dpc5.ddc.moph.go.th/Data/data14.02.pdf> [19 November

2007]

## **Future Search Conference**

<http://www.dpi.vic.gov.au/DSE/wcmn203.nsf/LinkView/>

[25 November 2007]

## **Future Search Methodology**

<http://www.futuresearch.net/method/methodology/index.cfm>

[25 November 2007]

Geller ES, Berry T, Ludwig T, et al. A conceptual framework for developing and evaluating behavior change interventions for injury control. *Health Educ Res* 1990;5:125–37.

Gielen AC, Girasek DC. Integrating perspectives on the prevention of unintentional injuries. In: Schneiderman N, Speers MA, Silva JM, et al, eds. *Integrating behavioral and social science with public health*. Washington, DC: American Psychological Association, 2001:203–30.

Gielen AC, ed. Injury and domestic violence prevention. (Special issue). *Patient Educ Couns* 2002;46:161–232.

*International Road Traffic Accident Database (IRTAD)* [online database]. Paris, Federal Highway Research Institute and the Organisation for Economic Co-operation and Development Road Transport Research Programme (<http://www.bast.de/htdocs/fachthemen/irtad>, accessed 7 November 2003).

National Committee for Injury Prevention and Control. Injury prevention: *meeting the challenge*. *Am J Prev Med* 1989;5(suppl):1–303.

Nantulya VM, Reich MR. Equity dimensions of road traffic injuries in low- and middle-income countries. *Injury Control and Safety*

*Promotion*, 2003, 10:13–20.

Runyan CW. Progress and potential in injury control. *Am J Public Health* 993;83:637–4. Thompson NJ, Sleet D, Sacks JJ. Increasing the use of bicyclehelmets: lessons from behavioral science. *Patient Educ Couns*2002;46:191–7.

Rothengatter T, Vaya EC. *Traffic and transport psychology: theory and application*. New York, NY: Pergamon Press,1997.

Sleet DA, Lonerio L. Behavioral strategies for reducing traffic crashes. In: Breslow L, ed. *Encyclopedia of public health*. New York, NY: McMillan Publishing Company, 2002:105–7.

Thailand. *Guidelines for Traffic Accident Prevention in Japan* (1994) [http://www.jicosh.go.jp/english/guideline/Gguide.2html\(29\)](http://www.jicosh.go.jp/english/guideline/Gguide.2html(29))

August, 2003 Ministry of Interior(1994). **Sub – District**

**Administration Organization**, Bangkok, Sunthongthin Press.

Tuenjai Fukuda, Atsushi Fukuda, Makoto Okamura and Atit Tippicai (2007) Application of Hiyarii hatto Concept to Thai Communities for Public Participatory Enhancement on Hazadous Spot Identification: A case study of Udon Thani City. Civil Engineer Meeting at Amarin lagoon, Pissnulok Province, Thailand 2-4 May, 2007.

Tuenjai Fukuda, Tetsushiro Ishizaka, Atsushi Fukuda, Chumroon Tangpaisalkit and Tusanee Silapabutra (2007)Empirical study on Identifying Potential Black Sports Through Public Participation Approach: A Case Study of Bangkok. Civil Engineer Meeting at Amarin lagoon, Pissnulok Province, Thailand 2-4 May, 2007.

Vichit Booryahotara, (1993). **Epidemiology and Control of**

**Accidents** Bangkok, Kurusapa Ladpraow Process.

Vagle, V, G; Perkin, C ; and Vallera, A. (1993) Is Helmet Use Beneficial to Motorcyclist ? **The Journal of Trauma**. 34 (1) ; 120 – 123.

What is Future search Conference

<http://www.futuresearch.net/method/whatis/index.cfm> [21 November 2007]